Government of Odisha

Forest Department

REVISED WORKING PLAN OF GHUMSUR NORTH DIVISION

For The Period
From 2015-16 to 2024-25

Prepared by

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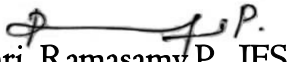
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GLOSSORY OF VERNACULAR NAMES OF TREES SHRUSS CLIMBERS ETC.FOUND IN DIVISION USED IN THE WORKING PLAN AND IN THE COMPARTMENT HISTORY			
A.Tree			
Sl.No.	**VERNACULAR NAME /LOCAL NAME.**	**BOTANICAL NAME.**	**FAMILY.**
1	Akasia / Acacia	Acacia auriculiformis	Mimosaceae
2	Amba	Mangifera indica	Anacardiaceae
3	Ambada	Spondias pinnata	Anacardiaceae
4	Amthi	Lasiobeme retusum	Caesalpiniceae
5	Achu	Morinda pubescens	Rubiaceae
6	Ankula	Alangium salvifolium	Cornaceae
7	Amla / Anla	Emblica officinalis	Euphorbiaceae
8	Arjuna	Terminalia arjuna	Combretaceae
9	Asan	Terminalia alata	Combretaceae
10	Ashoka	Saraca asoca	Caesalpiniaceae
11	Aswasth	Ficus religiosa	Moraceae
12	Babul	Acacia nilotica	Mimosaceae
13	Bahada	Terminalia bellerica	Combretaceae
14	Bandhan	Ougeinia oojeinensis	Papilionaceae
15	Banakopasia	Kydia calycina	Malvaceae
16	Barbakulia	Dalbergia paniculata	Papilionaceae
17	Bara	Ficus bengalensis	Moraceae
18	Borkuli	Zizyphus mauritiana	Rhamnaceae
19	Baruna	Crateva religiosa	Capparidaceae
20	Batra	Melia oomposita	Meliaceae
21	Bela	Aegle marmelos	Rutaceae
22	Bhalia	Semicarpus anacardium	Anacaradiaceae
23	Bentha	Maringi crenulata	Rutaceae
24	Bheru	Chioroxylon swietenia	Meliaceae
25	Bija	Ptarocarpus marsupium	Papilionaceae
26	Chakunda	Cassia florida/C. ciamea	Caesalpiniaceae
27	Chandan	Santalum album	Santalaceae
28	Char	Buchanania lanzan	Anacardiaceae
29	Chauli	Cassine glauca	Verbanaceae
30	Chauldhua	Glycosmis pentapnylla	Rutaceae
31	Chhatian	Alstonia scholaris	Apocynaceae
32	Chikani(Kalicha)	Glochidion	Euphorbiaceae

		lanceolarium	
33	Chotarai	Dillenia aurea	Dilleniaceae
34	Chhuipatali	Sterospermum angustifolium	Bignoniaceae
35	Charaiguri	Vitex penduncularis	Verbanaceae
36	Damgurudu	Gardenia latifolia	Rubiaceae
37	Dambalu	Khretia laevis	Seraginaceae
38	Dhauranjo	Moloptelia integrifolia	Ulmaceae
39	Dhaman	Grewia tiliaefolia	Tiiiaceae
40	Dhaura	Anogeissus latifolia	Combretaceae
41	Dimiri	Ficus racemosa	Moraceae
42	Eucalyptus (patas)	Eucalyputas spp./E. hybrid	Myrtaceae
43	Gaigutia	Dimorphocalyx glabellus	Euphorbiaceae
44	Gambhari	Gmelina arborea	Verbenaceae
45	Gandhapalas	Milliusa velutina	Anonaceae
46	Gandiari/ Genduli/ Ganiari	Cochlospermum religiosum	Bixaceae
49	Garkhari	Acacia ferruginea	Mimosaceae
50	Ghentol	Zizyphus glaberrima	Rhamnaceae
51	Ghoralanjia	Albizia chinensis	Mimosaceae
52	Ghotkhorika(Gangasiuli)	Nyctanthes arbortristis	Oleaceae
53	Giridhini(Genduli)	Sterculia urens	Sterculiaceae
54	Giringa	Pterospermum xylocarpum	Sterculiaceae
55	Gohira	Acacia leucophloea	Mimosaceae
56	Halda	Diospyros montana	Ebenaceae
57	Harida	Terminalia chebula	Combretaceae
58	Hinjal	Barringtonia acutangula	Myrtaceae
59	Jambu/Jamun	Syzygium cumini	Myrtaceae
60	Jaisanda	Litsea glutinesa	Lauraceae
61	Jari	Ficus lutescens	Moraceae
62	Jeutha	Artocarpus lacucha	Moraceae
63	Kadamba	Anthocephalus chinensis/ A. kadamba	Mubiaceae
64	Kaitho	Limonia acidissima	Rutaceae
65	Kamalagundi	Mallotus philippinensis	Euphorbiaceae

66	Kanso	Hymenodictyon excelsum	Rubiaceae
67	Khakada	Casearia elliptica	Samydaceae
68	Khakeda	Honalium nepalense	Samydaceae
69	Karada/Karia	Cielstanthus collinus	Euphorbiaceae
70	Karanja	Derris indica/ Poongamia pinnata	Papilionaceae
71	Karadha (Khurundu)	Gardenia turgida	Rubiaceae
72	Karakendu	Diospyros malabarica	Ebenaceae
73	Kasi	Bridelia squamosa/B. retusa	Euphorbiaceae
74	Kauchia (Kalicha)	Diospyros sylvatica	Ebenaceae
75	Kendu	Diospyros melanoxylon	Ebenaceae
76	Khair	Acacia catechu	Mimosaceae
77	Khakada	Suregadh multiflora	Euphoribiaceae
78	Khakada	Casearia elliptica	Samydaceae
79	Kodala	Sterculia villosa	Sterculiaceae
80	Kongra	Xylia xylocarpa	Mimosaceae
81	Kotokol (Katak)	Strychnos potatorum	Loganiaceae
82	Kuajari	Ficus virens	Moraceae
83	Kuchila	Strychnos nuxvomica	Loganiaceae
84	Kumbhi	Careya arborea	Myrtaceae
85	Kurei	Holarrhena antidysenterica	Apocynaceae
86	Kurum	Haldina cordifolia	Rubiaceae
87	Kusum	Schleichera oleosa	Sapindaceae
88	Lodha	Symplocos racemosa	Styraceae
89	Manda	Macaranga peltata	Euphorbiaceae
90	Mai or Moi	Lannea coromandelica	Anacardiaceae
91	Mahalimba,Mahal	Ailanthus excelsa	Simarubaceae
92	Makharkendu	Diospyros malabarica	Ebenaceae
93	Mamuri	Antideama acidum	Euphorbiaceae
94	Maranga	Albizia procera	Mimosaceae
95	Mohua,Mahul	Madhuca indica	Sapotaceae
96	Mirigachara	Grewia elastica	Tiliaceae
97	Mundi(Mitkania)	Mitragyna parbifolia	Hubiaceae
98	Munit Neem	Azadirachta indica	Meliaceae
99	Nimburumoi	Bursera serrata	Burseraceae
100	Palas	Butea monosperma	Papilionaceae
101	Paldhu	Erythrina variegata	Papilienaceae

102	Panasa	Artocarpua heterophyllus	Moraceae
103	Panigambhari	Trewia nudiflora	Euphorbiaceae
104	Panikodala	Firmiana colorata	Sterculiaceae
105	Panikusum (Pitakusum)	Aphenamixis polystachya	Meliaceae
106	Panipatuli	Lagerstroemia speciosa	Lythraceae
107	Patmessu	Polyathia cerasioides	Anonaceae
108	Patmossu	Milliusa tomentosa	Anonaceae
109	Patuli (Barapatuli)	Stereospermum chelonoides	Bignoniaceae
110	Phasi	Anogeissus acuminata	Combretaceae
111	Pitakarichio	Wrightia arborea	Apocynaceae
112	Pitamoi	Garuga pinnata	Surseraceae
113	Piasal	Pterocarpas marsupium	Papillionaceae
114	Poichandia	Drypetes roxburghii	Euphorbiaceae
115	Poijamu	Syzygium operculatum	Myrtaceae
116	Purhai	Ficus semicordata	Moraceae
117	Rai	Dillenia pentagyna	Dilleniaceae
118	Rajmohi	Lannea coromandelica	Ancardiaceae
119	Rohini	Soymida febrifuga	Meliaceae
120	Sachua	Alstonia scholaris	Apocynaceae
121	Saguan/Teak	Tectona grandis	Verbanaceae
122	Sahara	Streblus asper	Moraceae
123	Sal	Shorea robusta	Dipterocarpaceae
124	Salai	Boswellia serrata	Surseraceae
125	Salapa	Caryota urens	Palmaceae
126	Salara	Catunaregam nutans	Rubiaceae
127	Sajna	Moringa oleifera	Moringaceae
128	Sidha	Lagerstroemia parviflora	Lythraceae
129	Sijhu	Euphorbia royleana	Euphorbiaceae
130	Silveroak	Grevillea robusta	Proteaceae
131	Simili	Bombax ceiba	Malvaceae
132	Siris	Albizzia lebbek	Mimosaceae
133	Sissu/sissoo (Pahadi)	Dalbergia latifolia	Papilionaceae
134	Sissu(Bali)	Dalbergia sisoo	Papilionaceae

135	Sunari	Cassia fistula	Caesalpiniaceae
136	Tangar champa (Patharchampa)	Ochna obtusata	Ochnaceae
137	Tambal	Ficus hispida	Mimosaceae
138	Teak	Techtona grandis	Verbenaceae
139	Telkuruma	Ixora arborea	Rubiaceae
140	Tentra	Albizzia procera	Mimosaceae
141	Tentuli	Tamarindus indicus	Caesalpiniaceae
142	Tilei	Wendlandia heynel/ Wendlandia tinctoria	Rubiaceae
		Wendlandia tinctoria	Rubiaceae
B.Bamboos			
1	Bolongi bans	Cephalostachyum pergracile	Gramineae(Monocot)
2	Daba bans/Kanta bans	Bambusa arundinacea	Granineae
3	Salia	Dendrocalamus strictus	Granineae
C.SHRUBS			
1	Agni jhal	Vernonia aspera	Composites
2	Ankula	Alangium salvifolium	Cornaceae
3	Ankhukoli	Carrissa spinarum	Apocynaceae
4	Arakha	Calotropis gigantia	Asclepiadacea
5	Arjuna	Terminalia arjuna	Combretaceae
6	Ata	Anona squamosa	Annonaceae
7	Badichang	Symphorema polyandrum	Verbenaceae
8	Baincha	Flacourtia indica	Bixaceae
9	Banachiretia	Leea asiatica	Ampelidaceae
10	Bankhajuri	Phoenix acaulis	Palmaceae
11	Banachanda	Fioria vitifolia	Malvaceae
12	Banamalli	Jasminum sambar & J.arborascens	Oleaceae
13	Basanga	Justicia adhatoda	Acanthaceae
14	Begunia	Vitex negundo	Verbenaceae
15	Dalsingha	Canthium dicoccum	Rubiaceae
16	Dhatki or Jhatni	Woodforodia fruticosa	Nyrtaceae
17	Gangai	Melastoma malabathricum	Nelastomaceae
18	Gangasiuli	Nyctanthes arbortristis	Oleaeceae

19	Gilira	Indigofere cassioides	Papllionaceae
20	Gurudu	Gardenia gummifera & G.turgida	Rubiaceae
21	Guakuli	Diospyros ferrea	Kbenaceae
22	Jari	schefflera venulosa	Araliaceae
23	Jhumpuri	Streblus taxoides	Moraceae
24	Jojoka	Tarenns asiatica	Rubiaceae
25	Kakusia	Strobilanthes acaber	Acanthaceae
26	Kamini	Murraya paniculata	Rutaceae
27	Kaskasi Jhari	Ficus parasitica	Moraeceae
28	Kantasidhu	Euphoribia nivelia	Euphoribiaceae
29	Khirkoli	Manilkara hoxandra	Sapotaceae
30	Kirkichikanta	Mimosa rubicaulis or himalayana	Mimosaceae
31	Korei	Holerrhena antidysenterica	Apocynaceae
32	Kukurchatia	Pavetta crassicaulis	Rubiaceae
33	Kumti (Telgunia)	Clerodendrum viscosum	Verbenaceae
34	Khojuri (wild)	Phoenix acaulis	Palmar
35	Lajwanti (Lajkulilata)	Mimosa pudica	Mimosaceae
36	Muraphal murimuri	Helicteres ixora	Sterculiaceae
37	Madanga(Epiphyte)	Loranthus longiflorus	Loranthaceae
38	Nelbali	Cipadessa baccifera	Meliaceae
39	Narasingh Khara	Ardisia solanacea	Myrainaceae
40	Narguni	Atalantia monopjhylia	Rutaceae
41	Patalgaruda	Rauwolfia serpentina	Apocynaceae
42	Phanphana (Phapundi)	Oroxylon indicum	Bignoniaceae
43	Phiriko	Catunaregam melebarica	Rubiaceae
44	Pokusunga	Pogostemon benghalense	Labiaceae
45	Potua	Catunaregam malabarica	Rubiaceae
46	Ranidantakati	Flemingia chapper	Papilionaceae
		F.strobilifera F.Macrophylla	Papilionaceae
		F.Paniculata	Papilionaceae
47	Sonaragoda	Grewia helicterifolia	Tiliaceae
		Sida rhombifolia	Malvaceae
48	Sijhu	Euphorbia royleana	Euphorbiaceae

49	Tolko	Catunaregam uliginosa	Rubiaceae
50	Tulshi	Ocimum americenum & O.sanctum	Labiaceae
51	Urguma	Cycas circinalis	Cycadaceae
		Slepharis maderospatensis	Acanthaceae
		Eranthemum purpurascens	Acanthaceae
		Premna hamiltonii	Verbanaceae
		Premna calycina	Verbanaceae
D.CLIMBERS & LIANES.			
1	Akanbindu	Cissampelos pareira	Nenispermaceae
2	Anantamula	Hemidesmus indicus	Asclepidaceae
3	Arkala	Millettia extensa	Papilioneceae
4	Asadhua	Capparis zeylanica	Capparidaceae
5	Atundi	Combretum roxburghii	Combretaceae
6	Baidank	Mucana pruriens	Papilionaceae
7	Bana Alu	Dioscorea species	Dioscoraceae
8	Banakolthi	Atylosia scarabaeoides	Papilionaceae
9	Banakunduri	Trichosanthes cucumorina	Cucurbitaceae
10	Baghchaar	Argyreia setosa	Convolvulaceae
11	Beto	Calamus guruba	Palmaceae
12	Bhadalia	Opila mentaceae	Olaca ceae
13	Bichhuati	Tragia plukenetii	Euphorbiaceae
14	Budli	Butea superba	Papilionaceae
15	Chinkni	Glochidion lanceolarium	Euphorbiaceae
16	Dantari	Acacia sinuata A. torta	Mimosaceae
17	Ghaya	Marsdenia fenacissima	Asclepiadaceae
18	Gila	Entada phoseoloides	Mimosaceae
19	Gopkan	Cryptolepis buchanani	Asclepidaceae
20	Gulmari	Gymnema sylvestre	Asclepiadaceae
21	Mandiphuta	Pueraria tuberosa	Papilionaceae
22	Kanta Alu	Dioscorea belophylla	Dioscoraceae
23	Kanta Bet	Calamus guruba	Palmaceae

24	Khamba Alu	Dioscorea alata	Discoraceae
25	Khukundia (Kurukundia)	Calycopteris floribunda	Combretaceae
26	Karba Alu	Dioscorea pentaphylla	Discoraceae
27	Korondia Alu	Dioscorea belophylia	Discoraceae
28	Kosa Alu	Dioscorea anguina	Discoraceae
29	Kontaikuli	Zizyphus oenoplia	Rhamnaceae
30	Latanageshwar	Hiptage bengholensia	Melpighlaceae
31	Maharata	Canavalia spp.	Papilionaceae
32	Malti	Aganoscma caryophyllata	Apocynaceae
33	Marada	Millettia extensa	Papilionaceae
34	Makiria	Trichosanthes tricuspidata	Cucurbitaceae
35	Matka	Solena amplexicaulis	
36	Mrigalendi	Gnethum scandens	Gnetaceae
37	Mutri	Smilax ovalifolia	Liliaceae
38	Mutri	Smilax zeylanica	Liliaceae
39	Mate	Entada pursaetha	Mimosaceae
40	Noi palas (Lata palas)	Butea parviflora &	Papilienaceae
		Butea Superba	Papilionaceae
41	Pingo,Pengu	Colastrustrus paniculata	
42	Pani Alu	Dioscorea oppositifolia	Dioscoraceae
43	Pani bet	Calamus Viminalis	Palmaceae
44	Pankanch	Vitis spp.	Ampeliaceae
45	Pita Alu	Dioscorea bulbifera	Dioscoraceae
46	Pichhulu Noi,Rakta		
47	Pichhuli	Gouania tiliaefolia	Rhamnaceae
48	Palasinoi	Butea superba	Papilionaceae
49	Prasarini	Paederia scandens	Rubiaceae
50	Satabari	Asparagus racemosus	Liliaceae
51	Siali	Bauhinia vahlii	Caeselpiniaceae
52	Baghamari	B.Moxburghiana	Caesaipinisceae
53	Suam Noi	Ichnocarpus frustescens	Apocynaceae
54	Tunga Alu	Dioscorea wallichli	Dioscoraceae
		Dioscorea hispida	Dioscoraceae
		Pergularia extensa	Asclepiadaceae

E. GRASSES.			
	BOTANICAL NAME	**VERNACULAR NAME /LOCAL NAME**	
1	Perennial		
2	Aristida setacea		
3	Arundinelia khasiana		
4	A. Sectosa		
5	Bothriochloa pertusa		
6	B.biadhii		
7	Chrysopogon gryllus		
8	C.montanus		
9	Cymbopogan martinii	Dhanwantary	
10	Cynodon dactylon	Daha	
11	Dicanthium annulatum		
12	D.Carricosum		
13	Eragrostis coarctata		
14	Eulaliopsis binata	Panasi	
15	Heteropogon contortus	Sinkula Guguchhia spsar grass	
16	Isellema prostratum		
17	Imperata cylindrical		
18	Ichaemum rugosum		
19	Imperata arundinacea	Chhana	
20	Panicum spp.		
21	Pseudosorghum Fasciculare		
22	Sporobolus indicus		
23	Saccharum Spontaneus	Tenda	
24	Themeda triendre		
25	Thysanolaena maxima	Phulchanchani	
ANNUAL.			
1	Arthraxoa sp.		
2	Arundinelia pumila		
3	Eragrostis uniloides		
4	E.Viscosa		
5	Rottoboellia cochinchinensis		
6	Themeda quadrivalvis		
7	Dimeria spp.		
8	Eulalia spp.		

9	Setaria glauca		
F. HERBS			
1	Achyranthes porphyristachya		
2	Ageratum conyzoides	Pokesunga	
3	Aiginetia indica	In damp sal forest	
4	Allmania nodiflora		
5	Alysicarpus sp.		
6	Ammania spp.		
7	Andrographis paniculata	Bhuineem (Chireita)	
8	Anisomeles indica		
9	Andrographis paniculata	Bhuineem	
10	Argomone mexicana	Sarpuni or Dengibifuli	
11	Aristolchia indica		
12	Cassia obtusifolia	Bhu chakunda	
13	Canecera docussata	Kalmegh	
14	Celosia argentea		
15	Chlorophytum orundinaceum		
16	Commalina banghalensis		
17	Costus speciesus		
18	Crotalaria epunctata		
19	C.Falida	Jhunjhuka	
20	Curcuma sulcata		
21	Desmodium spp.		
22	Elephantopus scaber		
23	Gentelea asietica	Brahmi buti	
24	Hiptis suaveolens	Gongatulashi	
25	Indigofera trita		
26	Merrumia umbellata		
27	Kalanchoe pinnata	Amarpoi	
28	Lapidagathis spp.		
29	Lauria zeylanica		
30	Laucas montana		
31	Mimosa pudica	Lajkuli	
32	Musa balbiaiana	Banakadali	
33	Ocimum spp.		
34	Peucedanum nagpurenre		
35	Piper longum	Pipali	
36	Qabeokia sp.		
37	Ruellia sp.		

38	Selanum surattense	Ankaranta	
39	Stachytarpheta jamaicensis		
40	Sansevieria roxburghana		
41	Triumfetta rhomboidea		
42	Tridax Procumbens		
43	Drimia indica		
44	Pentanema indicum		
45	Volytarella divaricata		
46	Zingiber purpureum		
G.FERNS.			
1	Adiantum lanulatum		
2	A.Caudatum		
3	Chelanthes farinosa		
4	Drynaria quarcifolia		
5	Lastrea cochleata		
6	Morisilia quadrifolia		
7	Mophrodium molis		
8	N.Truncatum		
9	Seleginella proniflora		
H.ORCHIDS.			
1	Dendrobium herbaceum		
2	Eulophia nuda		
3	Habenaria plantaginea		
4	Pecteilis trifora		
5	Malaxis densiflora		
6	Saccolobium spp.		
7	Vanda tessellata		
8	V.testacea		
GLOSSORY OF LOCAL NAMES OF ANIMALS AND BIRDS FOUND IN GHUMUSUR NORTH FOREST DIVISION			
Sl.No.	**LOCAL NAMES**	**ENGLISH NAMES**	**LATIN NAMES**
A.ANIMALS.			
1	Badudi	Shortnosedfruitbat	Cynopterus sphinx
2	Badudi	Flying fox bat	Pterosus giganteus
3	Bagha	Tiger	Panthera tigris
4	Bajrakapta	Pangolin	Manis crassicaudata
5	Balia Kukura	Wild dog	Cuon alpinus
6	Banabiradi (Katash)	jungle cat	Felis chams affinis
7	Barha	Wild boar	Sus scrofa
8	Beleramusa(Nepali)	Nalayan Giant	Ratufa bicolor

		squirrel	
9	Bhallu	Sloth bear	Melursus ursinus
10	Bilua	Jackal	Canis Maureus
11	Chausingha	The four horned antelope	Totracerus quadricornis
12	Cheetah Biradi	Leopard cat	Felis bengalensis
13	Chemgha	Bearded sheath tailed bat	Taphozous melanopogon
14	Chhuchhundra	Grey musk shrew	Suncus murinus
15	Gayal	Bison	Bos gaurus
16	Gada Bhallu	Ratel	Mellivora Capensis
17	Gunduchimusa	3 stripped palm squirrel	Funambulus palmarum
18	Gunduchimusa	5 stripped palm squirrel	Funambulus pennanti
19	Gurandi	Mouse deer (indian chevrotain)	Tragulus meminna
20	Harina	Spotted deer (Cheetal)	Axis axis
21	Hati	Indian Elephant	Elephas maximus
22	Heta Bagha	Hyaena	Hyaena hyaena
23	Jhinka	Porcupine	Hystrix indica
24	Kalarapatria Bagha	Leopard (Panther)	Panthera pardus
25	Kala bagha	Black Panther	Panthera
26	Kokisiali	Fox	Vulpes bengalensis
27	Kutura	Barking deer	Muntiacus muntijak
28	Mankada (Hanu)	Monkey	Preabytis entelius
29	Mankada (Pati)	Rhesus monkey	Macaca mulatte
30	Musa	Rat	Rattus rattus
		White tailed wood rat	Rattus blanfordi
		Indian garbills	Tatera Indica
		Long tailed tree mouse	Vandeleuria oleracca
31	Musa (Nepali)	Gaint Indian squirrel	Ratufa indica
32	Neula (Hatia)	Common mangoose	Herpestes edvardsi
33	Neula (Kuji)	Small Indian mangoose	Herpestes auropunetatus
34	Nilagai	Bule Bull	Boselaphus tragocamelus
35	Odha	Smooth Indian otter	Lutra perapicillata
36	Ramsiali	Wolf	Canis lupus
37	Saliapatani	Toddycat	Paradoxurus hermaphroditus

38	Saliapatni	Small Indian civet	Viverricula indica
39	Sambar	Sambar	Cervus unicolor
40	Thekua	Hare	Lepus nigricollis
			ruficaudatum
B.REPTILES & AMPHIBIANS.			
1	Ahiraja	King cobra	Ophioptagus hannah
2	Ajagarh	Indian python	Python molurus
3	Bamhuni		Nabix stolata
4	Boda	Common boa	Boa constricta
		Russel's Earth Boa	Eryx conicus
5	Chiti	Common Indian Krait	Bungarus caeruleus
6	Dhamana	Rat snake	Ptyas musosus
7	Dhandaboda	Rubsels viper	Viper russelli
8	Dhanda		Kensch rophis piscator
9	Dhulinaga	Saw scaled viper	Echis carinatus
10	Domundia	John's sandboa	Eryx stolata
11	Naga (Gokhar)	Indian cobra	Naja naja naja
12	Kandanali	Tree snake	Ahetulla spp.
13	Laudonkia	Common green whip snake	Dryophis nasutrus
14	Pani Dhanda	Checkeered keel back	Natix piscator
15	Rana	Banded krait	Sungarus fasiatus
16	Tampa	Monocallota cobra	Naja naja kuothis
17	Teli sapa	common blind snake	Typhlops brahminus
		Bamboo pit viper	Trimeresurus gramineus
		Green keel back	Macropisthodon plumbicolor
		Copper head	Elpha radiata
C. LIZARDS.			
1	Bakalajhitipiti		Homidactyiusleschenaulti
2	Bahurupi	Indian chameleon	Chameloon Zeylanicus
3	Bahurupi kuasap	Garden geeko	Calotes versicolor
4	Champainoli	Skink	Mabuya bibro
5	Endua	Rock geeko	Hemidactylus maculatus
		Fattailed geeko	Eublephari ssp.
		Banded geeko	Crytodoctylu spp.
6	Godhi	Land monitor	Varnus bengalensis
7	Jhitipti	House lizard	Hemidactylus flaviviridis
8	Pani Godhi	Water monitor	Varanus salvador
		Penn. Rock agma	Fsammophilus dorsalis

D.TURTIES.			
1	Chabeda kaincha	Land tortoise	Trionyx gangeticus
2	Chitra kaincha	--	Chitra Indica
3	Kurma	--	Kachuga tenteria
4	Pani kaincha	Terrapin	Lissemys punctata
E.FISHES (FRESH WATER)			
1	Balia	--	Wallagonia attu
2	Baligarda	--	Glossogobius giuris
3	Bansa pati	--	Ailia coha
4	Bhakur	--	Catla catla
5	Chenga	--	Ophiocaphalus gachus
6	Chital	--	Notopterus chitala
7	Dandkiri	--	Esomus dandrica
8	Gadisa	--	Ophiocaphalus punctatus
9	Illisi	--	Hilsa ilisa
10	Jalanga	--	Pangasius pangasius
11	Jallah	--	Chela argentea
12	Kantia	--	Myotus cavasius
13	Kerandi	--	Barbus ambassis
14	Kou	--	Anabas tistudineus
15	Magura	--	Claries batrachus
16	Mirakali	--	Cirrhina mrigala
17	Mahurali	--	Amblyapharynagodon mola
18	Neuli	--	Gobiopterus chuno
19	pohala (Chuna)	--	Cirrbina reba
20	Pohala (Denga)	--	Labeo bata
21	Pabata	--	Callichrous bimaculatus
22	Phali	--	Notopterus notopterus.
23	Rohi	--	Labeo rohita
24	Serana	--	Barbus serana
25	Seule	--	Ophiocephalus striatus
26	Singi	--	Heterophneustes fossilis
27	Todi	--	Mastacembelus armatus
F.BIRDS			
1	Babbler common	Kunda	Turdoides caudatus
2	Babbler Jungle	--	Turdoides striatus
3	Babbler Rufous	--	Turdoides subrufus
4	Babbler rufous bellied	--	Dumetia hyperythra
5	Yellow breasted	--	Mecronous gularis

6	Barbet crimson breasted or coppersmith	--	Megalaima haemacephala
7	Barbet large green	--	Meglaima seylanica
8	Baya weaver bird	Baya	Ploceus phillipinus
9	Bee eater blue tailed	--	Merops phillipinus (Lannasus)
10	Bee eater small green	--	Merops orientalis (Litham)
11	Bulbul Red vented	Bulbul or Gobrachadhei	Pyononotus cafer
12	Bulbul Red whiskered	Pahadi Bulbul	Pyononotus jocosus
13	Chloropsis Gold fronted or Green bulbul	--	Chloropsis aurifrons
14	Chloropsis Gold mantled	--	Chloropsis cochinchinennis
15	Cormorant little	Panikua	Phalacrocora niger
16	Coucal or Crowpheasane	Dhakua or Kumbhatua	Centropus sinensis
17	Crow house	Kau	Corvus splendens
18	Crow jungle	Damarakau	Corvus macrorhynchos
19	Cuckoo common Hawk or brainfever bird	Koili	Cuculus varius
20	Cuckoo Indian	Koili	Cuculus micropterus
21	Cuckoo pied crested	Chatak	Clamator jacobinus
22	Dove Emraldor Bronze winged	--	Chalcophaps indica
23	Dove King	Kapota	Streptopelia decaocto
24	Dove spotted	Kapota	Streptopelia chinensis
25	Drongo Black or King crow	Kajalpati	Dicrurus adsimilis
26	Drongo rocket tailed	Bhrungaraja	Dicrurus paradiseus
27	Duck Ruddysheldrake or Brahmini	Chakua-chakoi	Tadoma ferruginea
28	Duck Ruddysheldrake or Brahmini	Chakua-chakoi	Tadorna ferruginea
29	Duck Grey or spotbili	Hansa	Anas poecilorhyncha (Perster)
30	Eagle Crested Hawk	--	Spimactus cirrhatus
31	Eagle crested serpent	--	Spilornis cheela
32	Eagle grey headed fishing	--	Ichthyophaga ichthyactus
33	Eagle tawny	--	Aquila rapax
34	Eagle lesser spotted	--	Aquila pomarina
35	Egret Cattle	Baga	Babulcus ibis
36	Egret little	Baga	Egretta garzetta

37	Falcon shahin	--	Falcoperegrinus peregrinator (Sundevall)
38	Flowerpecker thickbilled	--	Dicaeum agile
39	Flowerpecker tickell's	--	Dicaeum erythrorhynchos
40	Flycatcher Blacknaped blue	--	Monarch azurea
41	Flycatcher Blue throated	--	Culicicapa ceylonensis
42	Flycatcher Grey headed	--	Muscicapa rubaculoides
43	Flycatcher Paradise	--	Terpsiphone paradisi
44	Flycatcher Redbreasted	--	Muscicapa parva (Bochstain)
45	Flycatcher Tickell's blue	--	Muscicapa tickelliae
46	Flycatcher verditer	--	Muscicapa thalassinax (Swainson)
47	Goose Barheaded	Bataka	Anser Indicus
48	Grebe little or Debachick	Hansarali	Podiceps ruficollis
49	Gull Black headed	--	Larus ridibundus
50	Gull Great black headed	--	Larus ichthyastus
51	Harrier marsh	--	Circus aeruginosus
52	Harrier Pale	--	Circus macrourus
53	Heron pond or paddy bird	Kantiabaga	Ardeola grayii
54	Hightjar Indian	--	Caprimulgus asiaticus
55	Hoopoe	--	Upupa epops (Linnaeus)
56	Hornbill common grey	Bhaliakhai	Tockus birostris
57	Hornbill large pied	--	Anthracoceros malabaricus
58	Hornbill malabar pied	Kuchilakhai	Anthracoceros coronatus
59	Xibs white	--	Threskiornis aethiopica
60	Lora	--	Aegithina tifia
61	Jungle fowl grey	Banakukuda	Galius sonneratii
62	Jungle fowl red	Banakukuda	Gallus gallus (Linnaeus)
63	Kestrel	--	Falco tinunculus (Lannaeus)
64	Kestrel lesser	--	Falco naumanni
65	King fisher Brown headed or stork billed	--	Pelargopsis capensis
66	King fisher blue eared	--	Alcedo manimtino
67	King fisher pied	Machharanka	Ceryle rudis
68	King fisher small blue	--	Alcedo atthis
69	King fisher white breasted	--	Halcyon smyrnensis
70	Kite common pariak	Chilla	Milvus migrans

71	Kite Brahminy	Sankhachila	Haliastur indus
72	Koel	--	Eudynamys scolopacea
73	Laporing red wattled	--	Vanellus indicus
74	Lapuring yellow wattled	--	Vanellus malabaricus
75	Lapuring spur winged	--	Vanelluus spinosus
76	Lark Bush singing	--	Mirafra cantilisns
77	Malkoha small green billed	--	Rhopodytes viridirostris
78	Minivet scarlet	--	Pericrocotus flammeus
79	Munia spotted	--	Lonchura punctulata
80	Myna Bank	--	Acridothares ginginianus
81	Myna hill	Sari	Gracula religiosa (Linnaeus)
82	Myna Indian	Bani	Acridotheres tristis
83	Myna jungle	--	Acridotheres fuscus
84	Myna pied	Ghukalika	Sturnus contra
85	Night jar common Indian	--	Caprimulgus askaticus (Lantham)
86	Night jar jungle Indian	--	C.Indicus
87	Night jar long tailed	--	C.Macrurus
88	Oriole black headed	Haladi basanta	Oriolus xanthornus
89	Osprey	--	Pandion haliaetu
90	Owl collared scops	--	Otus bakkemoena (Pennant)
91	Owl Indian greathorned	--	Bubo bubo
92	Owl Dusky horned	--	Bubo coromandus
93	Owl Grass	--	Tyto capensis
94	Owlet scops	--	Otus scops
95	Owlet spotted	Pecha	Athene brama
96	Parakeet Blossom headed	--	Psittacula cyanocephala
97	Parakeet large Indian	Sua	Psittacula eupatria
98	Parakeet roseringed	--	Psittacula krameri
99	Patridge grey	Teetiri	Francolinus pondicerianus
100	Peafowl common	Mayur	Pavocristatus (Linnaeus)
101	Pigeon bluerock	Deuliapera	Columba livia (Gmelin)
102	Pigeon common green	--	Treron phoenicoptera
103	Pigeon imperial green	--	Ducula aenea
104	Pipit Indian	--	Anthus novascelandiae (Gmelin)
105	Pipit Tree	--	Anthus tivialis
106	Pitta Indian	--	Pitta brachyura
107	Plover little ringed	--	Charadrius dubius

			(Scopoli)
108	Quall Bush jungle	Teetri	Perdicula asiatica
109	Quall Bush painted	Teetri	Perdicula erythorhyncha
110	Quall blue legged or common or bastard	Gunduri	Turnix suscitator
111	Robin Indian	--	Saxicoloides fulicata
112	Robin magpie	Nilkantha	Copsychus saularis
113	Robin redbilled magpie	--	Cissa arythrorhyneha
114	Roller or blue jay	Bhadbhadalia	Coracias benghalensis
115	Sandpiper common	--	Tringa hypoleucos (Linnaeus)
116	Shama	--	Copsychus malabaricus
117	Shikra	--	Accipiter badius
118	Snipe common or fantail	--	Gallinago gallinago
119	Sparrow House	Gharchatia	Passer domesticus
120	Sparrow Hawk	--	Accipitor nisunaisa
121	Sparrow yellow throated	--	Petronia xanthocollis
122	Spinetail white rumped	--	Chactura sylvatica
123	Spufowl Red	--	Galloperdix spadicea
124	Stiit blackwinged	--	Himantopus himantopus
125	Stork openbilled	Gendalia	Anostomus oscitans
126	Stork whitenecked	--	Ciconia episcopus
127	Sunbird purple	--	Nectarinia asiatica
128	Sunbird purple rumped	--	Nectarinia Zeylonica
129	Swallow wire tailed	--	Hirundo smithii (Leach)
130	Swift House	Chataka	Apus affinis
131	Tailor bird	Phutki	Orthotonus sutorius
132	Teal common	--	Anas crecca (Linnaeus)
133	Teal cotton	--	Nettapus coromandelianus
134	Teal lesser whistling	--	Dendrocygna javanica
135	Teal grey	--	Anas gibberifrons
136	Tern river	--	Sterna aurantia
137	Tern common	--	Sterna hirundo
138	Thrush whitethorated ground	--	Zoothera citrinn
139	Treepie	--	Dendrocitta vagabunda
140	Trogon southern	--	Herapactes fasciatus
141	Vulture king	--	Sarcogyps calvus
142	Vulture white backedor bengal	Saguna	Gyps bangalensis
143	Wagall large pied	--	Motacilla

			maderaspatensis (Gmelin)
144	Wagtail white	--	Motacilla aiba (Linnaeus)
145	Wagtail yellow	--	Motacilla flava (Linnaeus)
146	Warbler wren ashy	--	Prinia socialist (Sykes)
147	Warbler wren Indain	--	Prinia subflava
148	Warbler wren futous	--	Prinia rufuscens
149	Warbler wren rufous fronted	--	Prinia buchanani
150	Warbler wren jungle	--	Prinia sylvatica
151	Woodpecker Golden backed	--	Dinopium benghalense
152	Woodpecker larger	--	Chrysocolaptes lucidus
153	Woodpecker Heart spotted	--	Hemicircus canente
154	Woodpecker pigmy	Kathkhumpa	Picoides nanus
155	Woodpecker black naped green	--	Picus canus.

Part-I

SUMMARY OF FACTS ON WHICH PROPOSALS ARE BASED

CHAPTER-I

THE TRACT DEALT WITH

1.1. Name and Situation

1.1.1. Ghumusur North forest Division, Bhanjanagar is one of the oldest forest Division of the state, constituted in the year 1938, vide Government of Odisha Notification No. 243 dated 12.11.1938 which then was known as Rasullkonda Forest Division with head quarters at Bhanjanagar. This Division was managed by Mr. A.F. Minchin's Plan from 1919 to 1929-30 and then by Mr.M.K.Nayar's plan from 1930-31 to 1939-40. Mr. D.H.Khan's plan was executed during 1940-41 to 1959-60 which was further extended up to 1968-69. Then Mr.H.K.Pattnaik's plan was followed from 1970-71 to 1989-90 which was extended twice up to 1993-94. Right now, this division managed by the working plan prepared by Mrs. Rebecca Nayar, IFS for the period from 1995-96 to 2014-15.

1.1.2. The forest area dealt within this Working Plan falls within the jurisdiction of Ghumsur North Forest Division. Geographically, the entire area lies within 19^0 43'and 20^0 18'North latitude and 84^0 21'and 54^0 50' East longitude towards the eastern side of Greenwich. The Forest Blocks are more or less compact and are situated within the jurisdiction of Bhanjanagar, Surada, Jagannath Prasad, Aska and Belaguntha Tahsils of Bhanjanagar Revenue Sub-Division of Ganjam District. The total geographical area of Ghumsur North Division is 2360.217 Sq.km as per FSI report 2013.

1.1.3. Previously the division was managed by 4 administrative ranges i.e Central, Gallery, Mujagada, and Tarasing with headquarters at Bhanjanagar, Dholapita, Bhanjanagar & Tarasing respectively. Re-organisation of territorial Division was taken up by Govt. during Oct, 2003. Total Division boundary remains unaltered but in order to ensure smooth administration one new range namely Jaganathprasad Range was created with headquarters at Jaganathprasad. Two sections i.e. Jaganathprasad and Gereda from erstwhile Tarasing Range and Bellaguntha beat which was made a section from erstwhile Mujagada Range were carved out to constitute the newly created Jagannathprasad Range. The Division headquarter is located at Bhanjanagar which is 80 kms from both Phulbani and Berhampur by road and 176 kms from Bhubaneswar. The distance of the different Range offices from the divisional headquarter along with GPS location is given in **Table-1-1,** the latitudinal and longitudinal limits along with the boundary description of all the Ranges is given in **Table1-2** and the Range wise jurisdiction of the revenue C.D blocks and police stations is given in **Table-1-3**.

Table 1-1 Distance of range office from Divisional Headquarters at Bhanjanagar with G.P.S location					
Sl.No.	**Name of the Range**	**Range Head Quarter**	**Distance on Road from Division H.Qs in Km.**	**G.P.S Location of Range Hqs.**	
				Latitude	**Longitude**
1	Central	Bhanjanagar	0.6km.	N 19^0 56' 14.7''	E 84^0 34' 59.0''
2	Mujagada	Bhanjanagar	1.0km.	N19^0 55' 44.9''	E 84^0 35' 05.3''
3	Gallery	Dholapita	22km.	N20^0 04' 53.9''	E 84^0 35' 45.0''
4	Jagannathprasad	Jagannathprasad	25km.	N 19^o 58' 38.3"	E 84^0 46' 58.5"
5	Tarasing	Tarasing	26km.	N 20^0 03' 0.36''	E 84^0 21' 55.87''

Table 1-2 Latitude and Longitude limits and boundary description of different ranges of Ghumsur North Division.					
Range	**Latitude (North)**		**Longitude (East)**		**Boundary Description**
	From	**To**	**From**	**To**	
Central	$19^0$56'06.4"	$19^0$43'44"	$84^0$32'46.1"	$84^0$39'07"	**N-**Mujagada Range **S-** Mujagada Range **E-** Mujagada Range **W-** Gallery Range
Mujagada	$20^0$12'13.2"	$19^0$52'40.9"	$84^0$19'30.3"	$84^0$39'27.3"	**N-**Phulbani Division **S-** Central Range **E-**Jagannathprasad & Tarsing Range **W-**Udaygiri Range of Phubani Division
Gallery	$20^0$12'44.9"	$20^0$04'37.9"	$84^0$39'23.5"	$84^0$38'49"	**N-**Tarasing Range **S-** Mujagada Range **E-** Mujagada Range **W-** Mujagada Range & Phulbani Division
Jagannathprasad	$20^0$25'12.0"	$20^0$12'48"	$84^0$59'00"	$85^0$26'00"	**N-** Tarasing Range **S-**Buguda Range of Ghumsur South Division **E-**Odagaon Range of Nayagarh Division **W-** Central Range
Tarasing	$20^0$02'36"	$20^0$28'06"	$86^0$03'54.0"	$85^0$23'30.0"	**N-**Daspala Range of Naygarh Division **S-** Mujagada Range **E-**Jagannthprasad Range **W-**Gallery Range

Table1-3 Range wise jurisdiction of revenue C D Blocks & Police Stations			
Sl.No.	**Name of the Range**	**Covered under C.D Block**	**Covered under Police Station.**
1	Central	Bhanjanagar and part of Surada, Bellaguntha , Aska	Bhanjanagar and Surada (Part), Gangapur P.S.
2	Mujagada	Bhanjanagar.	Bhanjanagar
3	Gallery	Bhanjanagar.	Bhanjanagar & Tarasingi
4	Jagannathprasad	Jagannathprasad and Bellegountha	Bhanjanagar & Jagannath Prasad
5	Tarasingi	Jagannathprasad	Tarasingi P.S.

Source: DFO Ghumsur North Division

1.1.4. Boundaries

1.1.4.1 Ghumsur North Forest Division is situated entirely within boundary of Bhanjanagar Revenue Sub-Division being surrounded by Nayagarh, Phulbani and Ghumsur South Forest Divisions.

North: Nayagarh (T) forest Division. (Nayagarh District)
North West: Phulbani Forest Division. (Kandhamal Dist)
West: Entirely covered by Phulbani Forest Division. (Kandhamal District)
South: Ghumsur south (T) Division. (Ganjam District)
South East: Nayagrah (T) Division. (Nayagarh District)

1.2. Configuration of the Ground

1.2.1. The major part of the forests of Ghumsur North Division occupy the slopes of the main and subsidiary ridges of the Eastern Ghats, where these ridges form the boundary between Nayagarh District on the one side and Kandhamal District on the other. The remaining part of the forests occupies the slopes of outlying hills and part of the flat and very gentle slopes of Ghumsur Plains. The elevation varies from about 91m. in the plains to 1196m on top of Kutarbari hill in Baiballi Block of Mujagada Range, where the altitude is highest in the Division. The hill ranges of Darpangia, Rambha, Gundiribadi and Baibali blocks bear an average range of altitude between 500 Meters to 600 Meters above mean sea level. Some of the important peaks in various Reserve forests of Ghumsur North Division with corresponding toposheet numbers and heights above mean sea level are given in **Table-1-4.**

Table-1-4 Range Wise list of important Peaks of Ghumsur North Division

Sl. No	Name of Range	Name of R.F	Toposheet Reference NO.	Name of Peak	Height above MSL (in mt.)
1	Mujagada	Rambha R.F	73D/12	Penhijutuni Parbata	502
2		Rambha R.F	73D/8	Bada Parbata	700
3		Darpangia R.F	73D/8	Penkuli Saru	700
4		Baibali R.F	73D/8	Kutarbari Parbata	1196
5		Baibali R.F	74A/5	Konda barhi Saru	1056
6		Baibali R.F	74A/5	Tanka Saru	800
7		Tiliki R.F	74A/5	Gaikiya Parbata	510
8	Central	Kaliamba R.F	74A/9	Boraja Saji	683
9		Kaliamba R.F	74A/5	Dhekamba Parbata	723
10		Ragada R.F	74A/5	Sanchunia Parbata	500
11		Malati R.F	74A/10	Matuli	523
12	Gallery	Chandragiri R.F	73D/12	Chandrigi Parbata	615
13		Chandragiri R.F	73D/12	Kandani Parbata	700

14		Ambajhari R.F	73D/12	Bindhani Patbata	738
15		Ambajhari R.F	73D/12	Tengiri Parbata	762
16		Ambajhari R.F	73D/12	Daleri Parbata	837
17		Ambajhari R.F	73D/12	Barapuragia Parbata	886
18		Ambajhari R.F	73D/12	Kasharhi Parbata	500
19		Ambajhari R.F	73D/12	Dhamara Parbata	620
20		Ambajhari R.F	73D/12	Chanagiri Parbata	659
21	Tarsing	Ambajhari R.F	73D/12	Giridhini Parbata	500
22		Ambajhari R.F	73D/16	Ratadeo Patbata	606
23	Jaganathprasad	Jagannathprasad R.F	73D/16	Chutia Parbata	500
24		Jagannathprasad R.F	73D/16	Patharkumuda Parbata	540

Source: As per the Survey of India Topo Maps

1.2.2 Drainage

1.2.2.1 The area represents a combination of radial and dendritic drainage pattern. The southern part of this Division represents an even ground forming the flood-plain of three main water courses such as Lohorakhandi, Boda Nala and Bada Nadi. The main catchment for the above three water courses drains into river Rushikulya. No perennial surface run off is found in the division.

1.3 Geomorphology

1.3.1 Geology, Rock and Soil

1.3.1.1 The area is located within the hilly tracts of Eastern Ghats and geologically represents a highly metamorphosed sector of the Archean Peninsula. Structurally the area is quite complicated. The geometry of the fold pattern appears to represent the super-imposition of two generations of fold axes almost at right angles to each other. The present immature physiography of the rugged hilly tract with sporadically scattered flat low-lying areas suggest the operation of cyclical erosion accompanied by the uplift of blocks along fault plains of comparatively recent origin which helped in the rejuvenation of drainage system. Major rock formations constitute Khondalite, Charnockite and Porphyroblastic Granite Gneiss. The major rock type in Ghumsur North Division is given in **Table 1-5** arranged in the order of antiquity.

Table 1-5 Major Rock types in Ghumsur North Division

Major Group	Main Rock Types
Recent	Alluvium and soil
Tertiary	Laterite
Archaean	Granite Gneiss (porpyroblastic) Khondalite Charnockite Pyroxene granulite

Source: Join Director, Geology, Southern Region, Berhampur

1.3.2 Khondalite Suite of Rocks

1.3.2.1 The term 'Khondalite' was first coined by Water (1902) to collectively denote a rock suite comprising sillimanite and garnet bearing siliceous schists/gneisses (graphitite) associated with garnetiferous quartzite and calc-silicate rocks. The name was given after the 'Khond' tribe of the Boudh –Kandhamal area of Odisha. These are oldest rocks made up of metamorphosed sediments. These are rich in quartz, sillimanite, feldspar, garnet and graphite. They are widely distributed in hills and plateaus. These meta-sedimentary rocks are dominant and highly metamorphosed. They form a series of sedimentary rocks and are the most prominent feature in the area. With exception to Calc-silicate rocks which are usually resistant to weathering, schists and gneiss are highly susceptible to weathering.

1.3.2.2 Khondalitic formations are rarely found on the top and in the valleys. There occurrences are generally along the ridges. Khondalite formations have undergone lateritisation on elevations but, original foliations are still evident. The general direction of foliation of Khondalites in the region is North-South dipping steeply due west. The rocks are greyish to reddish in colour, fine to medium grained and gneissosity is defined by altering dark and white bands constituting garnet, biotite, sillimanite, quartz and feldspar respectively. Sillimanite and Garnet are arranged in parallel planes. Sillimanites needless are extremely fine having a leafy and feathery arrangement. Round or elongated garnet grains are found embedded in it. Graphite flakes occur in between the clusters of Sillimanite and other minerals. These types of rocks are forms of unclassified gneiss found in the division.

1.3.3 Charnockite Suite of Rocks

1.3.3.1 These are a series of Granitoid rocks, occurring among the oldest Archaean Gneiss and Schist. Their content is high percentage of pyroxene (hypersthenes) and dark ferro-magnesium minerals, which impart dark colour to the rocks. They are greasy grey to dark grey in colour and granulite in texture. They are very hard, compact, and resistant to weathering. They are generally massive, melanocratic and medium to coarse grained in nature. Lenticular inclusion of charnockites has also been noticed within granite gneiss. These of those rocks have pitted appearance due to alteration of ferro-magnesium minerals present in them.

1.3.4 Granite Gneiss

1.3.4.1 It is the predominant rock found in the area. It is highly metamorphosed. It is either exposed on the hill ranges or along the valleys. The peaks formed by granites are generally dome shaped with steep scarps. Youngest rock formation found in this division. Mostly coarse grained porphyroblastic type of granite gneiss is found in the division. These are greyish white in colour with porphyroblast of white and grey feldspars. It is leucocratic. Porphyroblats are oval shaped and usually aligned. The rock is mainly of quartz, potash, feldspar and plagioclase with garnet and biotitic as accessories.The texture usually varies from medium to coarse grained.

1.3.5. Pyroxene Granulites

1.3.5.1 The rocks are generally fine to medium grained and dark coloured. Granulitic texture is displayed and contents are mainly pyroxenes and feldspar. Garnet varies in proportion as well as in shape and size. Mica is also seen, along with feldspars in local pegmatite veins. These granulites are chiefly composed of plagioclase, feldspar, diopside, hypersthenes along with accessories of biotite garent and amphiboles. These rocks occur as interstratified layers in the khondanlite rocks with uniform granulite texture in small size.

1.3.6 Laterites or Tertiary

1.3.6.1 Laterite appears above the Khondalite rocks. However the thicknesses of these plateaus are thin. The gradual process of lateralization from khondalite is seen.

1.3.7 Soil and Alluvium

1.3.7.1 Since the topography is moderately hilly in Tarasing and Mujagad Ranges, soil and alluvial tracts are limited and restricted to river banks, valleys and the foothill areas and the depth of the soil is also shallow. In other Ranges, the soil depth is better and support variety of miscellaneous tree species. The soils are mostly found over the khondalite rocks and the exposed granite gneiss and charnockites are barren and devoid of soil mantle.

1.3.8 Soil Type

1.3.8.1 Mainly three types of soil are found in this division and they are as follows:

1) **Sandy soils-** This soil predominates over the area of the division. The texture is loamy type and is well drained. In steep areas stoniness increases due to erosion caused by splash erosion and surface run offs. The soil depth is shallow in the ridges and deep in the valleys.
2) **Red soils-** These types of soils are mainly associated with khondalitic types of rocks. Khondalitic hills are generally covered with good soil. They are sandy in texture and the depth of the soil mantle varies from 0.5mt depth to 10mt. It is generally well drained.
3) **Grey soils-** These soils are found associated with charnockite suites and calc-silicate rocks. It is usually a mix of clay, lime and quartz. They grey colour is due to presence of the mineral magnesium.

1.3.9 Mineral Resources

1.3.9.1 The whole hill tract appears to be devoid of economic minerals but for the occurrences of mica, calcareous concretions, red-ochre and some manganese are scattered unevenly.

1.3.10 Detail Geological Formation of Various Blocks

1.3.10.1 The major rock types in some of the important blocks covering all the five ranges of Ghumsur North Division are detailed below:

1) **Chadhiapalli:** Khondalites cover the entire Kandani Parvat (771.1m) the western part of the forest is occupied by granite gneiss with exception of Sulabant Parvat, where Charnockites are exposed. The North-Western Part of the area is covered by Charnockites.

2) **Chandragiri:** The low-lying areas and valleys are mostly covered by Granite gneiss. The Chandragiri Parvat is occupied by Charnockites, Khondalites occupy the Handibadia Parvat (403.6m) and the hill range south of (585m). A few patches of hypersthenes granulites are scattered in the area.

3) **Brahmansahi:** Khondalites occupy the major hill ranges while granite gneiss covers the low-lying areas. A hypersthenes granite patch occurs on the hill (482.8m).

4) **Darpangia:** The area is mainly covered with granite gneiss, charnockites rocks occupy the hill range, 426.1m, near Birikote and hill 628.5m near Kocabondho. Khondalites are exposed on the Northern limits of the Reserved Forest in the hill range of Bakoli Soru (966m). Other Khondalite patches occur near the village Rambha, on the North-Western extremity of the Reserve Forest.

5) **Odinabadi:** (Olingia and Bhalingia) the area is completely covered with granite gneiss.

6) **Rambha:** The area is mostly covered with granite gneiss with small patches of Charnockitic rock south of Mitrangia Soru (706m). Small patches of Calo granitelite are also found in the area.

7) **Kullada:** The area is mostly covered by granite gneiss. The hill 423.4m North of Khatapalli is occupied by Charnockite.

8) **Jaganathprasad:** Khondalite suite of rocks occupy the major hill ranges Viz. Kalajhor Parvat, pathar Khurmunda and Chalia Parvat. Mohura Parvat and south of it area covered by granite gneiss.

9) **Kaliamba:** The area is mostly covered by granite gneiss.

10) **Malati:** The Central portion of the hill range is occupied by Khondalites and the Eastern flank is covered by Charnockite, whereas the Western Part is covered by granite gneiss.

11) **Tiliki:** The hill ranges are mostly covered by granite gneiss.

12) **Ambazora:** The entire forest is occupied by Charnockites. The South-Western low-lying areas have however, been occupied by granite gneiss.

13) **Dimirijholi:** The Ratna Parvat is mostly covered by Charnockites. A small patch of Khondalite is exposed on the Eastern flank of the Parvat. Few Patches of hypersthenes granulite occur sporadically on the hill as well as valleys.

14) **Gallery:** Major portion of the area is covered by granite gneiss. Hill ranges from 420.3 m & 312.4 m. North Western part of area occupied by Charnockites. The top of hill is covered by Khondalites

15) **Ghogodo:** Granite gneiss mostly covers the area. Patches of hypersthenes granulite are found on the North and North-East of the area.

16) **Paichalia:** Granite gneiss covers the area. Charnockites cover near Pattadayi Parvat in the Eastern hill ranges towards North and North-Eastern Parts of the village Rampa, Khondalites also occur sporadically within Charnockites and Granite gneiss. Patches of basic, hyperstheness granulites occur sporadically in the Northern half of the area within granite gneiss.

17) **Gundiribadi:** The area is mostly covered by granite gneiss. Charnockites are seen flanking the Northern portion of the Giridhari Parvat and also exposed in the South-Eastern hill ranges of the village Gundiribadi. Patches of hypersthenes granulite occur sporadically within granite gneiss.

1.3.11 Effect of Geology and Soil Types on the species composition and distribution of forest type (Result of lithological study by Sri S N Pattnaik Geologist

1.3.11.0 Chandragiri, Darpangia, Rambha, Kullada, Jagannathprasad, Tiliki, Gallery and Kaliamba Reserve Forest Blocks have been covered by Lithologic Study to establish the relationship between the lithology and the Flora by Sri S.N.Pattnaik, Geologist, Director of Mines, Government of Orissa, 1969. The following are the excerpts from his report:

1.3.11.1 "The Synecological study reveals the growth of the more or less uniform forests all over the above mentioned area. Broadly speaking, the Sal forests of Ghumsur North Division are by far one of the best found in this country and they bear a significant relationship to the local lithology in a humid climate. Regionally, the area encompassing the Ghumsur North Division constitutes a part of the Eastern Ghat facies. The main lithologic variants belong to the Khondalite and Charnockite suites of rocks. The later variety includes the acid, basic and intermediate types. Porphyroblastic granite gneiss is another dominant metamorphic facies of this tract. A correlation of the flora and the prevalent rock types and its composition has been attempted in the forthcoming discussion.

1.3.11.2 Chandragiri (Comapartment No. 1,10,11,7,8 & 9)

1.3.11.2.1 In Tarasing area the "Handibadia Parvat" is mainly occupied by Garnet-sillimanite gneiss. The concentration of sillimanite was found to be occasional. A thick clayey-loam and low mantle around the foot-hill region has given rise to a good second quality Sal forests, in contrast with the steeper gradient with quartzose favours for 3rd quality Sal and Bamboo clumps of *Dendrocalamus strictus*, *Cleistanthus collinus*, etc. It has also been observed that the garnetiferous gneiss with damp and humid condition may also favour for the growth of bamboo forests. The non-Sal mixed dry forests is the characteristic forest growth in the higher contour tracts.

1.3.11.3 Gallery (Compartment No. 6, 7, 3, 5, 11)

1.3.11.3.1 The compartment No.6 and 7 of the said block is of intermediate Charnockite Garnetiferous gneiss. The Granite gneiss is occasionally porphyroblastic in nature. On weathering the rocks have given rise to sandy loam that sustains the quality III mixed Sal Forests. The non-Sal flora includes *Cleistanthus collinus, Dendrocalamus strictus, Terminalia chebula, Lannea grandis*, *Anogeissus latifolia* and *Mitragyna parviflora*. The Granite gneiss has been affected occasionally by basic charnockite in the form of lenses tending NE/SW. The basicity favours the growth of *Diospyrous melanoxylon, Madhuca Latifolia, Terminalia Chebula, Emblica officinalis* and *Terminalia Tomentosa*. The Sal is conspicuously dwarfed and perhaps represents quality IV variety. The basic rocks, as observed in the compartment No. 5 & 6 of Gallery block mainly sustain a non-Sal forest.

1.3.11.4 Rambha (Compartment No. 2 & 7)

1.3.11.4.1 Porphyroblasts granite gneiss occupy compartment No.2. Porphyroblasts of felspars with concomitant growth of Muscovites and sericite have given to a sandy-loam soil that mainly sustains a poor Sal forest with the following dominant flora *Shorea robusta, Chloroxylon swietenia, Terminalia chebula* and *Terminalia tomentosa*. The compartment No.7 is occupied mainly by leptynite with conspicuous development of Garnet and Biotite. The rock shows medium to coarse grained in equigranular xenoblastic texture. The resultant forest is a mixed forest. The similar variety of rocks occupying the Durgaprasad Ghat (Kalinga Ghat in Ganjam portion) has given rise to flora like *Shorea robusta, Pterocarpus marsupium, Lannea grandis, Mitragyna parviflora, Bridelia retusa, Cleistanthus collinus* and *Buchanania lanjan*. The rocks on weathering give rise to sandy soil.

1.3.11.5 Darpangia (Compartment No. 1 & 12)

1.3.11.5.1 As seen in the compartment No.1 along with Bhanjanagar-Phulbani Ghats, the leptynite constitute the chief rock types with Garnet gneiss. The rock constitutes of Quartz, Feldspar, Biotic, Garnet, Plagioclase and occasionally Kyanite and sillimanite. The prevailing flora includes the following: *Ficus bengalensis , Lagerstroemia lanceolata, Cassia fistula, Cleistanthus collinus, Chloroxylon swietenia* and *Woodfordia fruticosa*.

1.3.11.6 Kaliamba (Compartment No. 1, 2, &5)

1.3.11.6.1 The main lithologic units are Khondalite and Porphyroblastic granite gneiss. The latter contain porphyroblasts of feldspar, partly decomposed and thus have resulted into a clayey loam. The maximum size of the porphyroblasts is 21 cms x 3 cms and is auger shaped. Calcium plagioclase-end-member has given rise to occasional lime Kankar. In such typical granite gneiss, the feldspar and matrix ratio is 1:3. This has been occasionally intruded by thin quartz wains. The granite gneiss bears an intimate intrusive relation to the khondolite. The high Al_2O_3 in the sillimanite feldspars and clay with lime form a thick soil mantle that has helped the dense Sal forests of quality I and II to flourish throughout the year. The associated flora includes *Terminalia chebula, Anogeissus latifolia, Pterocarpus marsupium, Lannea grandis*, etc.

1.3.11.6.2 It may be interesting to note the soil character in the Northern part of the kaliamba block, Iron Garnet has been decomposed to ferruginous sandy loam that sustains the growth of quality III 'SAL'. In the compartment, the Garnet, felspar and Quartz co-exist with SIO_2, AIO_2O_3, and Fe. The mineral composition as outlined above results in a sandy-loam soil that favours for a mixed forest consisting of *Lannea grandis, Terminalia chebula, Diospyrus melanoxylon and Cleistanthus collinus*. From the above flora assemblage, it is evident that the garnet quartz gneiss does not sustain a Sal forest.

1.3.11.6.3 In contrast, the Khondalite suites of kaliamba forest, the foot-hills of Sarajsaju hill and the Eastern flanks and the plains of the main kaliamba Reserve forest is known for the conspicuous luxuriant growth of I and III quality Sal forest with a moist climate. The reddish brown clayey-loam with occasional lime concentration and thick alluvial tract had been ideal for the Sal forest. The higher contour track is no doubt a mixed non-Sal forest.

1.3.11.7 Jaganathprasad

1.3.11.7.1 The block consists of either sides of Kullada village. Kaladhar hill range is the most conspicuous land form in this area, overlooking the flood plain of Bada Nadi flowing close by. The hill consists of typical Khondalites suites of rocks, such as garnet felspar-sillimanite schists, Garnet-feldspar-quarts schists, and gneiss with occasional traces of manganese and garnet sillimanite gneiss. The rocks strike North/South with low westerly dip of 15^0, it has been highly weathered in most of the places with occasional forest outcrops. The presence of Al_2O_3, M_gO, Mn and potash silicates are quite evident. The foot-hill is mainly occupied by dense Sal forests in contrast with the mixed forest growth in its higher contours. The main flora include *Gmelina arborea, Bridelia retusa, Lannea grandis, Bambusa arundinacea,* on the foot-hills, *Dedrocalamus strictus* (scattered) and *Shorea robusta*. The ground flora includes ferns Sterospermum gossipium, etc.

1.3.11.8 Conclusion

1) The foot-hills of Khondlite tract ideally favours for Sal forests. The loamy soil of more argillaceous nature favours the growth of Sal Forests

2) The clayey loam and sandy loam with low SIO_2, Al_2O_3 ratio gives rise to the Sal mixed-forest.
3) The sandy soil derived from the charnockites and basic igneous rocks develop the characteristic non-Sal mixed forests with bamboos.
4) Leptynite which usually constitutes the high hills and uneven rugged topography nourishes a moist-mixed forest devoid of Sal.
5) Porphyroblastic granite gneiss on weathering disintegrates in a variety of Calcareous clayey-loam that sustains a mixed Sal forest in a moist environment. In a dry condition the same lithology favours a non-Sal forest. The porphyroblast of Calcium Plagioclase occasionally prove favourable for the Teak Plantation in a moist condition e.g. Kaliamba Block.
6) In general the foot-hills of khondalite suites of rocks dignify themselves with a thick Sal forest in contrast to the non-Sal-dry-mixed forests that thrives in the Charnockite region.

1.4 Climate and Rainfall

1.4.1 Although Ghumsur North Forest Division is situated at a distance of only about 80 km. from the sea, its climate is having more similar characteristics of the climate of Central India than that of the Eastern Coast. There are three distinct seasons of the year, namely the Hot Season from March to June; the Rainy Season from June to September and the cold Season from November to February. The period from early May to the break of rains is the hottest in the year. The winter nights are cold but frost is unknown. Floods and Droughts are very common. They occur at regular intervals and cause heavy damage to property. The fertile agricultural fields, due to overflowing of Bada Nadi and Lohorakhandi rivers are often covered with a layer of sand rendering them less productive. The four major weathers experienced in the district of Ganjam are as follows:

I) **Hot and Dry Summer (March, April and May):** The mean summer maximum temperature is 35° C. The average duration of bright Sunshine hours is 8.8 hours per day. Even though temperature runs high, due to clouds of varying percentage, the bright sunshine hours fall short of normal day length. On an average the months of March and April receives rain fall of less than 50 mm where as May receives between 50 - 100 mm.

ii) **Rainy Season (June, July, August and September):** Usually the monsoon sets in towards the second week of June. The range of rainfall varies from 200 to 300 mm during the period from June to September. The rainfall intensifies during the months of July and August. The climatic water balance study group has identified Ganjam District as a moderately high deficit zone. For several days in July the sky remains cloudy and the sun is rarely seen beyond the cloud. The average duration of bright sunshine falls to 3.7 hours per day. Temperature remains high (maximum 24°C) and due to high the weather remains sultry.

iii) **The Autumn (October and November)**: During this period the mean maximum temperature is 34.9°C and mean minimum temperature is 20.2°C (*Source: Statistical abstract of Odisha 2012*

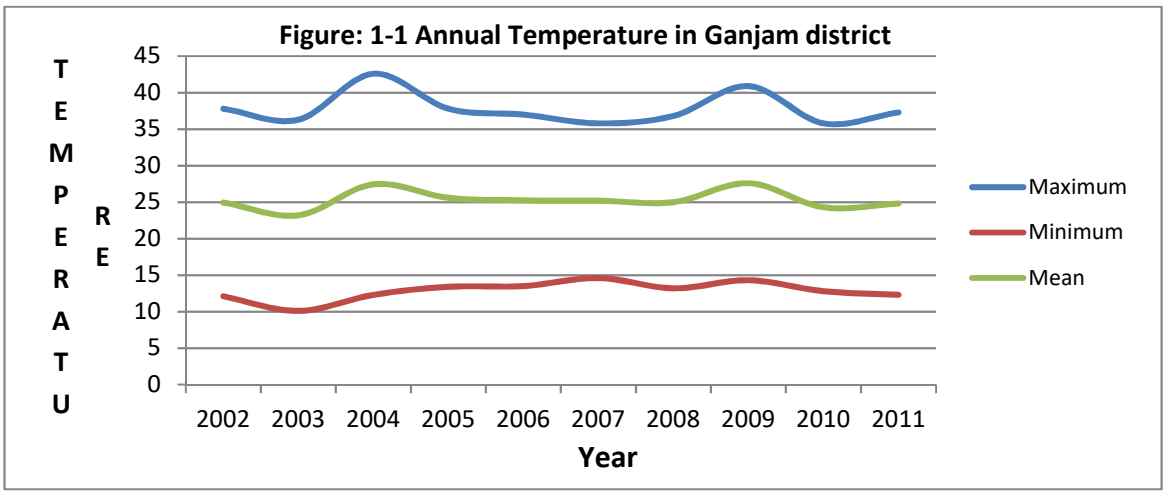
Directorate of Economics & Statistics, Odisha, Bhubaneswar) and weather remains bright. The sky remains clear and insulation uninterrupted. The average duration of bright sunshine hours increases to 7 - 8 hours per day.

iv) **The winter (December, January and February)**: The coldest month of the year is December. The average minimum temperature is 13.2°C and maximum temperature is 27.3°C. The sky remains clear and the average duration of the bright sunshine hour is 6 - 9 per day.

1.4.2 Temperature

1.4.2.1 Bhanjanagar is recorded by the British to be one of the Hottest Station in the State during the hot weather. The maximum/minimum temperature of Bhanjanagar is not available for Bhanjanagar, but it varies from a maximum temperature of as high as 42^0C in the summer season to as low as 10^0c in the winters. The month wise maximum, minimum and mean temperatures recorded at Gopalpur station of Indian meteorological department for the district of Ganjam from the year 2002 to 2011 is given in **Table 1-6** and the corresponding graph is given in **Figure 1-1**.

TABLE: 1-6 Annual Temperature in °C in Ganjam District			
Year	**Max**	**Min**	**Mean**
2002	37.8	12.1	24.95
2003	36.3	10.1	23.2
2004	42.6	12.3	27.45
2005	37.8	13.4	25.6
2006	37	13.5	25.25
2007	35.8	14.6	25.2
2008	36.8	13.2	25
2009	40.9	14.3	27.6
2010	35.8	12.8	24.3
2011	37.3	12.3	24.8

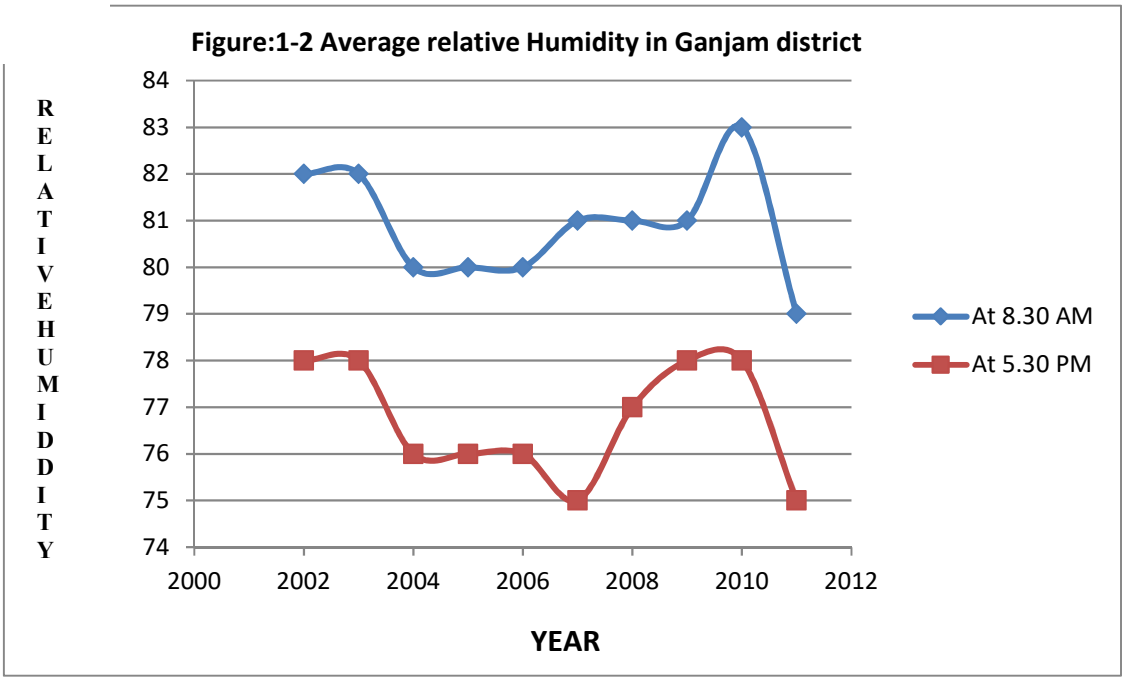


(Source: Statistical abstract of Odisha 2012 Directorate of Economics & Statistics, Odisha, Bhubaneswar

1.4.3 Humidity

1.4.3.1 Relative humidity is about 75 % throughout the year especially in the coastal areas. In the interior part of the district it may be slightly lower, particularly in the afternoons of the non-monsoon months. The average humidity from the year 2002 to 2011 is depicted in the following **Table-1-7** and the corresponding graph is given in **Figure 1-2**.

TABLE 1-7 Mean Relative Humidity (IN %) in Ganjam		
Year	Mean Humidity in Percentage	
	At 8.30 AM	At 5.30 PM
2002	82	78
2003	82	78
2004	80	76
2005	80	76
2006	80	76
2007	81	75
2008	81	77
2009	81	78
2010	83	78
2011	79	75



Source: Statistical abstract of Odisha 2012 Directorate of Economics & Statistics, Odisha, Bhubaneswar

1.4.4 Cloud

1.4.4.1 Sky is clear or lightly clouded in the cold season. In the summer months clouding is moderate. Heavily clouded to overcast sky prevails during the Southwest monsoon season. Thereafter cloudiness decreases.

1.4.5 Wind

1.4.5.1 Wind is strong particularly in the coastal regions during the summer and monsoon months. In the rest of the year wind is generally moderate. In the post monsoon and cold seasons wind blows from northerly or northwesterly direction in the morning. Afternoon wind blows from the directions between northeast and southeast during the period from October to December, changing the direction between east and south in January and between east and southwest in February. In the summer and south west monsoon months, wind is mainly southerly or southwesterly.

1.4.6 Special Weather Phenomena

1.4.6.1 Depressions and cyclonic storms originating in the Bay of Bengal in the pre - monsoon, monsoon and post - monsoon month cross the east coast in the neighborhood of the district, causing heavy rain and high wind in the district. Thunderstorms, sometimes in violent form, occur in the pre-monsoon months of April and May and also in the month of October. During the monsoon period the rainfall is associated with thunder too. The thunderstorms are occasionally accompanied with squall and hail. Super cyclones are noticed in the month of Sept-Oct, which had occurred during sept 1973, October 1999, Oct-2013(Phailin), Oct-2014 (Hud-hud)

1.4.7 Rainfall

1.4.7.1 The annual rainfall is recorded by the Rain Gauge Stations established at various locations of Ghumsur North division. The Yearly rainfall data experienced by the division from 1995 to 2013 is given in the following **Table 1-8**. The average annual rainfall at Bhanjangar and Kalinga are 136cm and 169cm where as the average rainfall experienced in the division is 475cm. The month wise rainfall data of Ghumsur North division as obtained from the website www.ori.nic.in and from the Indian Meteorological Department is given in **ANNEXURE-I** and the rainfall data of Ghumsur North Division obtained from the Minor irrigation department from the rain gauge stations maintained by their department is given in **ANNEXURE-II.** The South-East monsoon is the main harbinger of rain and maximum rainfall is received from mid-June to September. Occasional rains also occur in other months. The normal annual rainfall in Ganjam district is 1276.2 mm. The rainfall generally increases from the coast towards the interim- hilly parts of the district.

1.4.7.2 The Southwest monsoon breaks in the district by about second week of June and withdraws early in October. About 66 % of the annual rainfall is received during the Southwest monsoon. August is the rainiest month. There is not much variation in the-rainfall from the year 1901 to 1950. During the fifty year period (1901 to 1950) the highest annual rainfall in the district amounting to 147 % of the normal rain fall occurred in 1919. The lowest annual rainfall was 68 % of the normal rainfall occurred in 1935. There were only three years in which the rainfall was less than 80 % of the normal. The rainfall data collected for the year from 1901 to 1950

shows that it was between 1000 and 1500 mm for 39 years. (*Source: Revised Working Plan of Gh.South Division for the period 2001-02 to 2010-11)*

1.4.7.3 The comparison between the rainfall figures for the period between 1901 - 1987 and 1988 - 1999 shows that the rainfall in Ganjam District has not only been decreased but has been erratic and unpredictable. For example, November, 1990 was the rainiest month of the year. Similarly, the district has received heavy rainfall in November 1994, 1995 & 1998. The district witnessed heavy floods in 1995 with an average rainfall of 2107.6 mm. The average rainfall during May and October, 1995 was 626.6 mm and 507.7 mm respectively. In contrast, drought was witnessed in 1989, 1993 and 1996. It is interesting to observe that the average rainfall in Ganjam is decreasing over the years. The available data shows that the average rainfall of Ganjam District for the period 1901 - 1987 is 1263.81 mm, whereas that of for the period 1988 - 1999 is only 1090-03 mm. The variation in annual rainfall for the latter period is very high. The variation ranges from 49.03 % of the average in the low rainfall year to 193.35 % of the average in the high rainfall year. The district has received more rain fall during the year 2010 (1482.8 mm) followed by less rain fall during 2011 & 2012 i.e. 914.4 mm and 1224.4 mm respectively. Again during the year 2013 the rain fall was more i.e.1972.17 mm.

Table:1-8 Average Rainfall Data (in millimeter) of Ghumsur North Division from 1995 to 2014.

Year	Total Rainfall
1995	6923
1996	3459
1997	4836
1998	5437
1999	4516
2000	4438
2001	4993
2002	3238
2003	5382
2004	3695
2005	5694
2006	5952
2007	5659
2008	5510
2009	4536
2010	4932
2011	3760
2012	5390.4
2013	8743.1
Total	***90170.5***

1.4.8 Agro Climatic Zone

1.4.8.1 Odisha is divided into ten agro-climatic zones basing on the amount and distribution of rainfall pattern, irrigation, soil characteristics and cropping pattern. Ganjam District comes under two agro-climatic zones namely, (1) North Eastern Ghats and (2) East and South Eastern Coastal plain. Chatrapur, Ganjam, Khallikote, Kodala, Purusottampur, Hinjilicut, Rangeilunda, Kukudakhandi, Chikiti block under East and South Eastern Coastal plain agro-climatic zone.

1.5 Water Supply

1.5.1. There are no perennial streams of importance. The Lohorakhandi, Bada Nala, Bada Nadi and Rushikulya Nadi dry up in the hot weather. **Table 1-9** depicts the number of rivers flowing in the different ranges in the division. Water may, however, be struck in places by digging pits in the river bed. A number of reservoirs have been constructed by irrigation Departments for irrigation purposes. Forest Rest House and many of the subordinates quarters are supplied with dug wells and through deep bore well. The list of Dug wells constructed at the various establishment of Ghumsur North Division is given in **Annexure III**. The division boundary overlaps wholly over the area of Bhanjanagar Block and partly over the areas of Soroda, Bellaguntha and Jaganathprasad C.D blocks. The forest Department over the years have created of lot of water bodies and are renovating the same form time to time which not only are being used by the local villagers to meet their water requirement but are also being used by the wild life. **Table 1-10** depicts the Range wise list of water bodies created inside various reserve forests of Ghumsur North Division.

Table 1-9 Rivers and Streams in Ghumsur North Division.Bhanjanagar.

Range Covered	Name of the River/Stream
Central Range	Bada Nadi
Central Range	Rushikulya Nadi
Central Range	Lohorakhandi
Gallery	Bada Nadi
Gallery	Bada Nala
Tarasingi	Bada Nadi
Jagannathprasad	Rushikulya Nadi
Mujagada	Bada Nala
Mujagada	Lohorakhandi

Table 1-10. List of Water bodies created in Ghumsur North Division by Forest Department

Sl. No.	Range	Year of construction	Name of R.F	Location
1	Central	2002-03	Kaliamba	Saluapalli
2				Somanathpalli
3			Ragada	Khariguda
4		2005-06	Kaliamba	Kaliamba
5		2006-07	Ragada	Jodma

6		2010-11	Kaliamba	Malichanchara
7	Gallery	2006-07	Gallery	Khiriputi
8		2007-08	Chandragiri	Kirajhola
9	Tarisingi	2009-10	Chandragiri	Garudapathar
10		2010-11	Paichelia	Rampoo
11	Mujagada	2007-08	Gallery	Nidhiapalli
12		2010-11	Rambha	Rambha

Source: DFO Ghumsur North Division

1.5.2 Digging of tube wells and sanitary wells (dug wells covered with concrete slabs and fitted with a hand pump) have been undertaken by RWSS department to meet the water requirements of the people. **Table 1-11** depicts the CD block wise data of number of tube wells and sanitary wells dug and being maintained by the department.

Table 1-11. CD block wise number of Tube Wells and Sanitary Wells in Ghumsur North Division

Sl. No.	Name of CD Block	No. of Tube Well	No. of Sanitary Well
1	Bhanjanagar	1396	29
2	Bellguntha	895	4
3	Jagannathprasad	1565	22
4	Soroda	1222	118
TOTAL		5078	173

Source: Executive Engineer, RWSS, Bhanjanagar

1.5.3 The ground water level of different areas of the division vary in accordance with the topography, soil conditions and the rate of urbanization and the dependence of local people on the ground water for meeting their requirements of potable water like drinking, domestic use and for agricultural purposes. C.D Block wise average water level of some of the important locations in Ghumsur north division as per the data collected from the office of the executive Engineer, RWSS, Bhanjanagar is given in **ANNEXURE IV**.

1.5.4 A number of major, medium and minor irrigation projects have been undertaken in the division area which not only caters to the needs of the irrigation but also solves the water requirement of the population. **Table 1-12** depicts CD block wise number of Major and medium irrigation projects that also cater to the water requirements of the local population.

Table 1-12 CD block wise Irrigation project and their water level in Ghumsur North Division						
Sl. No.	**Name of the Reservoir**	**CD Block**	**Type of Irrigation project**	**Certified Ayacut (In Ha.)**	**Verified Ayacut (In Ha.)**	**Water Level in mtrs. (as on 11.09.2014)**
1	Bhanjanagar	Bhanjanagar	Major	18364.27	18364.27	94.3
2	Daha	Bhanjanagar and Bellguntha	Medium	4762.4	4762.4	118.45

Source: Executive Engineer, Irrigation, Bhanjanagar

1.5.5 There are a number of minor irrigation projects that actually caters to the water requirements more intensively of the people. Block wise and Grama panchayat wise detail list of all the MIP's have been provided in **ANNEXURE V**.

1.5.6 Data was also collected from the office of the Central Ground Water board regarding water levels of some of the important locations Range wise of Ghumsur North Division from the year 1995 to 2013. The position of ground water in some of the sample wells in prominent places Range wise in the year 2013 is depicted in **Table 1-13** and the Block wise details of ground water levels in these places from the year 1995 to 2013 is depicted in **ANNEXURE VI.**

Table 1-13 Ground water level of some important locations of Ghumsur North Division.					
Bellaguntha		**Bhanjanagar**		**Jagannathprasad**	
Site Name	**Water Level**	**Site Name**	**Water Level**	**Site Name**	**Water Level**
January					
Lathipada	4.45	Bhanjanagar-I	2.1	Baragam	2.84
Gobara	4.02	Mujhagarh	5.32	Jhadabhumi	3.45
Belaguntha1	3.14	Tilisingi	4.13	Jagannathprasad	3.86
April					
Lathipada	5.69	Bhanjanagar-i	2.99	Baragam	4.36
Gobara	5.76	Mujhagarh	7.1	Jhadabhumi	6.21
Belaguntha1	5.34	Tilisingi	3.59	Jagannathprasad	6.01
August					
Lathipada	2	Bhanjanagar-i	1.4	Baragam	1.05
Gobara	0.47	Mujhagarh	2.65	Jhadabhumi	1.15
Belaguntha1	1.35	Tilisingi	2	Jagannathprasad	2.65
November					
Lathipada	2.02	Bhanjanagar-i	2.7	Baragam	1.35
Gobara	0.45	Mujhagarh	4.7	Jhadabhumi	1.59
Belaguntha1	1.48	Tilisingi	3.15	Jagannathprasad	1.51

Source: Ground water board, Bhubaneswar

1.6. Distribution and area

1.6.1. Distribution of Area

There are **22 Reserve Forest Blocks in this Division** covering an area of **920.48 Sq Km** which have been divided into **154 compartments.** This puts the total reserve forest area at **39%** of the total geographical area of Ghumsur North division. There is **one DPF of 26.7 Ha** and **8 UDPF's** with a combined area of 687.35 Ha. Also **25 nos. of notified Village forests** with a combined area of **173 Ha** was created during the social forestry project from 1989-90 to 1993-94. When these forest areas are added to the reserve forest areas of Ghumsur North Division, the total forest area comes to **929.35 Sq. Km** which is **39.37%** of the total geographical area of the division. This forest area includes 82.837 Ha diverted under Forest conservation Act-1980 and **752.35 Ha** diverted under Schedule tribes and Other traditional Forest Dwellers (Recognition) of Forest Rights Act-2006.

1.6.2 Table 1-14 summarizes legal status wise area of RFs, DPFs, UDPFs and notified Village forests as per notification record and as per DLC record in Hectares of Ghumsur North Division. The range wise distribution of Reserve forests, DPF and UDPF and Village forest is given in **Annexure VII**, **Annexure VIII** and **Annexure IX** respectively.

Table 1-14 Abstract of Divisional area statement legal status wise of Ghumsur North Division

Sl. No.	Type of Forest Block	Number	Area as per notification in ha.	Area as per DLC in ha.
1	Reserve Forest	22	92,048.47	92,048.47
2	Undemarcated P.F	1	26.7	26.7
3	Demarcated P.F	8	687.35	687.35
4	Village Forest (notified)	25	173	173
	Total	***36***	***92935.52***	***92935.52***

Source: DFO Ghumsur North Division

1.6.3 Area tackled under the revised working Plan

1.6.3.1 Only the total reserve forest blocks comprising of 22 Reserve Forests are being tackled in this revised working plan. The lone DPF and the 8 numbers of UDPF are not being dealt in this plan as the all the necessary steps required to be completed to render the intended area to be declared as reserve forest have not been completed. The Range wise area Reserve Forest is summarized in **Table 1-15**.

Table 1-15 Abstract of Range wise R.F area of Ghumsur North Division

Sl. No.	Name of the Range	Number of R.F (Full)	Number of R.F (Part)	Area in ha.
1	Central	6	1	16731.328
2	Gallery	2	3	13055.431

3	Tarsingi	3	3	21574.095
4	Mujagada	6	3	33042.055
5	Jagannathprasad	0	2	7635.835

Source: DFO Ghumsur North Division

1.6.4 The forest type of all the Reserve Forests according to Champion & Seth Classification, area in different Ranges and area under Miscellaneous Sal, Plantation and Blanks or Eroded and unproductive areas are detailed **ANNEXURE X**.

1.6.5 The index of the topographic maps involving the territorial areas of Ghumsur North division in the scale 1:50000 and in the scale 1:25000 are described in **Table 1-16** and **Table 1-17** respectively. A diagrammatic representation of both the tables and the sequence in which the maps are to be arranged to get the division boundary has been represented in **Figure 1(1)** and **1(2)**.

Table 1-16 Index of the topographical maps Ghumsur north division in the scale 1:50000

Sl. No.	Index No.
1.	73 D/8
2.	73 D/11
3.	73 D/12
4.	73 D/16
5.	74 A/5
6.	74 A/9
7.	74 A/10
8.	74 A/13

Table 1-17 Index of the topographical maps Ghumsur north division in the scale 1:25000

SL.No.	No. of indicating Maps
1.	73 D/11 SE
2.	73 D/12 SW
3.	73 D/12 SE
4.	73 D/12 NW
5.	73 D/12 NE
6.	74 A/9 SW
7.	74 A/9 SE
8.	74 A/9 NW
9.	74 A/9 NE
10.	74 A/10 NW
11.	73 D/8 NE
12.	73 D/8 SE
13.	73 D/8 SW
14.	74 A/5 NE

15.	74 A/5 NW
16.	74 A/5 SE
17.	74 A/13 NW
18.	73 D16 NW
19.	73 D/16 SW

Figure 1(1) Diagrammatic Representation of Toposheet (in the Scale 1:50,000) covered in Ghumsur North Division.

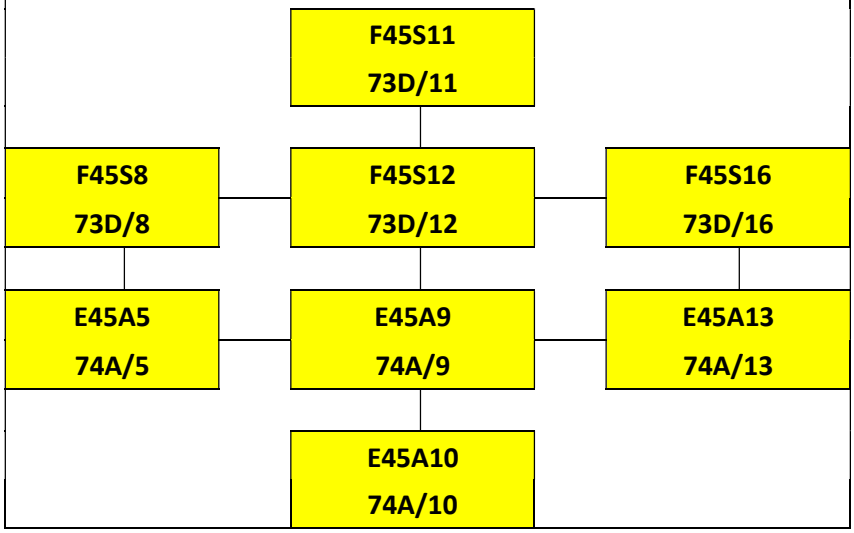
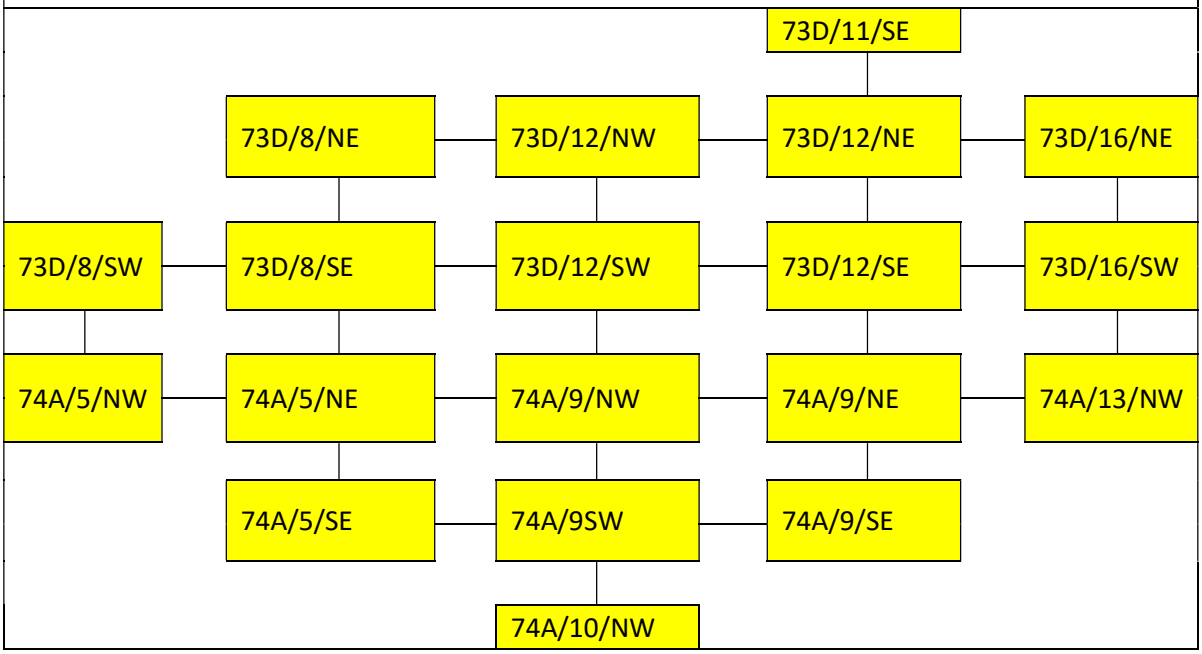


Figure 1(2) Diagrammatic Representation of Toposheet (in the Scale 1:25,000) covered in Ghumsur North Division.



1.7 State Of Boundary

1.7.1. The boundaries of the Reserve Forests have been demarcated by stone cairn and masonry pillars in almost all Blocks. Revenue pillars partly embedded in the ground by the Revenue Department are also present in some cases alongside the Reserve pillars. Masonry pillars have been constructed along the boundary lines where it is suitable for such construction and where the areas are susceptible to encroachment. The detailed list of maintenance works of Reserve Forest Boundary line and the boundary pillars is given in **ANNEXURE-XI**. However, at many places the boundaries of the reserve forest are not being maintained every year and the boundary pillars in many places is found missing or raised to the ground. It is often damaged wild elephant as well as podu cultivators. Repairs of pillars of pillars are inevitable. Systematic annual maintenance of boundary pillars should be done by the D.F.O as per the five year maintenance programme which is given in miscellaneous regulations. The total length of artificial and natural Reserve Forest Boundary Line is 1206.8 Kms. Reserve Forest wise length of boundary and number of boundary pillars given in Table-**1-18**.

Table 1-18. List of Reserve Forest Boundary and Number of Boundary pillars of each Forest Block

Sl. No.	Name of R.F. Boundary	Length of Boundary (in Km.)	No. of Pillars
1	2	3	4
1	Vinjigiri RF	44.22	302
2	Tiliki RF	72.58	274
3	Kullada RF	20.00	100
4	Gallery RF	124.37	875
5	Brahamansahi RF	42.47	348
6	Jagannathprasad RF	113.58	791
7	Rambha RF	37.00	574
8	Ragada RF	83.5	607
9	Chandragiri RF	71.665	544
10	Dumudumi (E) RF	23.14	74
11	Darapangia RF	68.00	552
12	Dimirijholi RF	33.38	376
13	Paichelia RF	57.3	483
14	Baiballi RF	65.00	478
15	Dumudumi (W) RF	24.33	90
16	Ambajhara RF	112.125	528
17	Malati RF	25.77	100
18	Ghogoda RF	62.75	301
19	B.Gundurubadi RF	44.12	230
20	Kaliamba RF	57.00	299
21	Chadhiapalli RF	7.5	60
22	Odinabadi RF	17.00	15
	Total	**1206.80**	**8001**

Source: DFO, Ghumsur North Division

1.7.2 Encroachment

1.7.2.1 In the outgoing plan of Mrs. Nayar, encroachment in ten reserve forest blocks was noticed involving a total area of 186.451 ha. as detailed in **Table 1-19**. Majority of the encroachments have been done for creation of agricultural fields and in one case involving Dimirijholi RF, 14 ha. Of reserve forest land had been encroached upon for construction of temple.

Table 1-19 Details of encroachment in Ghumsur North Division as per outgoing plan of Mrs. Nayar

Sl.No.	Range.	Reserve	Compartment No.	Encroached Area in ha.
1	Gallery	Ambazora	3b	2.428
2	Gallery	Dimirijholi	1c	14.002
3	Gallery	Dimirijholi	2b	11.736
4	Gallery	Dimirijholi	1c	1.781
5	Gallery	Gallery	23c	9.600
6	Mujagada	Gallery	6d	6.000
7	Mujagada	Gallery	7c	16.228
8	Mujagada	Gallery	7d	6.070
9	Mujagada	Gallery	8b	11.400
10	Mujagada	Rambha	6b	43.750
11	Tarasing	Ambazora	7b	15.985
12	Tarasing	Ambazora	11b	18.818
13	Tarasing	Ghogodo	4d	21.760
14	Tarasing	Ghogodo	5c	6.893
			Total	**186.451**

Source: Mrs. Nayar Plan

1.7.2.2 The encroachment has been found on the boundaries of 18 Reserve Forest Blocks in the division. The extent of such encroachment noticed is given Range wise and forest block wise in **Table 1-20.** Total of 976.273 acres of Forest Land has been encroached in 18 Reserve Forest Blocks for agriculture and all of these encroachments have been done after 1980, i.e. after the implementation of Forest Conservation Act-1980.

Table 1-20 Details of encroachment in Ghumsur North Division

Sl. No.	Name of the Range	Name of the RF/Forest Block	Pre-80 (in Acre)	Post-80 Area (in Acre)
1	**2**	**3**	**4**	**5**
1	Mujagada	Rambha RF	--	147.283
2	Mujagada	Darpangia RF	--	6.4
3	Gallery	Gallery RF	--	13.6
4	Mujagada	Kullada RF	--	6
5	Gallery	Dimirijholi RF	--	16.25

6	Gallery and Tarasingi	Ambajhora RF	--	100.25
7	Tarasingi	Ghogoda RF	--	182.6
8	Mujagada	Gundribadi RF	--	22.059
9	Central	Ragada RF	--	284.030
10	Central	Kaliamba RF	--	29.602
11	Mujagada	Tiliki RF	--	28.45
12	Central	Vinjigiri RF	--	43.2
13	Central	Malati RF	--	5.99
14	Central	Dumudumi RF	--	3.6
15	Gallery	Chadhiapalli RF	--	5
16	Gallery	Chandragiri RF	--	79.245
17	Mujagada	Baiballi RF	--	2.7
18	J.N.Prasad	Paichalia RF	--	0.014
G.Total				**976.273**

Source: DFO, Ghumsur North Division

1.7.3 Forest land diverted under various Acts

1.7.3.1 Total 82.837 Ha. Of Forest land has been diverted under Forest Conservation Act-1980. The detail project wise and Reserve Forest wise land diverted is given in **Table 1-21** A total of 1859.432 acres of forest land out of which 1363.493 acres of Reserve forest area and remaining 495.939 acres of revenue forest land as on 30.11.2014 were settled under The Schedule Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act,2006. The range wise, forest block and compartment wise and C.D block wise abstract of forest land settled under the act is detailed in **Table 1-22**. The detailed forest rights committee wise and gram panchayat wise no. of beneficiaries and the forest type and area settled in their favour is given in **Annexure- XII**.

Table 1-21 Details of Reserve Forest land diverted under Forest Conservation Act-1980 in Ghumsur North Forest Division

Sl. No.	Name of project	Forest area diverted			Govt. Of India Letter No. & date
		Name of Reserve Block	Compartment No.	Area in Ha.	
1	2	3		4	5
1	Bhitiribediguba MIP	Rambha RF	C/4 & 7	15.487	No. 8-147/84-FRY of GOI (Cons.) dt. 18.01.1985 and No. 5-ORC-0119/2005-BBSR dt.19.03.2007 of Dy. Conservator of Forests.
2	Nalakula ghai MIP	Jagannathprasad RF	C/6	7.91	No.8 (22)-3/99 FCE of GOI dt.10.03.2000
3	Alikuan MIP	Ragada RF	C/7	9.52	No.8 (22)-3/99 FCE of GOI dt.10.03.2000
4	132 KV line Bhanjanagar to	Kaliamba RF	C/5 &6	2.17	

	Phulbani	Gallery RF	C/7, 9 & 10	23.89	No.8 -216/84 FRY of GOI Central dt. .7.02.1988
		Rambha RF	C/1 & 5	22.35	
		Durgaprasad RF	C/1	1.08	
5	Bhanjanagar Dam Spillway (DSARP)	Gallery RF	C/7	0.43	No.8/26-3/02 FCEE of GOI, MOEF dt. 26.6.2000
		Total Area		**82.837**	

Table 1-22	Abstract of forest land settled under Forest Rights Act											
Name of Range	Name of R.F. where titles settled.	Compartment No.	Claim petitions approved by DLC. & titles issued.	No of beneficiaries	Total Forest Area settled in acre	Name of C.D. Block	No of claim petition approved & forwarded by SDLC.	Claim petition approved by DLC.	No of beneficiaries	Total area settled		Grand total.
										Reserve Forest.	Revenue.	
Mujagada	Rambha	C/ 5,3,	54	54	167.548	Bhanjanagar	268	268	268	337.438	153.454	490.892
	Baibali.	C/4,6,7,11	57	57	70.215	Bellaguntha	37	37	37	45.947	75.035	120.982
Central	Kaliamba	C/2,6,	26	26	45.947	Jagannathprasad.	329	329	329	593.45	264.453	857.903
	Vinjhigiri	C/ 1,3,4,	35	35	139.000	Surada	92	92	92	386.658	2.997	389.655
	Ragada	C/ 7,8,9,6	57	57	247.658							
Gallery	Gallery	C 16	51	51	61.886							
	Chadhiapalli	C /1	25	25	37.789							
Tarasing	Gundiribadi	C/2,3	77	77	266.670							
	Ambajhara	C/10,13	31	31	70.310							
	Paichhelia	C/4	23	23	11.300							
	Ghogoda	C/4,3,5,	64	64	245.170							
	Grand Total:		**500**	**500**	**1363.493**		**726**	**726**	**726**	**1363.493**	**495.939**	**1859.432**

1.8 Legal Position

1.8.1 All the forests covered in the Revised Working Plan have been duly constituted as Reserved Forests and notified as such under section 16 of the Madras Forest Act V of 1882. Area subsequently dereserved has also been notified under Section 24 of the act. However, as per Section 91 of Orissa Forest Act, 1972, The Indian Forest Act, 1927 (6 of 1927) and the Madras Forest Act, 1882 ((Madras Act 5 of 1882) (hereinafter to be said as Acts) in their application to the State of Orissa are hereby replaced; provided that, any forest or land declared or deemed to be a reserved forests or protected forest or village forest under any of the said Acts shall be deemed to be a reserved forest, Protected Forest or as the case may be, village forest under this Act. **Table 1-23** gives the Government Notification numbers and dates under Section 16 of the Madras Forest Act V of 1882 under which the various Forest Blocks have been reserved, as well as the Notification numbers and dates under section 24 under which various areas have been subsequently de reserved. The area of the reserve forests as on 2014-15 along with the notification number and date and the reference toposheet no. is given in **ANNEXURE-VII**.

Table 1-23 Number and date of government notification under section 16 of the Madras Forest Act V of 1882.

Sl. No	Name of Block	Name of Reserve	Reservation under section 16 of Madras Forest Act		Dereservation under section 24 of Madras Forest Act		Area of the Reserves on 31st March 1994
			Number and date of Government Notification under which Reserved.	Area in ha. As per G.I. Survey 1904-07	Number and date of Government Notification under which dereserved	Area in ha.	
1	Dimirjholi	Dimirijholi	414 dated. 16/12/1887.	1,669.810	2890-E dated. 11/10/1939.	6.880	1,662.930
2	Jagannathprsad	Jagannathprsad	103 dated. 13/02/1893.	6,753.824	13339 dated. 28/07/1956.	61.938	6,691.886
3	Chandragiri	Chandragiri	306 dated. 1/7/1891	7,011.777	73 dated. 14/4/1921.	17.807	7,054.984
		Chandragiri enclosure extension.	323 dated. 27/06/1901.	32.780	--	--	
		Fudrangi enclosure extension.	10 dated. 15/12/1912.	54.633	--	--	
		Kutunikuppa enclosure extension.	85 dated. 08/03/1922.	37.519	--	--	
4	Kullado	Kullado	379 dated. 17/07/1898.	1,392.958	--	--	1,392.958
		Kullado extension.	200 dated. 21/06/1920	177.458	--	--	177.458
5	Darpangia	Darpangia	422 dated. 14/09/1898.	6,877.094	296 dated. 11/	204.370	7,135.087
					312 dated. 5/9/1933.	13.557	
						217.927	

		Darpangia extension No.1	14 dated. 26/12/1901.	392.391	313 dated. 5/9/1933.	2.326	
		Darpangia Extension No.2	14 dated.26/12/1901	86.766	313 dated. 5/9/1933.	0.910	
6	Rambha	Rambha	550 dated. 2/11/1893	5,303.601	--	--	5,383.601
7	Chadhiapalli	Chadhiapalli	330 dated. 2/7/1896.	328.167	--	--	328.167
8	Brahmansahi	Brahmansahi	192 dated. 23/4/1898.	3,075.920	9471 dated. 24/5/1957.	4.856	3,071.064
9	Baiballi	Baiballi	193 dated. 27/4/1898.	7,541.441	--	--	7,541.441
10	Paichalia	Paichalia	409 dated. 31/8/1898.	3,302.064	--	--	3,302.064
11	Gallery	Gallery	36 dated. 26/1/1899	10,740.873	73 dated. 14/4/1921.	29.138	
					193 dated. 27/5/1931	8.093	10,703.642
		Gallery extension No.1, Block-1	200 dated. 21/6/1920	14.771	--	--	14.771
		Gallery extension No.1 Block-II & III	200 dated. 21/6/1920	43.504 7.689	289 dated. 4/9/1930	24.281	26.912
		Gallery extension No.1,Block-IV	200 dated. 21/6/1927.	274.585	6353-12-93/53 dated. 22/5/1954	6.272	
		Gallery extension No.II,Buduli enclosure.	240 dated. 25/7/1927	7.527			275.84
12	Ghogodo	Ghogodo	191 dated. 22/4/1899	4,086.282	--	--	4,086.282
		Ghogodo extension.	316 dated. 24/8/1903	45.082	--	--	45.082
13	Ambazora	Ambazora	2266 dated. 19/5/1899	11,986.078	--	--	11,986.078
		Ambozora extension enclosure Gopadar.	88 dated. 29/1/1906	6.879	--	--	6.879
		Ambozora extension	110 dated. 17/3/1920	41.968	--	--	41.968
14	Gundiribadi	Gundiribadi	269 dated. 1/8/1899	2,580.979	--	--	2,580.979
15	Odinabadi	Odinabadi	2066-XV-20/54LRS dated. 6/8/1955	233.104	--	--	233.104
16	Kaliamba	Kaliamba	39 dated. 11/3/1900	3,253.866	237 dated. 25/5/1923.	2.428	3,251.438
		Kaliamba extension.	242 dated. 15/3/1900	642.047	--	--	642.047
17	Tiliki	Tiliki extension Gundiribadi enclosure	479 dated. 24/7/1899	4,272.521	73 dated. 14/4/1923.	33.994	4,238.527

		Tiliki extension Gundiribadi enclosure.	180 dated. 21/5/1928	3.087	--	--	3.087
18	Vinjigiri	Vinjigiri	318 dated. 28/1/1891	2,141.448	3598 dated. 11/3/1985	102.05	2,039.90
19	Malati	Malati	253 dated. 13/9/1888.	766.410	--	--	766.410
20	Dumdumi	Dumdumi(east)	447 dated. 10/10/1900	594.941	71 dated. 20/2/1926	3.642	588.952
					2849 dated. 24/6/1940	2.347	
21	Dumdumi	Dumdumi(west)	447 Dated. 10/10/1900	443.424	--	--	443.424
22	Ragada	Ragada	342 dated. 24/7/1899	6,481.222	3598 dated. 11/3/1985	69.202	6,412.02

1.9. Rights and Concessions

1.9.1 Right of way over roads, cart tracks and foot-paths, right to worship at the shrines inside the reserves and rights to the use of water of the forest stream, wherever admitted are recorded in the reserve notifications.

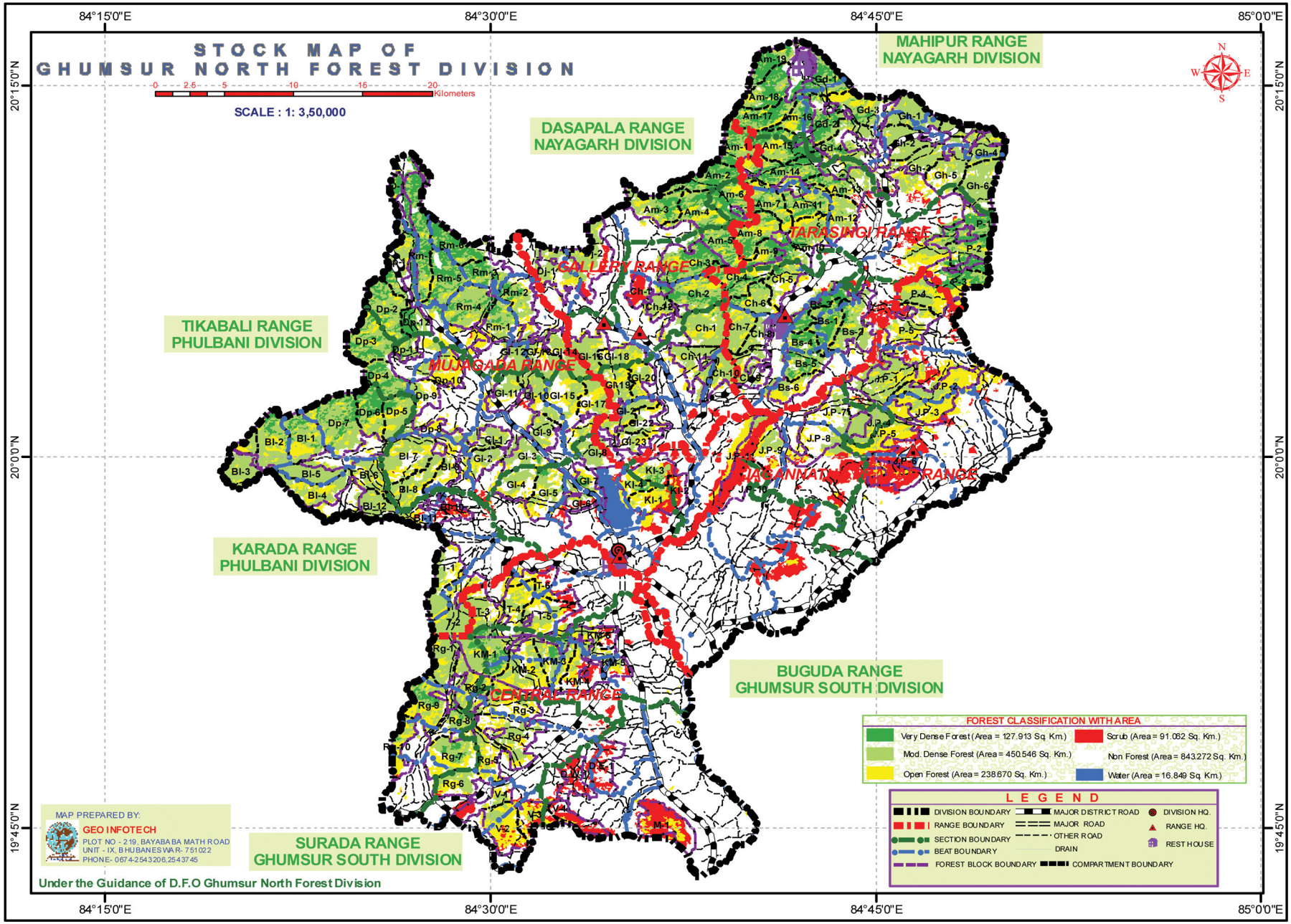
1.9.2 There are no rights to any forest produce. Of late, VANA SAMRAKHANA SAMITI (V.S.S.) has been constituted in pursuance to Government Resolution No.16700-10-F (Pron.) 20/93 F &E dated. 03.07.1993. Right now 223 numbers of VSS formed and actively involving in the forest protection and conservations. After making Subsequent modifications, wherein the following usufructuory rights have been given to the VAN SAMRAKHNA SAMIT (V.S.S.) as detailed below-

(i) Usufruct like leaves, fodder, grasses, thatch grasses, broom grasses, thorny fencing materials, brush wood and fallen lops and tops and twigs used as fuel-wood shall be available to the members free of cost.

(ii) Other usufructs like leased out minor forest produce, kendu leaves, etc. Can be collected by the members, but these will have to be delivered to the Departmental agency/lessee against payment of prescribed wages for the collection and delivery.

(iii) All intermediate yield in shape of small wood, poles, firewood, etc. as may be obtained in silvicultural operations will be equitably distributed among the members by the executive committee.

(iv) Timber and poles as may be obtained from a major harvest or final felling shall be shared between the Forest Department and the VANA SANRAKHAN SAMITI in equal shares. The detailed rights admitted in each of the reserve forest blocks at the time of reservation are explicitly elucidated in **ANNEXURE-XIII**.


STOCK MAP OF
GHUMSUR NORTH FOREST DIVISION
SCALE : 1: 3,50,000
0 2.5 5 10 15 20 Kilometers
84°15'0"E
84°30'0"E
84°45'0"E
85°0'0"E
20°15'0"N
20°0'0"N
19°45'0"N
MAHIPUR RANGE
NAYAGARH DIVISION
DASAPALA RANGE
NAYAGARH DIVISION
TARASINGI RANGE
GALLERY RANGE
TIKABALI RANGE
PHULBANI DIVISION
MUJAGADA RANGE
KARADA RANGE
PHULBANI DIVISION
BUGUDA RANGE
GHUMSUR SOUTH DIVISION
CENTRAL RANGE
SURADA RANGE
GHUMSUR SOUTH DIVISION
FOREST CLASSIFICATION WITH AREA
Very Dense Forest (Area = 127.913 Sq. Km.)
Mod. Dense Forest (Area = 450.546 Sq. Km.)
Open Forest (Area = 238.670 Sq. Km.)
Scrub (Area = 91.052 Sq. Km.)
Non Forest (Area = 843.272 Sq. Km.)
Water (Area = 16.849 Sq. Km.)
LEGEND
DIVISION BOUNDARY
RANGE BOUNDARY
SECTION BOUNDARY
BEAT BOUNDARY
FOREST BLOCK BOUNDARY
MAJOR DISTRICT ROAD
MAJOR ROAD
OTHER ROAD
DRAIN
COMPARTMENT BOUNDARY
DIVISION HQ.
RANGE HQ.
REST HOUSE
MAP PREPARED BY:
GEO INFOTECH
PLOT NO - 219, BAYABABA MATH ROAD
UNIT - IX, BHUBANESWAR- 751022
PHONE- 0674-2543206,2543745
Under the Guidance of D.F.O Ghumsur North Forest Division

CHAPTER-II A

FLORA OF FOREST

2A.1 Trees

2A.1.1 Sal (*Shorea robusta*) is the most dominant species found in the Division. It is well distributed from lowest altitude to the top of the hills (i.e. 600 m to 900 m). It occurs in pure form. The forest of the tract comes under the sub-group Northern tropical moist deciduous zone with a few semi-evergreen patches. Forests of sal occurs best in Gallery RF, Darpangia RF, Gundribadi RF, Ghogodo RF, Chandragiri RF, Ambazora RF, Baibali RF, Rambha RF, Dimirijholi RF, Brahamanasahi RF and Odinabadi RF where it attains best heights and diameters. The most common associates of Sal are *Terminalia tomentosa*, *Pterocarpus marsupium*, *Diospyrous melanoxylon*, *Ougenia oojenensis*, *Xylia xylocarpa*, *Bridelia retusa* and others. The site quality varies from place to place. *Cleistanthus collinus* occurs only in degraded areas.

2A.1.2. Condition of Crop

2A.1.2.1 The crop composition and quality of crop is greatly influenced by past and present biotic interference and several locality factors such as configuration of ground, constitution of soil and water retention capacity. The proportion of sal is high in major forest blocks in the Division. Vegetation of the hill slopes particularly the upper portions are predominantly miscellaneous having higher proportion of Asan, Kasi, Dhamana, Moi and Bandhan. Bamboo is a major constituent of the Sal forests in the Division. *Dendrocalamus strictus* is the most commonly found species. Bamboo has both its economic and silvicultural importance in this Division. The site quality varies from quality I, II and III. Broom grass *Thysaloaena maxima* and thatch grasses are commonly found. These grasses play a very important role in rural economy. Others significant grasses are *Heteropogon contortus*, *Cyonodon dactylon*, *Saccharum spontaneum, Aristida setacea, Themada triandra* and *Imperata arundinacea.*

2A.1.2.2 *Michelia champaca*, *Mangifera indica*, *Diospyros Montana,* and species of ficus are the main semi evergreen found in pockets. It is well confined to valleys and sheltered pockets where moisture condition is high. Several factors contribute to the degradation of these forests. Frequent forest fires, grazing, soil erosion, invasion of weeds and some other factors like illegal arbitrary removal have hastened the loss of these forests. These factors affect natural regeneration. Natural hazards and illicit felling ultimately affects crown density and more open forest are observed in some parts of reserve forests like Chandragiri, Darpangia, Gallery. However, the division still bears good forests in the aforestated forest blocks. The quality of sal in the locality varies from compartment to compartment.

2A.1.3. Summary of Important Trees and Other Species

2A.1.3.1 The quality of tree composition is varied from compartment to compartment. Important species of this Division are Sal (*Shorea robusta*),Teak (*Tectona grandis*), Dhau *(Anogeissus latifolia),*Ghambar*(Gmelina arborea), Kasi (Bridelia retusa),* Asan *(Terminalia tomentosa), Bahada (Terminilia bellerica), Sunari (Cassia fistula), Kusum (Schleichera oleosa), Jamun (Syzygium cumini), Kendu (Diospyros melanoxylon), Mahua (Madhuca indica), Amla (Emblica officinalis), Siris (Albizia lebbeck),* Bheru (*Chloroxylon swietenia*), Char (*Buchanania lanzan*), Karada (*Cleistanthus collinus*) and Cashew (*Anacardium occidentale*) and others. Major tree species with family presented in **Table 2A.1**

2A.1.3.2 Salia Bamboo is a major constituent of forests. *Bambusa arundinacea* is confined to few forest blocks only. Broom grass (*Thysanolaena maxima*) and thatch grass (*Themada arundinacea*) are common along the slopes and nallahs.

Table 2A.1. MajorTree Species and their Corresponding Families found in Ghumsur North

Sl.	**Scientific Name**	**Family**
1	*Acacia catechu*	Mimosaceae
2	*Aegle marmelos*	Rutaceae
3	*Ailanthus excels*	Simaroubaceae
4	*Alangium lamarckii*	Alangiaceae
5	*Albizia lebbeck*	Mimosaceae
6	*Anogeissus latifolia*	Combretaceae
7	*Anthocephalus kadamba*	Rubiaceae
8	*Artocarpus integrifolia*	Moraceae
9	*Bauhinia purpurea*	Caesalpiniaceae
10	*Bauhinia retusa*	Caesalpiniaceae
11	*Bombax ceiba*	Bombacaceae
12	*Boswellia serrata*	Burseraceae
13	*Bridelia retusa*	Euphorbiaceae
14	*Buchanania lanzan*	Anacardiaceae
15	*Butea monosperma*	Papilionaceae
16	*Careya arborea*	Lecythidaceae
17	*Casearia elliptica*	Flacourtiaceae
18	*Cassia fistula*	Caesalpiniaceae
19	*Cassia siamea*	Caesalpiniaceae
20	*Chloroxylon swietenia*	Flindersiaceae
21	*Cleistanthus collinus*	Euphorbiaceae
22	*Croton oblongifolius*	Euphorbiaceae
23	*Dalbergia latifolia*	Papilionaceae
24	*Dalbergia paniculata*	Papilionaceae
25	*Dillenia pentagyna*	Dilleniaceae
26	*Diospyros embryopteris*	Ebenaceae
27	*Diospyros melanoxylon*	Ebenaceae

28	*Diospyros Montana*	Ebenaceae
29	*Diospyros sylvatica*	Ebenaceae
30	*Emblica officinalis*	Euphorbiaceae
31	*Ficus bengalensis*	Moraceae
32	*Ficus glomerata*	Moraceae
33	*Ficus infectoria*	Moraceae
34	*Ficus religiosa*	Moraceae
35	*Gardenia latifolia*	Rubiaceae
36	*Garuga pinnata*	Burseraceae
37	*Gmelina arborea*	Verbenaceae
38	*Grewia tiliaefolia*	Tiliaceae
39	*Holarrhena antidysentrica*	Apocynaceae
40	*Kydia calycina*	Moraceae
41	*Lagerstroemia parviflora*	Lythraceae
42	*Lannea coromandelica*	Anacardiaceae
43	*Madhuca latifolia*	Sapotaceae
44	*Mallotus philippensis*	Euphorbiaceae
45	*Mangifera indica*	Anacardiaceae
46	*Michelia champaca*	Magnoliaceae
47	*Mitragyna parvifolia*	Rubiaceae
48	*Morinda tinctoria*	Rubiaceae
49	*Naringi crenulata*	Rutaceae
50	*Ougeinia dalbergiodies*	Papilionaceae
51	*Phoenix sylvestris*	Arecaceae
52	*Pogamia pinnata*	Papilionaceae
53	*Pterocarpus marsupium*	Papilionaceae
54	*Sapindus emarginatus*	Sapindaceae
55	*Schleichera oleosa*	Sapindaceae
56	*Semecarpus anacardium*	Anacardiaceae
57	*Shorea robusta*	Dipterocarpaceae
58	*Soymida febrifuga*	Meliaceae
59	*Streblus asper*	Moraceae
60	*Stereospermum suaveolens*	Bignoniaceae
61	*Sterculia urens*	Sterculiaceae
62	*Sterculia villosa*	Sterculiaceae
63	*Symplocos racemosa*	Symplocaceae
64	*Syzigium cumini*	Myrtaceae
65	*Tamarindus indica*	Caesalpiniaceae
66	*Tectona grandis*	Verbenaceae
67	*Terminalia arjuna*	Combretaceae
68	*Terminala bellerica*	Combretaceae
69	*Terminalia chebula*	Combretaceae
70	*Terminalia tomentosa*	Combretaceae
71	*Xylia xylocarpa*	Mimosaceae

2A.1.4 Floristic Diversity Survey

2A.1.4.1 Floristic Diversity Survey has been undertaken in all the forest types, for the first time to develop quantitative baseline data. Diversity indices for these forests have been developed. The methodology leaves much to be desired, however available resources (i.e. funds, skilled persons, man power and time). A comprehensive survey on plants has been undertaken. This survey was conducted to study the species richness and create a base line data which could be improved in future. The season of study shall have to be repeated in order to get perfect result.

2A.1.4.2 Several locality factors affect the floristic composition due to change in topography, soil, Micro-climate. The most significant factor adversely affecting the vegetation of this division is biotic interference like excessive removals of timber, traditional shifting cultivation, frequent forest fires, grazing etc. These forests are degraded to varying degrees. Most of the forests are devoid of regeneration and ground flora, especially in Part of jaganathprasad Range area. Apart from that the soil condition of that range especially in Jaganathprasad section is very poor which lead to poor regenation of forests. Further, soil erosion accelerates the process of forest degradation.

2A.1.4.3 Large patches of blank forest lands have been brought under plantation of species including, teak, sissoo, misc species, bamboo etc. Due to the cyclone phailine, 2013 this division was fully affected. 154460 numbers of trees was uprooted. Due to that large canaopy has been opened up. Huge loss of forest vegetation occurred in this divison. The Completion of salvage work will take till 2016.

2A.2. General Description of the Growing stock

2A.2.1.Classification of Forest Types for the Revised Plan

2A.2.1.1 The methodology adopted for classification of forest types of the Division is described below.

2A.2.1.2 Forest type is defined as a unit of vegetation which possesses similar characteristics of physiognomy, structure, function, floristic composition and phenology influenced by climate and topography (Champion & Seth 1968). The climatic and edaphic factors coupled with biotic disturbances in Ghumsur North Division have given rise to a rich and varied flora. According to Champion & Seth 1968, the forest types in the Division are mainly categorized into North Indian Moist Deciduous forest and Northern Tropical dry deciduous forest. An attempt has been made to derive forest types using multi-temporal satellite data and data collected while sampling the field.

2A.2.2. Forest Types : Using satellite image spectral separability and ground data following forest types were mapped and equated within standard Champion and Seths classification at Level II is based on phenological pattern (Evergreen, semi-evergreen, deciduous) and level III Deciduous forest is divided based on presence or absence of Sal (*Shorea robusta*). Further level IV

categorization is based on locale specific criteria in terms of locality, species composition and topographic factors. The type and corresponding code is summarized in **Table 2A-2**

Table 2A-2 Forest Types Of Ghumsur North Forest Division						
Group No.	**Group Name**	**Sub Group No.**	**Sub Group Name**	**Code**	**Name of the Forest Type**	**Area in Ha.**
3	Tropical Moist Deciduous forest	3C	North Indian Moist Deciduous Forest	C_{2eii}	Moist Peninsular low level Sal	20.021
5	Tropical Dry Deciduous forest	5B	Northern Tropical Dry Deciduous forest	C_{1c}	Dry peninsular Sal forest	27269.522
				C_2	Northern Dry mixed Deciduous Forest	58336.801
				DS_1	Dry deciduous Scrub	2309.146
				$5/E_9$	Dry Bamboo brake	57.230

2A.2.2.1. Moist Peninsular Low Level Sal – 3c/C2 eii (Area 20.021 Ha.) : The moist Sal is viewed as a climax (Climatic, Edaphic bio-edaphic) formation throughout and some forms which might be considered seral type have also been included in the climax type as they are sufficiently stable under prevailing conditions of management. The main climatic features which distinguish it are: rainfall above 1300 mm. mean daily relative humidity for the year 60 to 70%. Downwash from crystalline rocks which yields deep yellow loam soil is the edaphic condition on which this sub-type occurs. This sub-type is marked with light shrub growth under Sal but moderately dense cover of grass.

2A.2.2.1.1 Quality: The quality of Sal met in this sub-type is generally quality III. Growth of Sal is better in the cooler aspects and on gentle to moderate slopes. The deep sandy loam soil which contains more humus support Sal of quality II or II/III as in Ambazora-2. But this favourable site does not exceed and remains narrowly localised. Also on higher slopes and hill tops where depth of soil is shallow Sal of Qality IV is met with. On an average it is appropriate to take the quality of this sub-type as Qality III/IV.

2A.2.2.1.2 Floristic composition: Floristic composition changes in different site and frequency of the species found variies. However to describe the composition, area covered under this forest sub-type has been divided into two categories namely; (a) Valley area; where moisture retention capacity of soil is better, humus is more and area is comparatively cooler; (b) Other areas consisting slopes and plain which is comparatively drier. In these two categories too; frequency of species varies, however average crop composition of these two categories are described below.

(A) In the vallery areas

I. *Shorea robusta, Dillenia pentagyna, Bridelia squamosa, Terminalia alata, Tarminalia arjuna, Syzygium cumini, Adina cordifolia, Mitragyna parvifolia, Lagerstroemia parviflora, Mangifera indica, Bursera serrata, Pterocarpus marsupium, Terminalia bellerica, Anthocephalus chinensis, Bombax ceiba, Gmelina arborea, Garuga pinnata.*

II. *Syzygium cumini, Miliusa velutina, Polyalthia cerasioides, Lannea coromandelica, Pterospermum xylocarpum, Macaranga peltata, Diospyros montana, Derris indica, Mallotus phillippensis, Careya arborea, Glochidion lanceolarium.*

IIa. *Bambusa arundinacea.*

III. *Ardisia solanacea, Grewia helicterifolia, Flemingia chappar, Flemingia strobilifera, Cycas circinalis, Leea asiatica, Cipadessa baccifera, Strobilanthes scaber, Helicteres ixora, Clerodendrum viscosum, Woodfordia fruticosa.*

IV. *Thysanolaena maxima, Panicum species.*

V. *Bauhinia vahlii, Combretum roxburghii, Butea superba, Zizyphus oenoplia, Millettia extensa, Acacia torta, Entada phoseoloides, Smilex zeylanica, Dioscoria species.*

(B) In other areas

I. *Shorea robusta, Terminalia alata, Terminalia chebula, Adina cordifolia, Mitragyna parvifolia, Lagerstroemia parviflora, Anogeissus latifolia, Bridelia squamosa, Albizia procera, Albizia lebbeck, Hymenodictyon excelsum, Pterocarpus marsupium, Bombax ceiba, Gmelina arborea, Dalbergia paniculata, Schleichera oleosa, Madhuca indica, Lannea coromandelica, Diospyrus melanoxylon, Sterculia urens.*

II. *Cleistanthus collinus, Dalbergia latifolia, Ougeinia oojeinensis, Syzygium cumin, Dillenia pentagyna, Careya arborea, Diospyrus species, Mallotus philippinensis, Wendlandia heynei.*

II.a. *Dendrocalamus strictus.*

III. *Cipadessa baccifera, Woodfordia fruticosa, Clerodendrum viscosum, Zizyphus oenoplia, Indigofera cassioides.*

IV. *Thysanolaena maxima, Panicum species. Eulaliopsis pinata.*

V. *Bauhinia vahlii, Millettia extensa, Combretum roxburghii, Butea superba, Acacia torta, Zizyphus oenoplia, Entada phoseoloides, Smilax zeylanica, Dioscorea species.*

2A.2.2.1.3 In the eroded area, the top canopy is very much open and forest cover is poor. Soil which is a major determinant of vegetation is rendered poor to extremely poor with gravels exposed and white stone nodules dispersed depending on degree of erosion. This type of edaphic condition supports poor stunted and open crop. In these patches a number of miscellaneous species like Dhaura. Karda, Sidha, Moi, Barbakulia, Char, Kendu, Anal, Kasi, Khaira, Bheru, Dhatki, Kanteikoli, Kurei, Mahula, Rohini, Sunari, provide scattered stunted cover. In climber Atundi and in grasses Sabai dominate. The various circle-erosion, Soil deterioration, stunted and sparse vegetation leading to more erosion continues and requires trapping at some point through soil conservation measures. No specific survey has been carried out to find frequency of grasses in

different site of this forest sub-type. However lists of grasses which generally associate with this forest type are furnished below in **Table 2A-3**.

Table 2A-3 List of Perennial Grasses, Annual Grasses and Herbs	
Aristida setacea	*Imperata Arundinacea*
Bothriochloa pertusa	*Ichaemum rugosum*
Bothriochloa bladhi	*Panicum species*
Cymbopogon martini	*Pseudosorghum fasciculare*
Chrysopogon gryllus	*Sporobolus indicus*
Chrysopogon montanus	*Cynodon dactylon*
Dicanthium annulatum	*Heteropogon contortus*
Dicanthium carricosum	*Thysanolaena maxima*
Eragrostis coarctata	*Themeda triendra*
Eulaliopsis binata	*Arundinella khasiana*
Iseilema prostratum	*Arundinella setosa*
Imperata cylindrical	*Saccharum spontaneum*
Annual Grasses	**Herbs**
Arthraxon species	*Desmodum* species
Arundinelle pumila	*Desmodum latifolium*
Eragrostis Unioloides	*Triumfetta rhomboidea*
Eragrostis viscose	*Achyranthes porphyristachy*
Rottboellia cochinehinensis	*Elcphantopus scaber*
Themeda quadrivalvis	*Ocium* species
Dimeria species	
Eulalia species	
Setaria glauca	

2A.2.2.2 5B/C_{1C} - Dry Peninsular Sal Bearing Forests (Area 27269.522 ha.)

2A.2.2.2.1 This sub-type occurs on shallow soil derived from crystalline and metamorphic rocks wherever the soil moisture conditions are unfavourable for the development of moist Sal, even in areas of similar rainfall, mean temperature and humidity. In this, sub-type soil rests on hard impervious lateritic or calcareous rocks. Low moisture retention capacity and dryness which is further increased due to increasing biotic interference and repeated forest fire are the feature of this sub-type,responsible for poor regeneration of Sal and slow establishment. Characteristic associates of this sub-type are *Anogeissus latifolia, Bowellia serrata* in top storey, *Gardenia* species, Helicteres ixora and phoenixacaulis in middle and sabai grass (Eulaliopsis binata) among grasses.

2A.2.2.2.2 Quality: The site quality of this sub-type varies between quality III and IV. Since this forest type has deteriorated appreciably, the quality may be taken as IV.

2A.2.2.2.3 Density: Density of crop in this sub-type varies from 0.2 to 0.6 and the average crown density may be taken as 0.4 so far the percentage of Sal is concerned it varies from 10 to 30%. Sal occurs in mixed patches between which its associates predominate. In this sub-type, it is noticed that proportion of Sal is decreasing with increasing dryness.

2A.2.2.2.4 Regeneration: The ground regeneration of Sal may be taken as fair but it's rare establishment due to various factors makes the overall regeneration poor. Regeneration does not established due to repeated forest fires, biotic interference, heavy grazing and browsing, removal of selected trees of Sal even in pole stage. Among the miscellaneous species regeneration of xerophytic species, nonbrowsable and thorny species have come to predominate. To check the present condition of retrogression, immediate steps to ensure and improve regeneration status is absolutely necessary.

2A.2.2.2.5 Floristic Composition: This sub-type contains a vast number of species many of which are of little importance. Composition stating important species is furnished below.

I. *Shorea robusta, Terminalia alata, Bridelia squamosa, Pterocarpus marsupium, Anogeissus latifolia, Schleichera oleosa, Lagerstroemia parviflora, Albizia* species*, Adina cordifolia, Mitragyna parvifolia, Terminalia bellirica, Terminalia chebula, Madhuca indica, Acacia catechu, Buchanania lanzan, Lannea coromandelica, Boswellia serrata, Dalbergia paniculata, Ougenia oojeinenses, Dalbergia latifolia, Gmelina arborea, Syzigium cumini, Terminalia arjuna, Sterospermum chelonoides, Bombax ceiba, Dillenia pentagyna, Dyospyrus melanoxylon.*

II. *Cleistanthus collinus, Chloroxylon swietenia, Emblica officinalis, Cassia fistula, Aegle marmelos, Wendlandia tinctoria, Gardenia* species*, Symplocos racemosa, Morinda pubesens, Cochlospermum religiosum.*

II.a. *Dendrocalamus strictus (only in Archean group formation)*

III. *Holarrhena antidysentrica, Ixora arborea, Woodfordia fruticosa, Antidesma acidum, Aristida setacea, Indigofera cassioides, Phoenix ecaulis.*

IV. *Eulaliopsis binata, Themeda* species*, Heteropogon contortus, Cynodon dactylon.*

V. *Combretum roxburghii, Butea superba, Smilax* species*, Zizyphus oenoplia, Bauhinia vahlii.*

2A.2.2.3. 5B/C_2-NORTHERN DRY MIXED DECIDUOUS FORESTS (AREA 58336.801 HA.): This sub-type occurs scattered over extensive areas in the Division on dry slopes, rugged ground where soil is poor and shallow. Tree canopy is seriously broken by human activities so that scattered trees and small groups are now typical. This broken top canopy is characterising the transition to still drier types having trees with low spreading crown. Many portions are occupied by large shrubs and small trees. Density varies from 0.1 to 0.5 and average density may be taken as 0.3.

Regeneration of miscellaneous species of xerophytic nature and unbrowsable nature, thorny shrubs mainly establish though ground regeneration of other miscellaneous species too appear fair. These forests are associated with well drained slopes, poor shallow soil, dryness, heavily influenced by forest fire, heavy grazing giving rise to poor height and diameter growth.

2A.2.2.3.1 Distribution: This sub-type is fairly distributed throughout the Division.

2A.2.2.3.2 Density: Openness is the important feature of these forests and density varies from 0 to 0.9 & average density may be taken as 0.4.

2A.2.2.3.3 Regeneration: Regeneration of thorny unbrowsable xeropytic species is noticed predominately while there is much less regeneration of other miscellaneous species. Regeneration status may be taken as very poor, coppice regenerations come up from illicitly felled stumps but its growth remains retarded and poor, probably because these are from stumps of very old origin which have lost its vigour and cannot withstand grazing etc.

2A.2.2.3.4. Floristic Composition

I. *Anogeissus latifolia, Lagerstroemia parviflora, Aldina cordifolia, Terminalia alata, Mitragyna parvifolia, Dalbergia latifolia, Hymenodictyon excelsum, Bridelia squamosa, Albizia* species*, Bombax ceiba, Shorea robusta*. (less than 5%) *Pterocarpus marsupium, Dalbergia paniculata, Lannea coromandelica, Diospyrus melanoxylon, Diospyrus* species*, Cleistanthus collinus, Malia composita, Terminalia bellerica, Stereospermum chelonoides, Boswellia serrata, Acacia leucophloea.*

II. *Ougenia oojeinenses, Cassia fistula, Alangium salvifolium, Careya arborea, Hollarrhena antidysentrica, Cassearia elliptica, Mallotus phillippinensis, Catunaregam mutans, Limonia acidissima, Acacia leucophloea, Zizyphus glaverrima, Chloroxylon swietenia, Gardenia latifolia, Gardenia gummifera, G.gummifera* occurs sub-gregarious on many of the dried hills with clay soil derived from clay and quartzschist, H.H. haines)*, Ixora arobea.*

II.a. *Dendrocalamus strictus.*

III. *Helicteres ixora, Strobilanthus* species*, Woodfordia fruticosa, Indigofera cassioides, Cipadessa baccifera.*

IV. *Cymbopogon martini, Aristida setacea, Eulaliopsis binata.*

V. *Combretum roxburghii, Zizyphus oenoplia, Butea superba, Butea parviflora, Millettia extensa, Smilax species, Gouania tiliaefolia.*

2A.2.2.4. 5/DS_1- DRY DECIDUOUS SCRUBS (AREA 2309.146 HA.) : This type of forest occurs mainly in Central and Tarasing Ranges. The factors responsible for this degradation can be enumerated as follows:

(a) Situation of these forest blocks in scattered fashion in outskirts of forest areas and situated near the villages or surrounded by it.

(b) Heavy demand from these forests due to increase of human and cattle population.
(c) Illicit felling and removal of commercially important species.
(d) Annual forest fire 2 to 3 times in summer.
(e) Repeated coppicing.
(f) Soil erosion.

2A.2.2.4.1 Distributuion: This degraded sub-type is met with in Kaliamba, Malati, Dumdumi and Jagannathprasad Reserve Forest Blocks.

2A.4.2.2.4.2 Floristic Composition: *Shorea robusta, Terminalia alata, Cassia fistula, Anogeissus latifolia, Lageratroemia parviflora, Terminalia belleirica, Terminalia chebula, Aegle marmelos, Buchanania lanzan, Maldina cordifolia, Cleistanthus collinus, Soymida febrifuga, Chloroxylon swietenia, Acacia catechu, Emblica officinalis, Gardenia gummifera, Acacia leucophloea, Woodfordia fruticosa, Zizyphus spp. Combretum roxburghii, Indigofera cassioides, Ixora arborea, Smilax* species *and grasses of Themeda, Heteropogon and Cynodon* species.

2A.2.2.5. 5/E9-Dry Bamboo Brakes (Area 57.23 ha.): In the forest 5B/C_2 and 5B/C_{1c} scattered patches of only species *Dendrocalamus strictus* are met with forming relatively low but dense brakes of bamboos mainly on higher slopes and hill tops with grasses and deciduous thorny shrubs in between. Though some time no over wood exist but generally scattered over wood of hardier species like Anogeissus latifolia, Boswellia serrata, Dalbergia paniculata are seen. The presence of hardier over wood in scattered manner suggests the dominance of bamboo to be only of secondary origin which has arisen due to grazing and maltreatment in past and represent bio-edaphic seral association.

2A.3 Status of Natural Regeneration: Though new recruits occur in abundance but the establishment varies considerably and is a matter of great concern in several forest blocks. Only few blocks have good regeneration. The ever increasing biotic interferences like podu cultivation, fire, heavy grazing and browsing, illicit removal of pole sizes and selected removal of trees are the main reasons for poor establishment of the regeneration. In course of time valuable and browsing species are being replaced by other species e.g. dhaura, karada, kendu, sedha and thorny species etc. Regeneration is poor as regeneration of coppice origin even remains retarded due various interferences. Frequent cultural operations, control of grazing and fire can substantially improve condition.

2A.3.1. REGENERATION SURVEY

2A.3.1.1 The regeneration survey has been conducted extensively in all the compartments of the 22 reserve forest blocks of the division. The survey was conducted simultaneously while doing strip enumeration by taking sample plots of dimension 2mt.X2mt at the central location of the grid line lying in the middle of the 40 mt. strip. For every compartment atleast two grid lines were

taken.Five hundred sixteen sample points were included for calculation. The survey is done by within a sample plot of 0.01ha of the given co-ordinate where growing stock inventory is carried out in such forest blocks. Five subplot size of $2M^2$ quadrants at the North, East, West, South and plot center were taken as a sample. The regeneration seedlings are classified into Established, Woody, Whippy and Recruits. They enumerated and scored. This exercise is limited to only 15 species. Each established seedling is given a weightage of 5, woody seedling 3, whippy seedling 2 and recruits 1. The weightage is multiplied by the respective count of Established, Woody, Whippy, and Recruit seedlings as enumerated in the sample subplot. These figures are so obtained, are subsequently added up species wise and the figure so arrived at is divided by 11 (sum of weightages) to know the weighted Arithmetic Mean. The weighted arithmetic mean gives the total regeneration seedlings per sample plot.

TABLE 2A-4.	**Status Of Regeneration (Seedlings Per Hectare)**	
Sl.No	**Number of Regeneration Seedlings**	**Status**
01	Less than 100	Deficient
02	100 & above but less than 200	Fair
03	200 & above but less than 300	Moderate
04	300& above but less than 400	Good
05	400 & above	Excellent

2A.3.1.2 The regeneration survey indicates the presence of root stocks of various species. It indicates spatial preference in natural condition. The regeneration status also indicates potential of future crop. This information will be useful for selection of sites for various species in plantation as well as guide regeneration of degraded forest through JFM.

TABLE 2A.5. Abstract Of Regeneration In Different Blocks Of Ghumsur North Division												
NAME OF FOREST BLOCKS												
Sl.No	**Species**	**Ambazora**	**Baibali**	**Brahmansahi**	**Chadhiapalli**	**Chandragiri**	**Darpangia**	**Dimirijholli**	**Dumudumi East**	**Dumudumi West**	**Gallery**	**Ghogoda**
1	Sal	Deficient	Good	Good	Deficient	Fair	Good	Good	Deficient	Deficient	Good	Deficient
2	Piasal	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
3	Kusuma	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
4	Sahaja	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Fair	Deficient
5	Dhau	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Fair	Deficient
6	Dhamana	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Fair	Deficient
7	Kendu	Deficient	Fair	Deficient	Deficient	Deficient	Good	Good	Deficient	Deficient	Good	Deficient
8	Moi	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
10	Jamu	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Fair	Deficient
11	Harida	Deficient	Fair	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
12	Dhobi	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Fair	Deficient
13	Amla	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
14	Char	Deficient	Good	Fair	Deficient	Deficient	Good	Good	Deficient	Deficient	Fair	Deficient
15	Others	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient

ABSTRACT OF REGENERATION IN DIFFERENT BLOCKS OF GHUMSUR NORTH DIVISION (Contd.)												
Name of Forest Blocks												
Sl.No	**Species**	**Gundiribadi**	**Jagannathprasad**	**Kaliamba**	**Kullada**	**Malati**	**Odinabadi**	**Pachiallai**	**Ragada**	**Rambha**	**Tiliki**	**Vinjigiri**
1	Sal	Good	Deficient	Good	Deficient	Deficient	Deficient	Deficient	Good	Good	Deficient	Deficient
2	Piasal	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
3	Kusuma	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
4	Sahaja	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
5	Dhau	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
6	Dhamana	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
7	Kendu	Good	Deficient	Good	Deficient	Deficient	Deficient	Deficient	Good	Good	Deficient	Deficient
8	Moi	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
10	Jamu	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
11	Harida	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
12	Dhobi	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
13	Amla	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient
14	Char	Good	Deficient	Good	Deficient	Deficient	Deficient	Deficient	Good	Fair	Deficient	Deficient
15	Others	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient	Deficient

2A.3.2 Plantations

2A.3.2.1 Apart from natural forest, there are various artificial plantations created in the Division mainly economic species Teak, Gambhar, and miscellaneous plantations. During the outgoing Plan period plantations of 3031ha was prescribed but there was a shortfall of 23.15% and only 702 ha could be raised. Plantations usually are damaged for want of proper protection and illicit removal by local people much before harvestable age. The survival is low in many cases. A detail survey could not be done due to shortage of staff and time.

2A.4. INJURY TO WHICH THE CROP IS LIABLE

2A.4.1. NATURAL CALAMITY

2A.4.1.1 Cyclone, flood, Frost and climatic change are some of the factors, which cause injury to the forests. High temperature during summer season and unusual rainfall has a profound effect on young plantation and natural regeneration. Flood is not very uncommon but does have little effect on the forests. Frost is not common in this tract. The cyclone affects the pole crop and the plantation. A severe cyclone had affected Ganjam District in 1972 - 73, but its effect on the forests could not be traced. Another severe storm struck Ganjam in October, 1999.

2A.4.1.2 This had severely affected the forests of Ghumsur North Division. The plantations of this division were heavily damaged. During 2013 “Phailine” a severe cyclone has caused irreparable damage to forest Blocks of the Berhampur Division. The detailed account of damage of due to cyclone of 1999 and 2013 is presented in the following **Table- 2A.6. & Table-2A.7**

Table 2a.6 Extent Of Damage Caused During Cyclone – 1999

Range	**Number of trees Uprooted**
Gallery	**1690**
Tarasing	19092
Mujagada	5617
Central	**450**
Total	**26849**

Source: Divisional Forest Officer, (Ghumusur North) Division.

TABLE 2A.7 EXTENT OF DAMAGE CAUSED DURING PHAILIN OF 2013				
Name of the Range	**No of trees Enumerated**	**No of trees salvaged by**	**No of trees salvaged by**	
			Worked as	**Working as**
Jaganathprasad	8022	5944	25	2053
Central	6969	4628	750	1591
Mujagada	53733	20004	3058	30671
Tarasingi	42697	762	1384	40551
Gallery	43039	14735	2128	26176
Total		**46073**	**7345**	**101042**

Source: Divisional Forest Officer, Ghumsur North Division.

2A.4.1.3 Flood is uncommon as the areas in the Division do not have much low lying areas. Drought in the area is experienced sporadically. Erosion in the Division is common along river/nallah banks and steep slopes as the entire area is hilly with less flat areas. Erosion prevention shall be a major prescription for degraded areas of the forests of this Division.

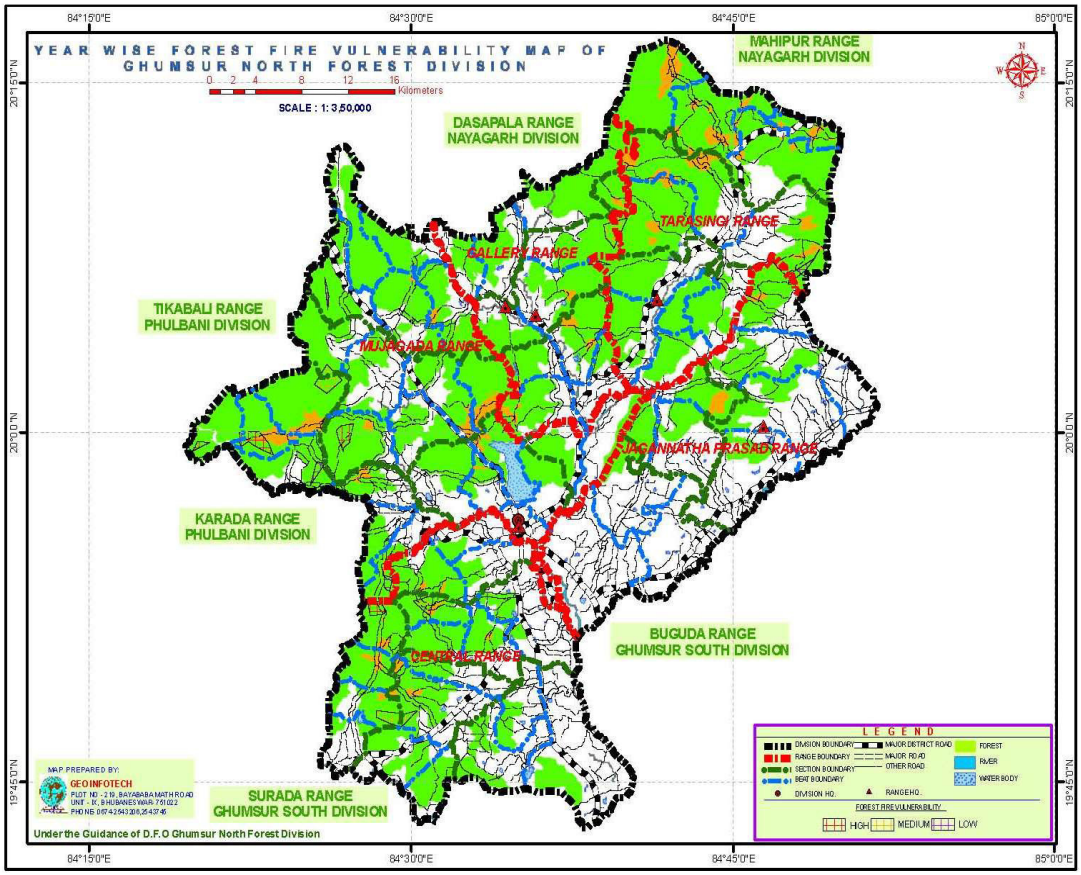
2A.4.2. MAN RELATED FACTORS

2A.4.2.1. FOREST FIRE

2A.4.2.1.1 Forest globally are considered as one of the major factors of climate change, bio-diversity loss and increase in global temperature due to production of biological carbon and green house gasses. In the tropical deciduous forests of Orissa, fire is a recurrent phenomenon due to higher levels of water stress during summer. Traditional land use practices and changes in weather pattern have resulted in higher fire incidences in the tropical India. Forest fires in India are mostly anthropogenic in nature. Following are the major causes of Forest fire in this division:

(i) Burning of forest floor for good growth of grass or mushrooms in the next season
(ii) Hunting
(iii) Un-extinguished charcoal panniers
(iv) Un-extinguished cigarettes or bidi buts being thrown in the under bush etc.
(v) Due to High Temperature

2A.4.2.1.2 Based on forest fire occurrence over last 6 years using satellite based observations, the forest fire vulnerability of blocks was assessed for Ghumusur North Division.



FIRE VULNERABILITY MAP OF GHUMSUR NORTH DIVISION

2A.4.2.1.3 Methodology

2A.4.2.1.3.1 Coarse resolution satellite data of sensors like MODIS, ASTER, NOAA directs active fire based on brightness temperature levels recorded in short wave and thermal IR wavelength bands. Detection of active fires as a function of pixel brightness temperature above that of the background resolution of the sensor, fire and smoldering intensity levels, vegetation type, back ground land cover and atmospheric interference. MODIS aqua and terra satellite daily active fire location information products over 6 years (2001-2006) have been used for assessing the vulnerability. The number of channels or bands in MODIS is 36 and of these bands 20-36 falls under thermal bands having a resolution of 1 km and daily coverage. The fires which have an extent of 1-2 ha or more are only picked up by the satellite. The daily data has been integrated over one year and the annual integrated out put has been prepared. The annual fire occurrence over the last ten years has been overlaid in GIS domain with the management layers to give block wise annual fire occurrence data and generating fire vulnerability map based intensity of fire occurrence. The block-wise annual fire occurrence has been tabulated according to the year of occurrence. It may be noted that the data provided refers to fire occurrence over 1 km area but not the spread of burnt area. It has been observed that Ghumsur North Forest Division has relatively moderate to high fire occurrence as a whole with 127 fire occurrence in the last 10 years

(2006-07 to 2015-16). The total area affected due to these fire incidences in the past ten years is 800.175 hectares. Though in majourity of fire incidences, the area affected mostly is within 2 to 4 hectares, but the average affected area per incident is 6.3 hectares. Range wise and forest block wise GPS location of forest fire, the date of occurrence and the area affected by it are depicted in **Table 2A-8**. It is observed that the forest area affected by fire outbreak per incident was more until 2012 after which it declined. Annual integrated Fire Occurrence in the different Blocks Range wise in Ghumsur North Forest Division over 10 years is given below in **Table 2A-9**

Table 2A-8 Range wise and Forest block wise fire location with extent of area affected over ten years from 2006 to 2015 in Ghumsur North Division

Name of the Range	Name of the R.F.	Date (dd/mm/yyyy)	Longitude	Latitude	Area affected by fire in Ha.
1	2	3	4	5	6
		2006			
Central	Ragada	22.02.2006	84 28 22 E	19 54 28 N	70 Ha.
	Ragada	24.02.2006	84 28 22 E	19 48 01 N	53 Ha.
Mujagada	Gallery	05.03.2006	84 31 48 E	20 02 27 N	8 Ha.
	Gallery	05.03.2006	84 31 48 E	20 02 27 N	7 Ha.
	Ambazora	31.03.2006	84 39 39 E	20 13 14 N	23 Ha.
	Darapangia	31.03.2006	84 26 09 E	20 05 49 N	5 Ha.
	Darapangia	31.03.2006	84 26 06 E	20 05 16 N	6 Ha.
	Darapangia	31.03.2006	84 25 30 E	20 02 02 N	8 Ha.
	Baibali	31.03.2006	84 27 07 E	19 59 34 N	8 Ha.
	Gallery	31.03.2006	84 34 44 E	20.01.08 N	15 Ha.
				Total	**203 Ha.**
		2007			
Gallery	Chandragiri	02.04.2007	84 38 02 E	20 03 50 N	15 Ha.
	Chandragiri	02.04.2007	84 38 34 E	20 03 28 N	15 Ha.
	Chandragiri	15.04.2007	84 23 20 E	19 59 34 N	6 Ha.
	Chandragiri	15.04.2007	84 22 55 E	20 00 03 N	8 Ha.
Mujagada	Baibali	15.04.2007	84 22 37 E	19 59 27 N	4 Ha.
	Rambha	15.04.2007	84 28 01 E	20 07 08 N	5 Ha.
	Darapangia	26.04.2007	84 23 38 E	20 02 49 N	7 Ha.
	Darapangia	26.04.2007	84 23 16 E	20 01 55 N	8 Ha.
				Total	**68 Ha.**
		2008			
Mujagada	Gallery	10.03.2008	24 31 48 E	20 02 27 N	12 Ha.
	Paichalia	24-04-2008	84 48 54 E	20 10 26 N	8 Ha.
	Kaliamba	06.05.2008	84 19 30 E	19 02 00 N	15 Ha.
	Gallery	03.05.2008	84 31 48 E	20 02 27 N	5 Ha.
				Total	**40 Ha.**
		2009			

Tarasing	Ghogoda	22.02.2009	84 42 50 E	20 12 50 N	10Ha.
Central	Tiliki	04.03.2009	84 31 01E	19 52 58 N	12 Ha.
Tarasing	Ambazora	04.03.2009	8430 25 E	19 30 25 N	10 Ha.
Tarasing	Paichalia	06.03.2009	84 42 00 E	20 14 20 N	7 Ha.
Tarasing	Paichalia	06.03.2009	84 49 04 E	20 07 51 N	9 Ha.
Mujagada	Chandragiri	06.03.2009	84 47 34 E	20 06 21 N	7 Ha.
Mujagada	Gallery	06.03.2009	84 38 45 E	20 04 19 N	8 Ha.
Mujagada	Baibali	06.03.2009	84 33 50 E	20 01 44 N	8 Ha.
Mujagada	Baibali	06.03.2009	84 27 50 E	20 01 01 N	9 Ha.
J.N.Prasad	J.N.Prasad	06.03.2009	84 27 36 E	20.00 54 N	9 Ha.
Mujagada	Gallery	17.03.2009	84 42 14 E	19 59 56 N	8 Ha.
Mujagada	Gallery	17.03.2009	84 33 14 E	19 58 08 N	11 Ha.
Mujagada	Gallery	17.03.2009	84 32 42 E	19 58 01 N	9 Ha.
Mujagada	Tiliki	07.04.2009	84 31 01 E	19 52 44 N	8 Ha.
				Total	**125 Ha.**
2010					
Central	Tiliki	07.04.2010	84 31 01 E	19 52 44 N	8 Ha.
Mujagada	Gallery	24.03.2010	84 32 13 E	20 02 52 N	12Ha.
Gallery	Chandragiri	06.03.2010	84 38 45 E	20 06 21 N	5. Ha.
				Total	**25 Ha.**
2011					
Tarasing	Ghogoda	01.04.2011	84 47 06 E	20 12 36 N	5 Ha.
Tarasing	Bramhansahi	05.04.2011	84 42 28 E	20 04 40 N	6 Ha.
Mujagada	Gallery	10.04.2011	84 34 12 E	20 03 25 N	6 Ha.
Mujagada	Gallery	10.04.2011	84 33 32 E	20 02 56 N	5 Ha.
Gallery	Chandragiri	10.04.2011	84 38 45 E	20 05 56 N	6 Ha.
				Total	**28 Ha.**
2012					
Mujagada	Baibali	29.02.2012	84 19 48 E	19 59 09 N	2.428Ha.
Mujagada	Darapangia	29.02.2012	84 25 58 E	20 06 39 N	3.642Ha.
Mujagada	Darapangia	29.02.2012	84 24 55 E	20 04 17 N	2.630Ha.
Mujagada	Darapangia	29.02.2012	84 26 49 E	20 03 59 N	2.832Ha.
Mujagada	Darapangia	29.02.2012	84 25 46 E	26 02 44 N	3.642Ha
Mujagada	Darapangia	29.02.2012	84 25 11E	20 02 39 N	4.046Ha.
Mujagada	Baibali	29.02.2012	84 21 46 E	20 01 05 N	3.844Ha.
Mujagada	Baibali	29.02.2012	84 20 44 E	20 00 23 N	2.428Ha
Mujagada	Baibali	29.02.2012	84 21 59 E	20 00 00N	2.023 Ha
Mujagada	Baibali	29.02. 2012	84 22 24 E	19 59 35 N	2.549Ha.
Mujagada	J.N.Prasad	05.03. 2012	84 40 54 E	20 01 03 N	2.023Ha.
Mujagada	Rambha	05.03. 2012	84 28 07 E	20 07 31 N	4.046Ha.
Mujagada	Darapangia	03.03. 2012	84 26 29 E	20 00 05 N	2.913Ha
Mujagada	Baibali	03.03. 2012	84 22 47 E	19 58 20 N	3.723Ha
Mujagada	Darapangia	07.03. 2012	84 26 37 E	20 08 20 N	3.439Ha.

Mujagada	Darapangia	14.03. 2012	84 27 10 E	20 01 34 N	2.428Ha.
Mujagada	Baibali	14.03. 2012	84 26 50 E	19 59 10 N	4.046Ha.
Mujagada	Gallery	18.03. 2012	84 29 15 E	20 00 47 N	3.237Ha.
Mujagada	Darapangia	07.03. 2012	84 26 37 E	20 08 08 N	4.046Ha.
Mujagada	Baibali	07.03. 2012	84 25 36 E	19 58 43 N	2.428Ha.
Mujagada	Babali	07.03. 2012	84 25 57 E	19 58 38 N	2.225 Ha
Mujagada	Darapangia	14.03. 2012	84 27 10 E	20 01 34 N	2.633 Ha.
Mujagada	Baibali	14.03. 2012	84 26 50 E	19 59 18 N	2.023 Ha
Mujagada	Baibali	23.03. 2012	84 25 19 E	19 57 43 N	2.678Ha.
Mujagada	Baibali	20.03. 2012	84 26 54 E	20 01 19 N	1.902Ha.
Mujagada	Gallery	18.03. 2012	84 29 15 E	20 00 47 N	2.156Ha.
Mujagada	Baibali	23.03. 2012	84 25 19 E	19 57 43 N	3.642Ha.
Gallery	Chandragiri	07.03.2012	84 38 35 E	20 70 5 N	2 Ha
Gallery	Chandragiri	07.03.2012	84 37 16 E	20 04 58 N	1 Ha
Central	Ragada	20.03.2012	84 30 17 E	19 48 02 N	3 Ha
Central	Ragada	20.03.2012	84 29 42 E	19 47 53 N	2 Ha
Central	Kaliamba	25.03.2012	84 30 52 E	19 52 06 N	3 Ha
Mujagada	Darapangia	18.03.2012	84 48 22 E	20 06 56 N	2 Ha
Mujagada	Darapangia	18.03.2012	84 47 46 E	20 06 56 N	2 Ha
Mujagada	Darapangia	20.03.2012	84 41 28 E	20 02 30 N	2.5Ha
Mujagada	Darapangia	20.03.2012	84 41 52 E	20 02 24 N	1.0Ha
Mujagada	Darapangia	07.03.2012	84 39 18 E	20 07 10 N	4Ha
Mujagada	Rambha	05.03.2012	84 46 27 E	20 12 56 N	2 Ha
Mujagada	Darapangia	6.03.2012	84 40 54 E	20 01 03 N	2Ha
Mujagada	Darapangia	18.03.2012	84 41 06 E	20 00 53 N	4Ha
Mujagada	Baibali	23.03.2012	84 47 56 E	20 01 40 N	2Ha
Mujagada	Baibali	23.03.2012	84 48 22 E	20 01 38 N	2.5Ha
Mujagada	Baibali	23.03.2012	84 47 38 E	20 01 33 N	3Ha
				Total	**117.652**
2013					
Mujagada	Tiliki	05.03.2013	84 28 34E	19 52 44 N	1 Ha.
Mujagada	Tiliki	05.03.2013	84 27 59 E	19 52 39 N	1 Ha.
Mujagada	Tiliki	05.03.2013	84 28 40 E	19 52 11 N	1 Ha.
Mujagada	Tiliki	05.03.2013	84 28 05 E	19 52 06 N	1.5 Ha.
Mujagada	Darapangia	10.03.2013	84 26 55 E	20 03 42 N	2 Ha.
Tarasing	Gunduribadi	19.03.2013	84 41 54 E	20 14 24 N	5 Ha.
Tarasing	Gunduribadi	19.03.2013	84 41 54 E	20 14 24 N	5 Ha.
Tarasing	Ghogoda	19.03.2013	84 48 56 E	20 11 29 N	5 Ha.
Tarasing	Ghogoda	19.03.2013	84 48 56 E	20 11 29 N	5 Ha.
Gallery	Chandragiri	21.03.2013	84 38 19 E	20 07 29 N	4 Ha.
				Total	**30.5 Ha.**
2014					
Central	Ragada	18.03.2014	84 28 05 E	19 52 06 N	30 Ha.

	Ragada	31.03.2014	84 29 21 E	19 51 02 N	10 Ha.
	Tiliki	05.4.2014	84 30 05 E	19 52 44 N	15 Ha.
	Kaliamba	05.4.2014	84 26 53 E	19 50 31 N	10 Ha.
	Ragada	05.04.2014	84 29 32 E	19 47 18 N	5 Ha.
Mujagada	Darapangia	31.03.2014	84 26 46 E	20 02 15 N	4 Ha.
	Baibali	31.03.2014	84 22 01E	19 59 22 N	5 Ha.
	Tiliki	31.03.2014	84 29 09 E	19 53 45 N	5 Ha.
	Tiliki	31.03.2014	84 29 00 E	19 53 10 N	5 Ha.
	Baibali	05.04.2014	84 23 34 E	19 59 02 N	6 Ha.
	Darapangia	05.04.2014	84 26 03 E	20 02 55 N	4 Ha.
	Darapangia	05.04.2014	84 26 05 E	20 01 40 N	4 Ha.
	Baibali	05.04.2014	84 20 36 E	19 59 32 N	5 Ha.
	Baibali	05.04.2014	84 20 01 E	19 59 37 N	5 Ha.
	Gallery	28.04.2014	84 30 34 E	19 58 36 N	2 Ha.
Gallery	Chandragiri	29.03.2014	84 39 03 E	20 08 20 N	15 Ha.
	Ambajhora	29.03.2014	84 38 57 E	20 08 55 N	10 Ha.
	Ambajhora	31.03.2014	84 39 26 E	20 07 55 N	15 Ha.
Tarasing	Paichalia	14.04.2014	84 48 49 E	20 07 30 N	1.214 Ha.
	Ambajhora	26.04.2014	84 40 04 E	20 09 12 N	0.809Ha.
				Total	**147.023 Ha.**
2015					
Central	Ragada	19.04.2015	84 28 48 E	19 52 16 N	1 Ha.
	Ragada	09.03.2015	84 28 23 E	19 47 45 N	1 Ha.
	Ragada	23.03.2015	84 26 55 E	19 50 28 N	1 Ha.
Gallery	Gallery	23.03.2015	84 38 15 E	20 07 11 N	2 Ha.
	Gallery	23.03.2015	84 35 17 E	20 10 49 N	2 Ha.
Tarasing	Brahmanasahi	23.03.2015	84 43 37 E	20 05 18 N	1.5 Ha.
J.N.Prasad	Paichalia	03.04.2015	84 45 24 E	20 14 07 N	1 Ha.
	J.N.Prasad	03.04.2015	84 47 36 E	20 01 44 N	1.5 Ha.
Mujagada	Baibali	19.04.2015	84 27 18 E	20 00 22 N	3 Ha.
	Baibali	19.04.2015	84 26 44 E	20 00 17 N	2 Ha.
				Total	**16 Ha.**

Table 2A-9 Range wise Annual integrated Fire Occurrence in the different Reserve Forest Blocks in Ghumsur North Forest Division over 10 years (2006-2015)

Range	Forest Block	Year									
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Central	Ragada	2						2		3	3
	Tiliki				1	1				1	
	Kaliamba							1		1	
Mujagada	Gallery	3		2	4	1	2	2		1	
	Ambazora	1									
	Darpangia	3	2					17	1	3	

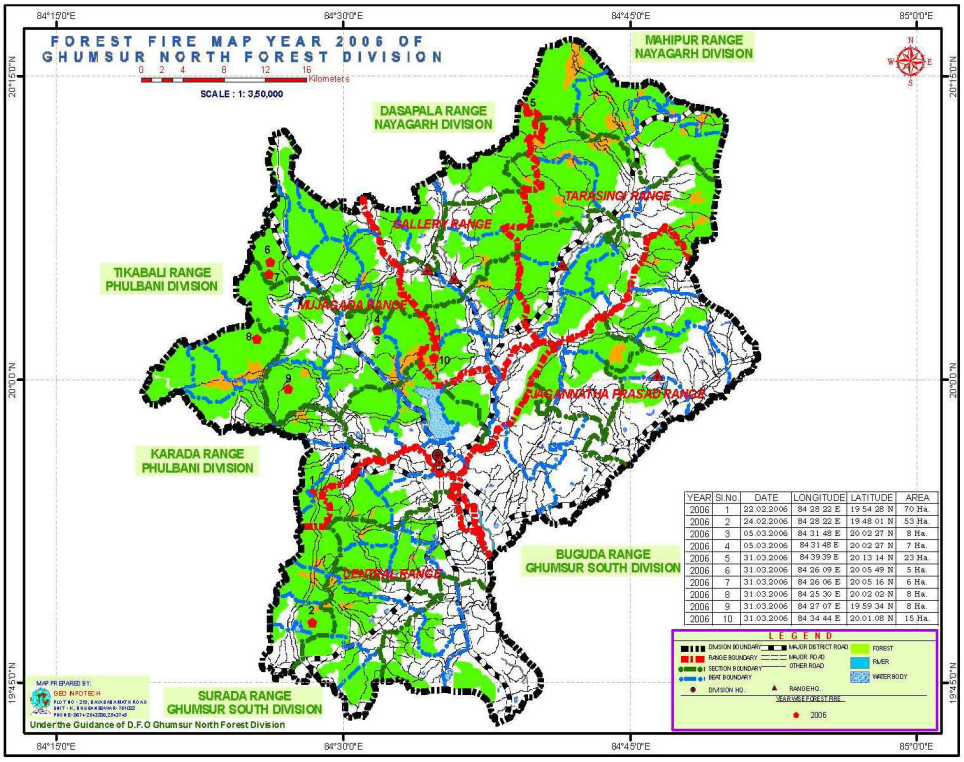
	Baibali	1	1		2			16		4	2
	Rambha		1					2			
	Paichalia			1							
	Kaliamba			1							
	Tiliki				1				4	2	
	Chandragiri				1						
	J.N.Prasad							1			
Gallery	Chandragiri		4			1	1	2	1	1	
	Ambazora									2	
	Gallery										2
Tarasing	Ghogodo				1		1		2		
	Ambazora				1					1	
	Paichalia				2					1	
	Brahmanasahi						1				1
	Gundribadi								2		
J.N.Prasad	Paichalia										1
	J.N.Prasad				1						1

2A.4.2.1.3.2 Among 22 Reserve forest blocks in the Ghumsur North Forest Division 14 blocks have fire occurrence over the last 10 years. The most fire prone blocks in Ghumsur North Forest Division are Darpangia RF and Baiballi RF with 26 fire occurrences each over a period of 10 years respectively. Maximum numbers of fire occurrences were in 2012 where 43 numbers of fire occurrences were recorded where 117.652 hecatres were affected but in the year 2006 and 2014 203 hectares and 147.023 hectares forest were affected area. Year 2010 showed the least number of fire incidences of only three in which 25 hectares of forest area was affected due to fire. This may be due to accumulation of fuel load or some anthropogenic disturbance pattern. The moderately fire prone blocks include Gallery RF, Tiliki RF, Chandragiri RF whereas rest of the nine forest blocks have low fire outbreak occurences. The rest of the blocks not enumerated in table above fall under occasional fire prone blocks. Annual expenditure spent in fire protection is presented below **Table 2A.10**

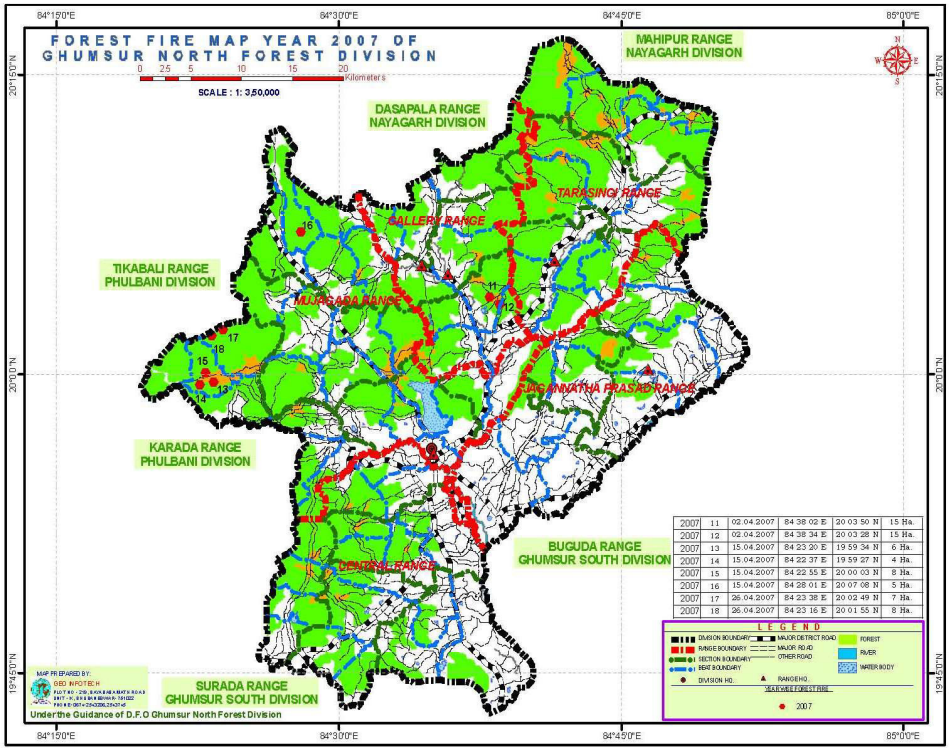
TABLE 2A.10 ANNUAL EXPENDITURE ON FIRE PROTECTION EFFECTED AREA

Year	Amount spent in Rs.
2008-09	186000
2009-10	25000
2010-11	719500
2011-12	28000
2012-13	1019000
2013-14	3371000
2014-15	578935308

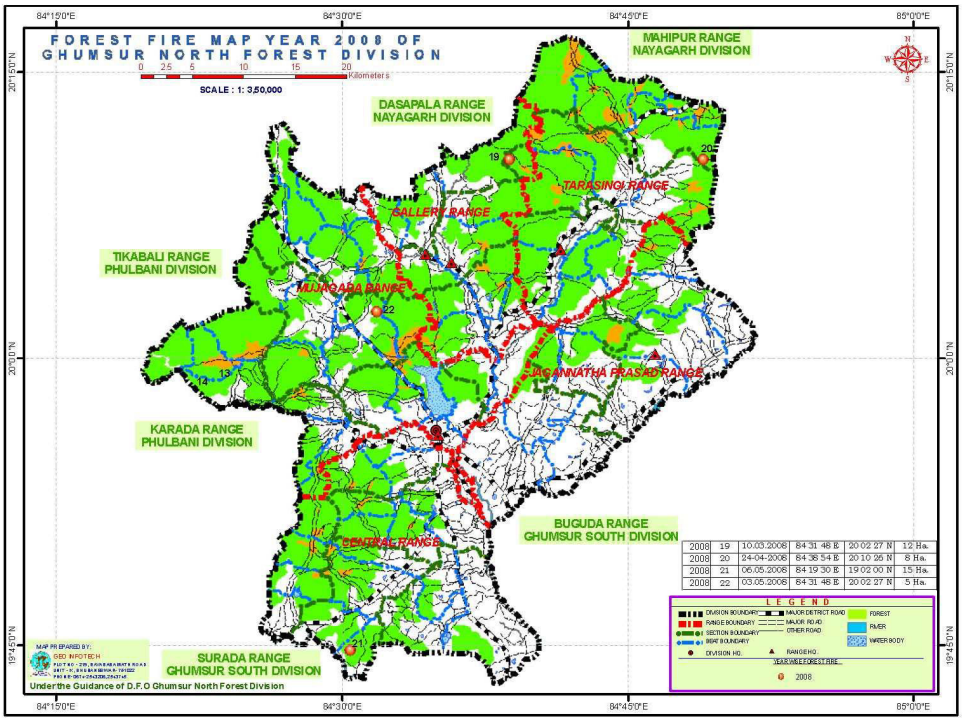
Source:Divisional Forest Officer(Ghumsur North Division)

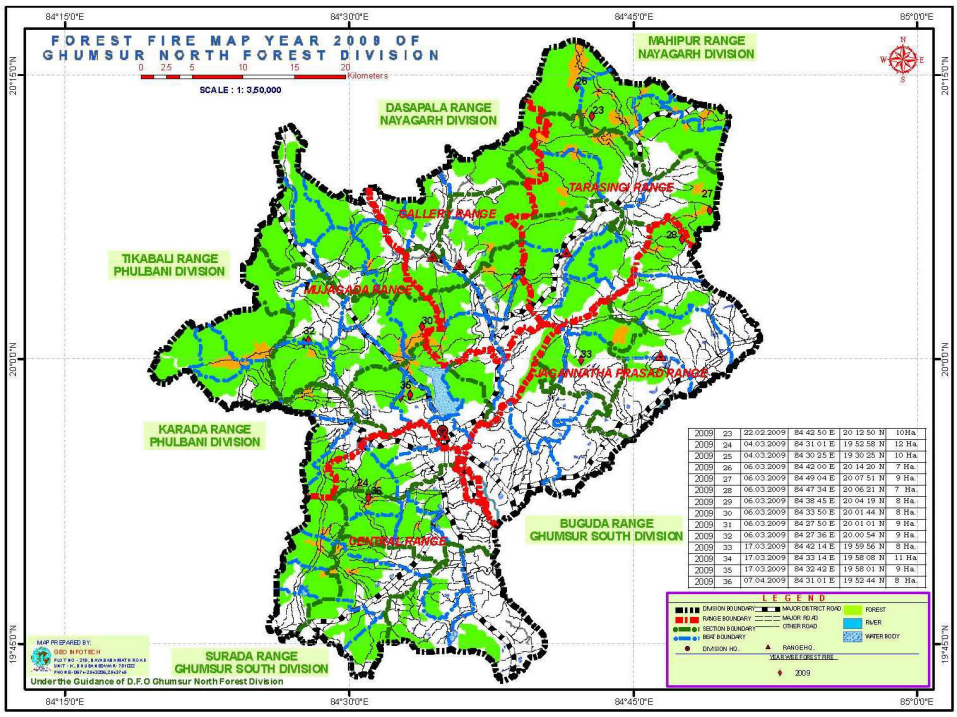


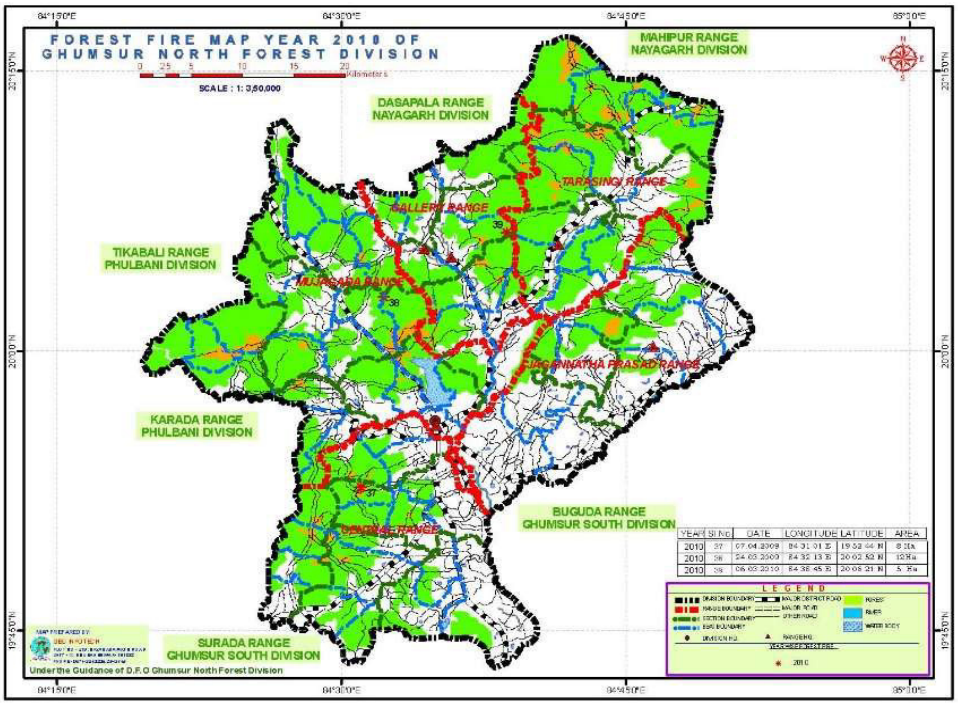
YEAR	Sl.No	DATE	LONGITUDE	LATITUDE	AREA
2006	1	22.02.2006	84 28 22 E	19 54 28 N	70 Ha.
2006	2	24.02.2006	84 28 22 E	19 48 01 N	53 Ha.
2006	3	05.03.2006	84 31 48 E	20 02 27 N	8 Ha.
2006	4	05.03.2006	84 31 48 E	20 02 27 N	7 Ha.
2006	5	31.03.2006	84 39 39 E	20 13 14 N	23 Ha.
2006	6	31.03.2006	84 26 09 E	20 05 49 N	5 Ha.
2006	7	31.03.2006	84 26 06 E	20 05 16 N	6 Ha.
2006	8	31.03.2006	84 25 30 E	20 02 02 N	8 Ha.
2006	9	31.03.2006	84 27 07 E	19 59 34 N	8 Ha.
2006	10	31.03.2006	84 34 44 E	20 01 08 N	15 Ha.

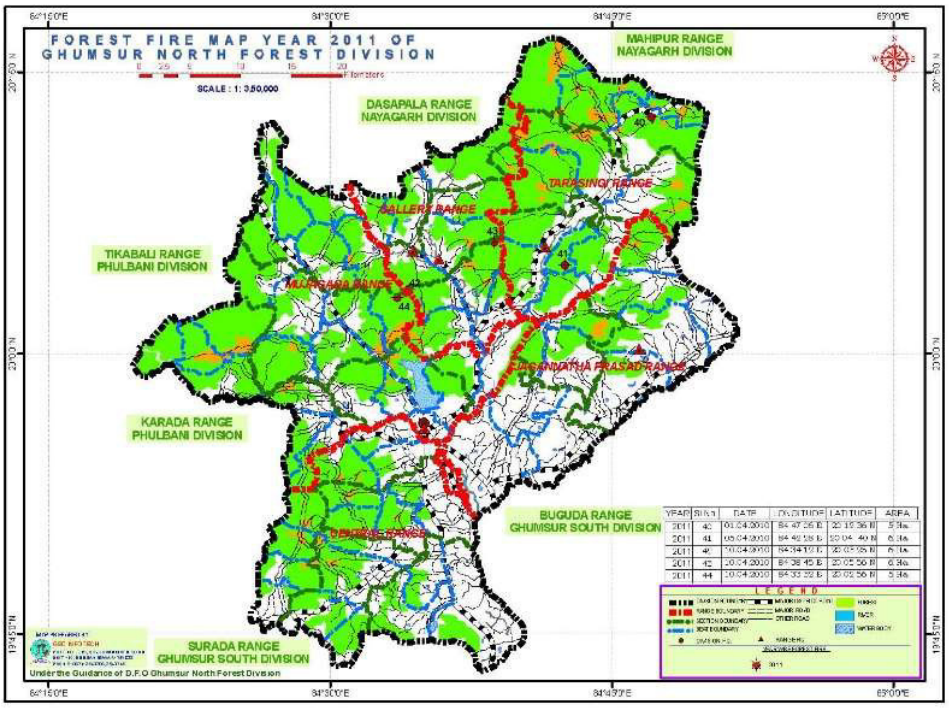


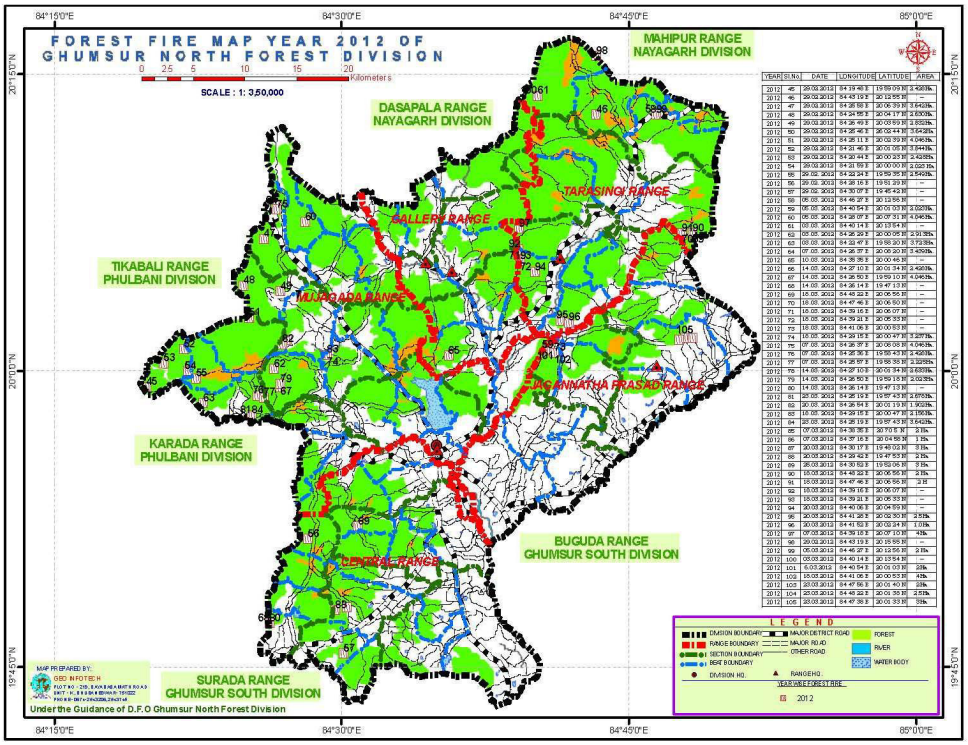
2007	11	02.04.2007	84 38 02 E	20 03 50 N	15 Ha.
2007	12	02.04.2007	84 38 34 E	20 03 28 N	15 Ha.
2007	13	15.04.2007	84 23 20 E	19 59 34 N	6 Ha.
2007	14	15.04.2007	84 22 37 E	19 59 27 N	4 Ha.
2007	15	15.04.2007	84 22 55 E	20 00 03 N	8 Ha.
2007	16	15.04.2007	84 28 01 E	20 07 08 N	5 Ha.
2007	17	26.04.2007	84 23 38 E	20 02 49 N	7 Ha.
2007	18	26.04.2007	84 23 16 E	20 01 55 N	8 Ha.

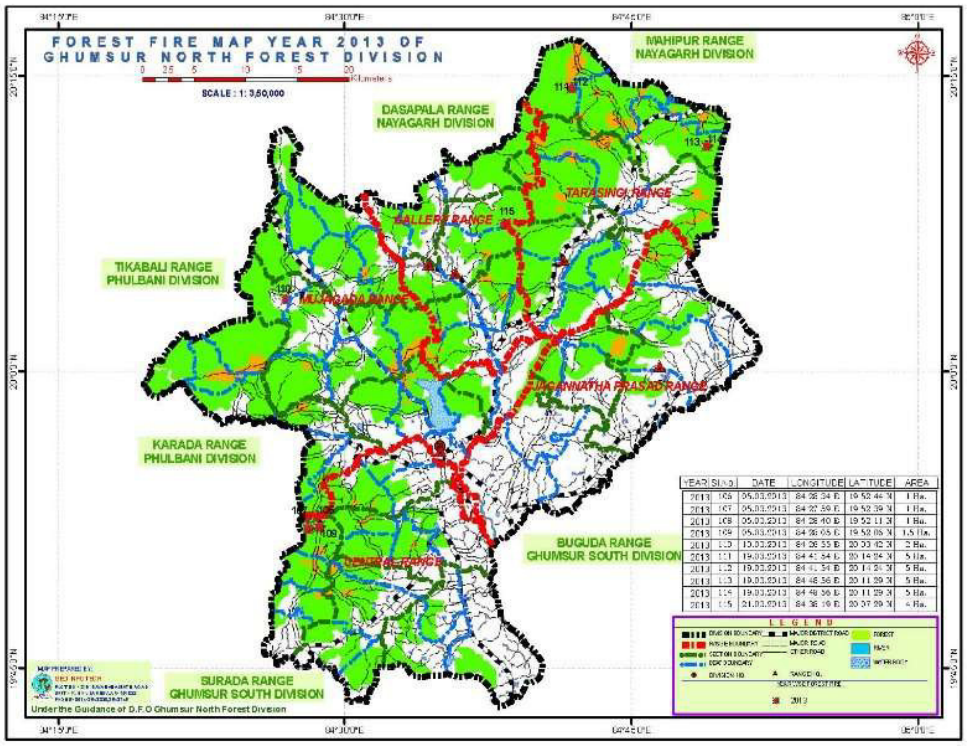

FOREST FIRE MAP YEAR 2008 OF
GHUMSUR NORTH FOREST DIVISION
SCALE : 1: 3,50,000
MAHIPUR RANGE
NAYAGARH DIVISION
DASAPALA RANGE
NAYAGARH DIVISION
TARASINGI RANGE
SALLERY RANGE
TIKABALI RANGE
PHULBANI DIVISION
MUNIGADA RANGE
JAGANNATHA PRASAD RANGE
KARADA RANGE
PHULBANI DIVISION
BUGUDA RANGE
GHUMSUR SOUTH DIVISION
CENTRAL RANGE
SURADA RANGE
GHUMSUR SOUTH DIVISION
Under the Guidance of D.F.O Ghumsur North Forest Division
LEGEND
2008 19 10.03.2008 84 31 48 E 20 02 27 N 12 Ha.
2008 20 24-04-2008 84 38 54 E 20 10 26 N 8 Ha.
2008 21 06.05.2008 84 19 30 E 19 02 00 N 15 Ha.
2008 22 03.05.2008 84 31 48 E 20 02 27 N 5 Ha.

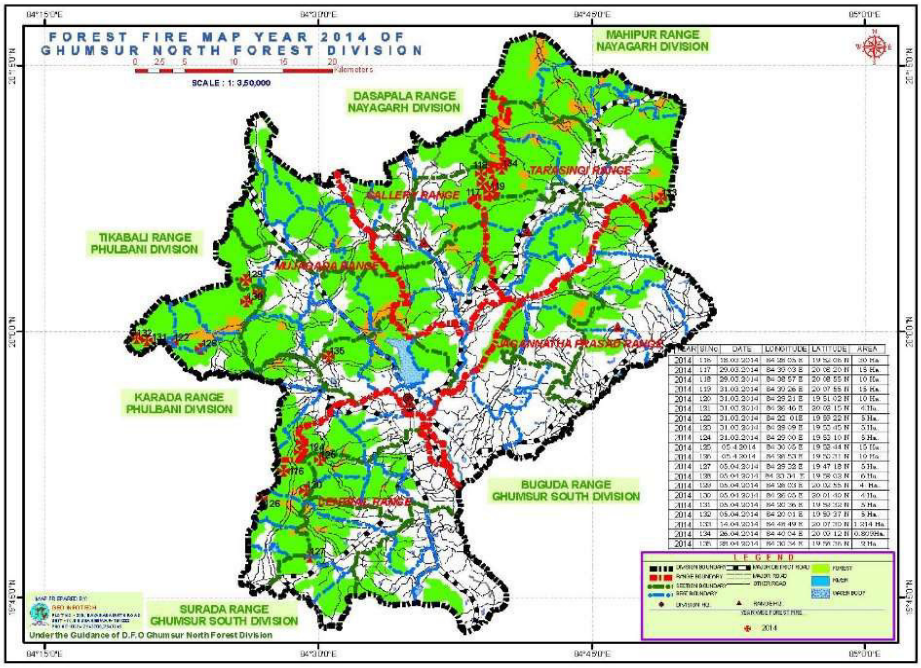

FOREST FIRE MAP YEAR 2009 OF
GHUMSUR NORTH FOREST DIVISION
SCALE : 1: 3,50,000
MAHIPUR RANGE
NAYAGARH DIVISION
DASAPALA RANGE
NAYAGARH DIVISION
TARASINGI RANGE
SALLERY RANGE
TIKABALI RANGE
PHULBANI DIVISION
MUNIGADA RANGE
JAGANNATHA PRASAD RANGE
KARADA RANGE
PHULBANI DIVISION
BUGUDA RANGE
GHUMSUR SOUTH DIVISION
CENTRAL RANGE
SURADA RANGE
GHUMSUR SOUTH DIVISION
Under the Guidance of D.F.O Ghumsur North Forest Division
LEGEND
2009 23 22.02.2009 84 42 50 E 20 12 50 N 10Ha.
2009 24 04.03.2009 84 31 01 E 19 52 58 N 12 Ha.
2009 25 04.03.2009 84 30 25 E 19 30 25 N 10 Ha.
2009 26 06.03.2009 84 42 00 E 20 14 20 N 7 Ha.
2009 27 06.03.2009 84 49 04 E 20 07 51 N 9 Ha.
2009 28 06.03.2009 84 47 34 E 20 06 21 N 7 Ha.
2009 29 06.03.2009 84 38 45 E 20 04 19 N 8 Ha.
2009 30 06.03.2009 84 33 50 E 20 01 44 N 8 Ha.
2009 31 06.03.2009 84 27 50 E 20 01 01 N 9 Ha.
2009 32 06.03.2009 84 27 36 E 20 00 54 N 9 Ha.
2009 33 17.03.2009 84 42 14 E 19 59 56 N 8 Ha.
2009 34 17.03.2009 84 33 14 E 19 58 08 N 11 Ha.
2009 35 17.03.2009 84 32 42 E 19 58 01 N 9 Ha.
2009 36 07.04.2009 84 31 01 E 19 52 44 N 8 Ha.

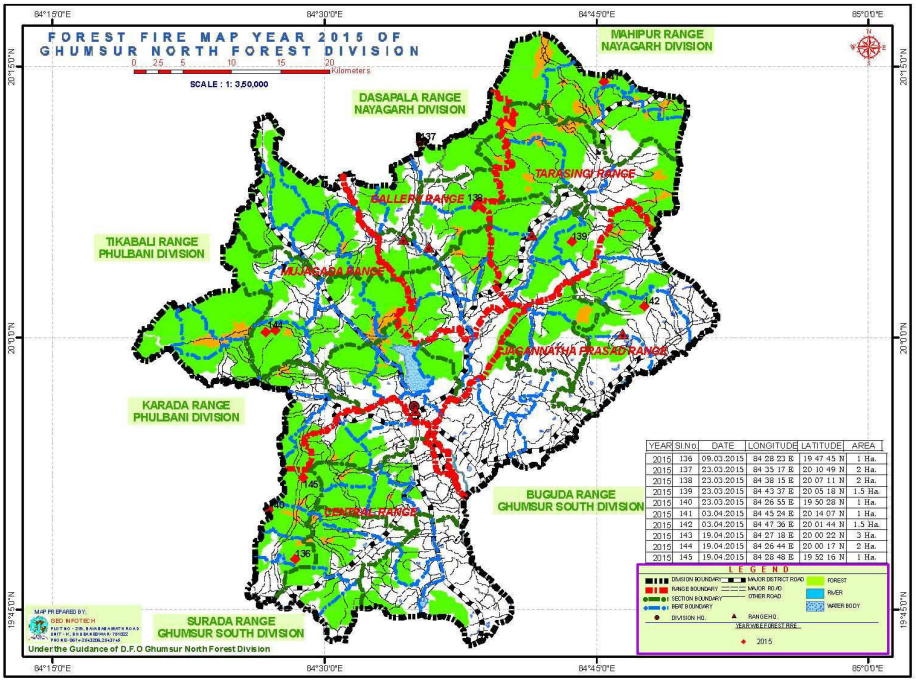

FOREST FIRE MAP YEAR 2010 OF
GHUMSUR NORTH FOREST DIVISION
SCALE : 1: 350,000
MAHIPUR RANGE
NAYAGARH DIVISION
DASAPALA RANGE
NAYAGARH DIVISION
TARASINGI RANGE
GALLERY RANGE
TIKABALI RANGE
PHULBANI DIVISION
MUNIGUDA RANGE
JAGANNATHA PRASAD RANGE
KARADA RANGE
PHULBANI DIVISION
BUGUDA RANGE
GHUMSUR SOUTH DIVISION
DEVIGAON RANGE
SURADA RANGE
GHUMSUR SOUTH DIVISION
Under the Guidance of D.F.O Ghumsur North Forest Division
LEGEND


FOREST FIRE MAP YEAR 2011 OF
GHUMSUR NORTH FOREST DIVISION
SCALE : 1: 350,000
MAHIPUR RANGE
NAYAGARH DIVISION
DASAPALA RANGE
NAYAGARH DIVISION
TARASINGI RANGE
GALLERY RANGE
TIKABALI RANGE
PHULBANI DIVISION
MUNIGUDA RANGE
JAGANNATHA PRASAD RANGE
KARADA RANGE
PHULBANI DIVISION
BUGUDA RANGE
GHUMSUR SOUTH DIVISION
DEVIGAON RANGE
SURADA RANGE
GHUMSUR SOUTH DIVISION
Under the Guidance of D.F.O Ghumsur North Forest Division
LEGEND


FOREST FIRE MAP YEAR 2012 OF
GHUMSUR NORTH FOREST DIVISION
SCALE : 1: 3,50,000
MAHIPUR RANGE
NAYAGARH DIVISION
DASAPALA RANGE
NAYAGARH DIVISION
TARASINGI RANGE
GALLERI RANGE
TIKABALI RANGE
PHULBANI DIVISION
MUNIGADA RANGE
JAGANNATHA PRASAD RANGE
KARADA RANGE
PHULBANI DIVISION
BUGUDA RANGE
GHUMSUR SOUTH DIVISION
CENTRAL RANGE
SURADA RANGE
GHUMSUR SOUTH DIVISION
Under the Guidance of D.F.O Ghumsur North Forest Division
LEGEND


FOREST FIRE MAP YEAR 2013 OF
GHUMSUR NORTH FOREST DIVISION
SCALE : 1: 3,50,000
MAHIPUR RANGE
NAYAGARH DIVISION
DASAPALA RANGE
NAYAGARH DIVISION
TARASINGI RANGE
GALLERI RANGE
TIKABALI RANGE
PHULBANI DIVISION
MUNIGADA RANGE
JAGANNATHA PRASAD RANGE
KARADA RANGE
PHULBANI DIVISION
BUGUDA RANGE
GHUMSUR SOUTH DIVISION
CENTRAL RANGE
SURADA RANGE
GHUMSUR SOUTH DIVISION
Under the Guidance of D.F.O Ghumsur North Forest Division
LEGEND





YEAR	SI.NO	DATE	LONGITUDE	LATITUDE	AREA
2015	136	09.03.2015	84 28 23 E	19 47 45 N	1 Ha.
2015	137	23.03.2015	84 35 17 E	20 10 49 N	2 Ha.
2015	138	23.03.2015	84 38 15 E	20 07 11 N	2 Ha.
2015	139	23.03.2015	84 43 37 E	20 05 18 N	1.5 Ha.
2015	140	23.03.2015	84 26 55 E	19 50 28 N	1 Ha.
2015	141	03.04.2015	84 45 24 E	20 14 07 N	1 Ha.
2015	142	03.04.2015	84 47 36 E	20 01 44 N	1.5 Ha.
2015	143	19.04.2015	84 27 18 E	20 00 22 N	3 Ha.
2015	144	19.04.2015	84 26 44 E	20 00 17 N	2 Ha.
2015	145	19.04.2015	84 28 48 E	19 52 19 N	1 Ha.

2A.4.2.2. Illicit Felling

2A.4.2.2.1. Illicit felling is one of the most common injuries to the crop and is a major cause of depletion of forests. Some section of people resort to illicit felling, to earn easy money by regular removal of old plantations and forest blocks in the vicinity of villages get reduced. The main reasons for illicit felling are as follows.

(i) To met requirement of firewood for daily cooking due to non-availability of alternative.

(ii) To meet small timber, poles and bamboos for construction, house repair, agricultural implements.

(iii) To meet the increasing demands in urban areas e.g. making furniture, construction, doors, windows etc.

(iv) To earn easy money by supplying timber to bigger towns adjoining the areas.

(v)

2A.4.2.2.2 Prone to this illicit timber smuggling are Ghogoda, Rambha, Daha, Lathipada, Baiballi, Badangi sections.Divisional mobile squad, Para forest staff, wildlife protection squad has been set up comprising of daily wage staff to check illegal poaching, transportation, illicit felling in the Division. However, the present facilities are not insufficient to combat all these pressures due to less infrastructure facility.

2A.4.2.2.3 Vehicle involves in smuggling of forest produce is seized under the relevant Section 56 of the Orissa Forest Act 1972, and is disposed by ACF and DFO of the Division. **Table 2A.11** provides the total number of vehicle seized in different categories for last 25 years. Detection is poor due to shortage of field staff to combat with the problem. The disposal position varies from one another.However; it is appreciable as more than 50 percent has been disposed. In many cases it is pending at various levels of different higher courts.

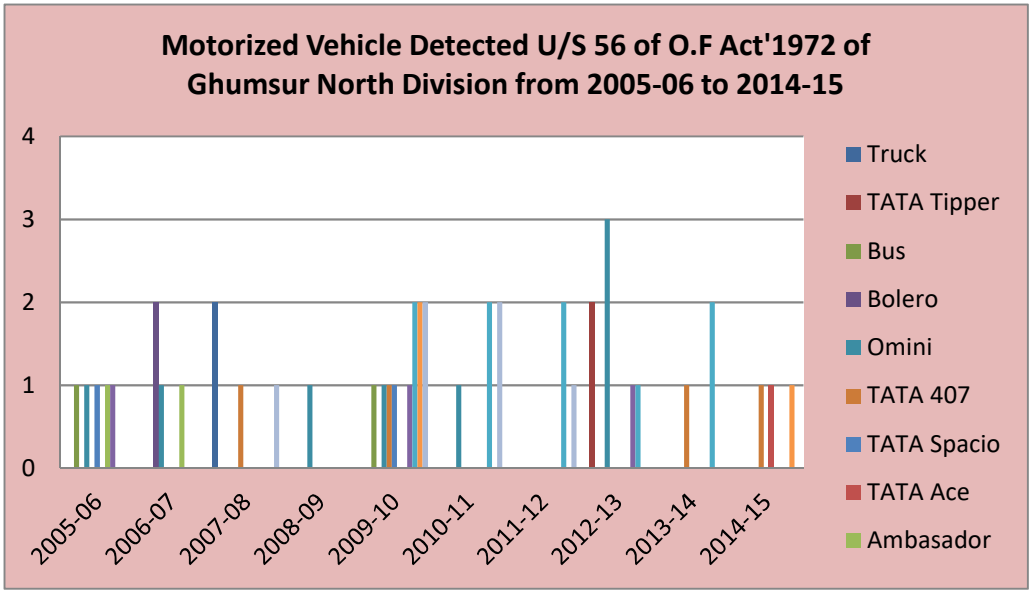
Table 2A.11: Vehicle Detected U/S 56 of O.F. Act'1972 of Ghumsur North Division from 2005-06 to 2014-15

Year	Motorized Vehicle													Non-Motorized Vehicle			
	Truck	TATA Tipper	Bus	Bolero	Omini	TATA 407	TATA Spacio	TATA Ace	Ambasador	Max Pick Up	Motor Cycle	Tractor	Auto	Cycle	Cart	Rickshaw	Trolleys
2005-06	0	0	1	0	1	0	1	0	1	1	0	0	0	24	3	0	0
2006-07	0	0	0	2	1	0	0	0	1	0	0	0	0	20	3	0	0
2007-08	2	0	0	0	0	1	0	0	0	0	0	0	1	18	1	0	0

2008-09	0	0	0	0	1	0	0	0	0	0	0	0	0	8	1	0	0
2009-10	0	0	1	0	1	1	1	0	0	1	2	2	2	20	0	0	0
2010-11	0	0	0	0	1	0	0	0	0	0	2		2	10	0	0	0
2011-12	0	0	0	0	0	0	0	0	0	0	2	0	1	3	0	0	0
2012-13	0	2	0	0	3	0	0	0	0	1	1	0	0	18	0	0	0
2013-14	0	0	0	0	0	1	0	0	0	0	2	0	0	4	0	0	0
2014-15	0	0	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0

Source: DFO, Ghumsur North Division,Bhanjanagar

FIGURE: MOTORIZED AND NON-MOTORIZED VEHICLE DETECTED U/S 56 OF O.F. ACT'1972 OF GHUMSUR NORTH DIVISION FROM 2005-06 TO 2014-15



2A.4.2.2.4 Forest offence cases detected in the division and staus of case pending in the court of law is presented in **Table 2A.12.** Figure represents five years trend.

Table-2A.12 Forest offence cases in Ghumsur North Division from 2005-06 to 2015-16							
Year 2005-06 to 2015-16	No. of OR cases detected	UD cases detected	Total No of cases	No. of cases compounded	Prosecution submitted to court	Persons Involved	C. Fees Realized
2005-06	503	276	779	256	233	508	37000
2006-07	456	238	694	289	156	461	30000
2007-08	446	231	677	336	94	450	38000
2008-09	435	150	585	357	51	441	59000
2009-10	671	179	850	535	46	682	110000
2010-11	832	163	995	739	74	837	114800
2011-12	851	112	963	770	8	861	227517
2012-13	912	178	1090	818	2	925	136434
2013-14	891	137	1028	853	8	908	134160
2014-15	706	116	822	704	3	731	122030

Source: DFO, Ghumsur North Division,Bhanjanagar

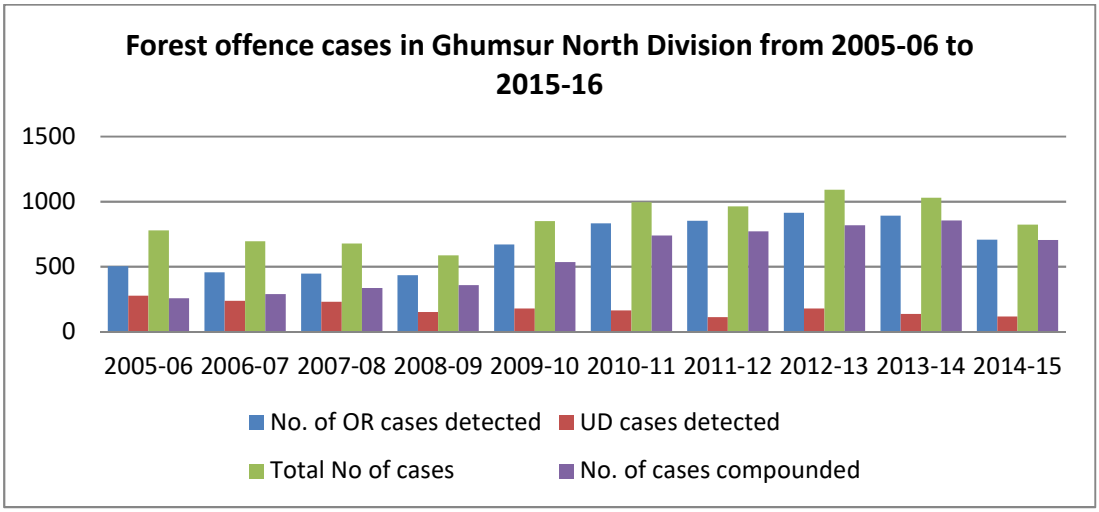


Figure: Graphical representation of OR, UD, and Compunded Cases.

Table 2A.13 provides information on the year wise quantity of forest produce i.e. timber, firewood, poles, bamboo and other MFP items and minor minerals seized in this division.

TABLE 2A.13 SEIZURE OF FOREST PRODUCE IN GHUMSUR NORTH FOREST DIVISION FROM 2005-06 TO 2014-15					
Year	Timber (in cum)	Fire Wood (in MT)	Poles (in Nos)	Bamboo (in Nos)	Charcoal (MT.)/Kendu leaf (bundle)
2005-06	159.17	4.736	117	0	0.57
2006-07	148.295	5.65	774	346	0.11
2007-08	119.996	6.025	1043	47	0.34

2008-09	63.8133	14.75	981	274	1.84
2009-10	75	12.48	2590	409	0.37
2010-11	88.831	12.02	1887	394	0.7
2011-12	81.1495	12.775	7935	177	0.315
2012-13	72.9566	17.63	4488	67	0.16
2013-14	65.4187	13.965	4193	38	KL-1300 bundle 0.22
2014-15	73.5604	1.192	3984	42	0.69

2A.4.2.2.5 Encroachment in the form of shifting cultivation is very less prevalent in the Division. In the process small hamlets form a village. Encroachment is generally for homestead and agriculture purpose. Ranges which have been widely affected are Central, Tarasingi, Mujagada, Gallery. In some forest blocks it presents a very devastated appearance due to fragmentation of the forests. The Block wise area settled under Forest Rights Act to the claimant is presented in **Table 2A.14.** The Range and RF wise settled under Forest Rights Act to the claimant is presented in **Table 2A.15**

Table 2A.14. The block wise area settled under forest rights act, 2006 in ghumsur north division						
Name of Block	**Claim petitions approved & forwarded from SDLC to DLC**	**Claim petitions approved by DLC & titles issued**	**No. of Beneficiaries**	**Total area Involved in Ac.**	**Reserve Forest area in Ac.**	**Revenue Area in Ac.**
1	2	3	4	5	6	7
Bellaguntha	37	37	37	120.982	45.947	75.035
Surada	132	132	132	444.250	441.253	2.997
Jagannathprasad	329	329	329	857.903	593.45	264.453
Bhanjanagar	268	268	268	490.892	337.438	153.454
Total	**766**	**766**	**766**	**1914.027**	**1418.088**	**495.939**

Table 2A.15. Range and rf wise implementation of forest rights act, 2006												
Name of Range	Name of R.F. where titles settled.	Compartment No.	Claim petitions approved by DLC. & titles issued.	No of beneficiaries	Total Forest Area settled in acre	Name of C.D. Block	No of claim petition approved & forwarded by SDLC.	Claim petition approved by DLC.	No of beneficiaries	Total area settled		Grand total.
										Reserve Forest.	Revenue.	
Mujagada	Rambha	C/ 5,3,	54	54	167.548	Bhanjanagar	268	268	268	337.438	153.454	490.892
	Baibali.	C/4,6,7,11	57	57	70.215	Bellaguntha	37	37	37	45.947	75.035	120.982
Central	Kaliamba	C/2,6,	26	26	45.947	Jagannath prasad.	329	329	329	593.45	264.453	857.903
	Vinjhigiri	C/ 1,3,4,	35	35	139.000	Surada	132	132	132	441.253	2.997	444.250
	Ragada	C/ 7,8,9,6,10	97	97	302.253							
Gallery	Gallery	C 16	51	51	61.886							
	Chadhiapalli	C /1	25	25	37.789							
Tarasing	Gundiribadi	C/2,3	77	77	266.670							
	Ambajhara	C/10,13	31	31	70.310							
	Paichhelia	C/4	23	23	11.300							
	Ghogoda	C/4,3,5,	64	64	245.170							
	Grand Total:-		**540**	**540**	**1418.088**		**766**	**766**	**766**	**1418.088**	**495.939**	**1914.027**

2A.4.2.3.Grazing: Many tribal villages are located in close proximity to different forest blocks. All animals depend mainly on forest for grazing through out the Division. Availability of grasses and fodder for their cattle being scanty in villages, forest is the only alternative source. The forests close to human habitation are most prone to heavy grazing. Grazing is a serious problem as it affects natural regeneration of several species. As result young recruits and saplings badly damaged due to concentrated and unregulated over grazing. Soil compacting and erosion are also caused due to heavy incidences of cattle grazing. The status of forests and the intensity of grazing in Ghumsur North Division are provided in **Table 2A.16.**

Table 2A. 16 Grazing Intensity in forest section ghumsur north forest division.		
Name of the Forest Range	**Grazing Intensity**	**Name of the Forest Block**
Mujagada	**Light**	Baiballi,Rambha,Mujagada,Daha
	Moderate	NIL
	Heavy	Bhanjanagar,
Central	**Light**	Kaliamba,Lathipada,Ragada,
	Moderate	Bhanjanagar
	Heavy	Gangapur
Gallery	**Light**	Dholpita,Badangi
	Moderate	Tilisingi
	Heavy	NIL
Tarasingi	**Light**	Gayaganda,Tarasingi, Ghogoda
	Moderate	NIL
	Heavy	NIL
Jaganathprasad	**Light**	Gereda
	Moderate	Jaganathprasad
	Heavy	Bellaguntha

2A.4.2.4. MINING

2A.4.2.4.1 No Mining of major minerals in the Division. Other minor mineral like murum and boulders are collected in large scale on a regular basis by the local people to earn their livelihood. This collection is destructive to forests and will accelerate erosion of top soil and damage habitat. The Divisional Forest Officer should keep a strict vigil to protect illegal collection of stones and boulders from forest areas in order to prevent erosion.

2A.4.2.5. SCIENTIFIC INFORMATION ON FUNGUS / INSECT PESTS

1. **FUNGUS**

Many fungi and parasites have been found to be adversely affecting the crops. Some of them are:

(i) ***Loranthus scurrula*:** Loranthus mainly attacks sal poles and trees. The extent of damage it causes to the host tree has not yet been exactly assessed. It does not cause mortality in Sal, but is believed to be responsible for the unsoundness of the host tree. It is also seen affecting on char and mahua trees.

(ii) ***Polyporus shoreae*:** It is a root fungus, which affects damper portion of Sal. It causes death and drying of healthy Sal trees by destroying their root system and making them incapable of drawing nutrients and water from the soil. The infected trees get uprooted easily and infestation of the roots can be clearly seen in such uprooted trees.

(iii) ***Fomes fastuous*:** It causes heart rot of Sal in the butt region. It infests trees through injury principally caused by fire and coppicing. In early stages the heart wood shows dark brown stains in patches, which develop later into small pockets. Under active decay these pockets get filled with white decayed fibers, which disintegrate in later stages to create empty brown pockets. It also attacks the associate species of sal.

(iv) ***Hymenochaete rubiginosa:*** This fungus causes pocket rot in sal heart wood. Due to its attack the tissues become white and fibrous surrounded by brown wood. Externally sporophores appear in tiers, one above the other, in close cluster from the stem of affected trees. It is seen in all the forest blocks having good sal forest in this division and attacks associates of Sal like Piasal.

(v) ***Ganoderma lucidum:*** This fungus attacks sissoo plantations. The pathogen attacks and kills the bark and causes white spongy rot in the sapwood. Infested trees should be completely removed to avoid spread of disease. Khair is also infested by it.

(vi) ***Fomes caryophylli*:** Decay due to this fungus commonly known as '**gauji' or 'Sambhar ankhi**' because of the characteristics appearance of punk knots which look like pox mark or eyes of Sambhar deer. It is heart rot of sal and is commonly seen in all the forest patches where sal is predominant species. In early stages of its attack, heartwood is stained-slightly dark to brown then ring rot is caused. Later decayed wood becomes spongy and after causing appreciable decay, fungus emerges through the sound sapwood into the bark in the form of pink knots. Bark in the region of eye (knot) is gradually shed off. Epicormic branches appear but they do not always indicate heart rot. Sporophores rarely develop.

2. INSECTS

The damage caused to forests and plantations by defoliators, borers, and other insects have not been estimated quantitatively. Some of the harmful insects are:

(i) ***Hoplocerambyx spinicornis*:** This sal heartwood borer is found to attack un-barked logs of sal, particularly during the rains. It also attacks sal trees in poor dry type of forests.

(ii) ***Weeval cytotrachelus longipes*:** This causes damage to the top of new bamboo culms.

(iii) ***Haplia machaeralis*** (teak skeletoniser): This causes damage to teak leaves attack is more in September and October.

(iv) **Hyblea pleuera (teak defoliator):** Causes damage to teak leaves in natural teak blocks and plantations.

2A.4.2.6. EPIPHYTES AND CLIMBERS

2A.4.2.6.1 Epiphiyte of tropical Dendrobium spp are commonly seen in moist areas. A detailed study could be not undertaken for want of resources, including skilled personnel. Climbers menace is very common. *Combretum decandrum, Bauhinia vahlii, Butea superba* are most common in the Division. During peak summer this climbing palas blooms manipulate a red canopy particularly in Balliguda Range. *Bahunia vahlii* also riches top of the canopy and affects the growth of sal tree. They are found to have damaging effect on the young seedlings. Other important climbers are *Butea parviflora, Milletia auriculata, Smilax macrophylla, Acacia pinnata.* Climbers like *Dioscorea bulbifera, Entada spp*. are also found.

CHAPTER-II B

FOREST FAUNA

2B. Forest Fauna: Ghumsur North Division is one of the oldest forest divisions in Orissa, which was managed from 1938 onwards. The forest of this Division was safe habitat for varieties of wild life in the past, since human population was minimal. It was once the abode of several carnivorous and herbivorous animals. Due to continuous increase in population, tree removal, construction of new roads, Dams, poaching, fire, wild life population is depleting fast. Wildlife population is also decreasing due to many other reasons i.e. increase in encroachment, demand on forests for fuel-wood, inadequacy of forest staff to combat poaching, lack of awareness among local people. However, some habitat still exists as paradise of wild animals. The major species, found in Ghumsur North Division, having highest conservational importance are leopard, Elephants, Indian Sloth Bear, Bison, Pangolins, Spotted deer, Sambar, Black Bucks, Barking deer and others. Availability of rich food source, plenty of rivers and streams, natural saltlicks provide a congenial home for the wild animals and elephant in particular. The Range wise distribution of wild animals rarely and frequently seen in important forest blocks is given **Table 2B-1**.

Table 2B-1 Range wise distribution of Wild animals in Forest Blocks of Ghumusur North Division

Sl. No.	Name of the Range	Name of Forest Block	Usually seen	Rarely seen
1	Central	Tiliki	Wild boar, Spotted deer, Barking deer, porcupine, Rabbit	Elephant
2	Central	Kaliamba	Wild boar, Spotted deer, Barking deer, Bison, Peacock, Leopard, Porcupine, Rabbit, Giant squirrel, Sambar, Gurandi, Pangolin	Elephant
3	Central	Ragada	Wild boar, Spotted deer, Barking deer, Peacock, Leopard, Porcupine, Rabbit, Sambar, Gurandi, Pangolin	Elephant
4	Central	Vinjigiri	Wild boar, Spotted deer, Barking deer, Porcupine, Rabbit, Sambar, Gurandi, Pangolin	Elephant
5	Central	Malati	Wild boar, Spotted deer, Barking deer, Bison, Peacock, Leopard, Porcupine, Rabbit, Sambar, Gurandi, Pangolin	Elephant
6	Central	Dumudumi East	Wild boar, Spotted deer, Barking deer, peacock, porcupine, Rabbit, Sambar, Gurandi, Pangolin	Elephant
7	Central	Dumudumi West	Wild deer. Spotted deer, Barking deer, Peacock, Porcupine, Rabbit, Sambar, Gurandi, Pangolin	Elephant
8	Tarasingi	Chandragiri	Spotted deer, Sambar, Barking deer, Wild boar, Hare, Porcupine	Elephant
9	Tarasingi	Ambhazora	Sambar, Barking deer, Wild boar, Hare, Porcupine, Elephant, Bison	Leopard
10	Tarasingi	Gundiribadi	Barking deer, Wild boar, Hare, Porcupine	Elephant
11	Tarasingi	Ghogada	Spotted deer, Barking deer, Wild boar, Elephant	Elephant/

				Leopard
12	Tarasingi	Paichalia	Barking deer, Wild boar, Elephant	Leopard
13	Tarasingi	Brahamansahi	Barking deer, Spotted deer, Sambar, Porcupine, Wild boar, Elephant	Leopard
14	J.Prasad	J.Prasad	Barking deer, Wild boar	Leopard
15	J.Prasad	Paichalia	Barking deer, Wild boar	Leopard
16	Gallery	Chandragiri	Wild boar, Sambar, Spotted deer, Barking deer, Bear, Leopard, Bison, Rabbit, Gurandi, Pangolin	Elephant
17	Gallery	Ambazora	Wild boar, Sambar, Spotted deer, Barking deer, Bison, Peacock, Leopard, Porcupine, Rabbit, Giant Squirrel, Gurandi, Pangolin	Elephant
18	Gallery	Dimirijholi	Wild boar, Sambar, Spotted deer, Barking deer, Peacock, Leopard, Porcupine, Rabbit, Squirrel, Gurandi, Pangolin	Elephant
19	Gallery	Gallery	Wild boar, Spotted deer, Barking deer, Sambar, Gurandi, Pangolin	Elephant
20	Gallery	Chadhiapalli	Wild boar, Spotted deer, Barking deer, Peacock, Rabbit, Bear, Gurandi, Pangolin	Elephant
21	Mujagada	Gallery	Wild boar, Sambar, Spotted deer, Barking deer, Bison, Peacock, Elephant, Porcupine, Rabbit, Giant Squirrel, Gurandi, Pangolin	Elephant Leopard
22	Mujagada	Darpangia	Wild boar, Sambar, Spotted deer, Barking deer, Bison, Peacock, Elephant, Porcupine, Rabbit, Giant Squirrel, Gurandi, Pangolin	Leopard
23	Mujagada	Rambha	Wild boar, Sambar, Spotted deer, Barking deer, Bison, Peacock, Elephant, Porcupine, Rabbit, Giant Squirrel, Gurandi, Pangolin	Leopard
24	Mujagada	Baibali	Wild boar, Sambar, Spotted deer, Barking deer, Bison, Peacock, Elephant, Porcupine, Rabbit, Giant Squirrel, Gurandi, Pangolin	Leopard
25	Mujagada	Kullada	Wild boar, Spotted deer, Barking deer, porcupine, Rabbit	Elephant

Source: As per observation during field work.

2B.1. (a) Mammals

2B.1.1 Distribution of Mammalian Species

2B.1.1.1 A wide variety of wild animals such as Leopard (*Panthera pardus*), Spotted deer (*Axis axis*), Elephant (*Elephas maximus*), Haeyna (*Hyaena hyena*), Porcupine (Hystrix indica), Hare (*Lepus nigricicollis*), Barking deer (*Muntiacus muntijack*), Indian giant squirrel(*Ratufa indica*),Pangoline (*Manis crassicaudata*), Jungle cat (*Felis chausaffinus*), Wild boar (Susscrofa cristanus), Sloth bear (*Melursus ursinus*), Jackal (*Canisaures gintsquirrel*), Monkey (*Presbytis entellus*), (*Rhesus macaque*), (*Macaca mullata*), Mangoose (*Heypestes edwardsi*), Flying fox bat (*Pterosus quiganteus*), Sambar (*Cervus unicolor*), Small Indian ceivet (*Viverricula indica*), Peacock (*Pavo cristatus*). Details of mammals found in this division have given in **GLOSSARY.**

2B.1.2. Some of the important mammals found in the division are described below

2B.1.2.1. Leopard *(Panthera pardus)*

2B.1.2.1.1 There has been a recorded sighting of leopard in Central, Mujagada, Gallery, Tarasingi ranges. But there has been no direct sighting of leopard in Jaganathprasad Range. Leopards are frequently sighted in Chandragiri RF C/11 of Gallery Range Chandragiri RF C/9 of Tarasingi Ranges. Similarly leopards are also sighted in Kallimba RF of Central Range as well as Ramba and Darpangia RF of Mujagada range. There has been no report of cattle kill or human injury due to leopard attack in this Division. There has been no systematic record of sighting of leopards in the Division but information was collected based on direct sighting in different ranges has shown in **Table 2B.2**. Therefore it can be concluded the prevalence of the leopards is in all 5 ranges. The forest of the Division have sizeable prey base for the leopard such as Wild boars, Spotted deer, Sambar, Barking deer, Black bucks, etc. However the absence of the leopards in most forest blocks may be attributed to the higher level of the disturbance and less cover in the forest blocks.

TABLE 2B.2 Direct sighting of leopard in Ghumsur North Division		
Year	**No of leopard**	**Place of sighting**
2014	2	Kaliamba RF of central Range and Mujagada Range.
2015	3	Chandragiri RFC/15 of gallery Range and Chandragiri RF C/9 of Tarasingi Range

2B.1.2.2. Elephant (*Elephus maximus*)

2B.1.2.2.1 Elephant is the most priority species in the area. Due to availability of perennial water sources, bamboos, and fodder species in the tract of elephants are reason for increasing of population in the division. The elephant population is concentrated in all five ranges. Among that, Jaganathprasad Range of this division is having 6 numbers of residential elephant's population which is confined in the Jaganathprasad RF area. Remaining 14 numbers of elephants are basically migratory viz 1. Phulbani division to Mujagada Range, 2. Ghumsur South Division to Central Range, 3. Nayagarh forest Division to Tarasingi Range. The population status of elephants in different census periods is summarized in **Table 2B-3.**

TABLE 2B-3 CENSUSES OF ELEPHANTS IN GHUMSUR NORTH DIVISION										
Year	**Tusker**	**Makhna**	**Adult cow**	**Adult bull**	**Sub-adult Bull**	**Sub-adult cow**	**Juvenile**	**Sub-adult unknown sex**	**Calf less than 4'**	**Total**
2007	3		8			1			5	17
2010	4	1	5			1			2	13
2012			7	2	1	3	3		1	17
2015	2		6		4	5	3		1	21

2B.1.2.3 Bears

2B.1.2.3.1 No census figure of bears in the division is available. However based on the feeding signs, fecal dropping and human injuries it can be concluded that bears are found in almost all the forest blocks of the Division. In each forest block bears usually occupy the higher rocky patches of the hills. Going by the offence register it can be concluded that they are more prevalent in Tarasingi, Central , Mujagada ,Gallery Ranges.

2B.1.2.3.2 The habitat of forests in Ghumsur North Division is quite ideal for bears. The thick rich Sal forests and deciduous forest present in most forest blocks are a good cover for the bears. Also the barriers of the thorny bushes are being consumed by bears. All the forest blocks are having rocky crevasse and caves mostly on the higher reaches. They provide shelter for the bears. The forests also have plantations of cashew & mango, the ripe fruits of which are delicacy for the bears. *Madhuca latifolia* (Mahua) are well distributed on the fringes of the forests. They provide rich source of diet for the bears during summer. There have been a few cases of a bear being killed by Electrocution in particular Central ranges but there has been no case of intentional poaching of bears in Ghumsur North Division.

2B.1.2.4 Hyena and Jackal

2B.1.2.4.1 Hyena and Jackals are sighted in almost all the forest blocks of the Division. Hyenas have been reported of cattle lifting in Tarasingi Range. This has been confirmed based on the pug mark impressions. Jackals are often found moving along the village fringes during the evening hours and early morning. Jackals scavenger poultry wastes of the habitations, feed on rodents, injured and dead Black bucks, Barking Dear, etc.

2B.1.2.5 Gaur Indian Bison (*Bos Gaurus*)

2B.1.2.5.1 Out of five ranges, The Gaur or Indian Bison is only found in the central range. Two numbers of herds are found each in Malati RF and Kaliamba RF C/5. The vast stretch of bamboo forests along with grassland are acting as a habitat for those bison's. Officially no bison census has been conducted. But the expected population will be around 15 to 20 numbers.

2B.1.2.6. Deer

2B.1.2.6 .1 Barking deer, Sambar and Spotted deer are found widely in the forests of the Division. Spotted deer and barking deer is the most prevalent and is found in almost all the forest blocks of the Division.

2B.1.2.7. Black Buck

2B.1.2.7.1. The black buck population is present only in Jaganthprasad Range of Ghumsur North Division. There has been no sighting of blackbuck in this division prior to the 2002. The present populations of black buck all are migrated from the Bhetnoi Blackbuck Sanctuary of Ghumsur North Division. The animals feed on grasses that grow luxuriantly on the bunds of agricultural fields during the day and retire to adjacent forest blocks by night. There are a number of uncultivated and fallow lands among agricultural fields which are being used by the black bucks as feeding and resting places. The blackbucks have been reported to feed on pulse crops that are sowed during December. However there has been no animosity towards the animals by the local populations as the local people accord religious importance to these animals. First time during 2015, census has been carried out in this division. The population of black bucks shown in the census figures of 2015 is in **Table 2B.4**

Table 2B.4 Census of Black buck in Ghumsur North Division in the year - 2015

Unit	Male (In Nos)	Female (In Nos)	Young (In Nos)	Total (In Nos)
Unit – I(Sadarpadar)	14	8	0	22
Unit-II (Nuagaon Thakurani	0	0	0	0
Unit-III(Kebiri Basangatota	15	35	6	56
Unit-IV (Kamasar Babaji Matha)	9	11	4	24
Unit-V (Banatumba Padar)	12	13	5	30
Unit0VI (Sutumsara Padar)	7	7	1	15
Unit-VII (Tanarada Bridge Paaramala	3	14	4	21
Total	**60**	**88**	**20**	**168**

2B.1.2.8 Indian Giant Squirrel (*Ratufa indica*)

2B.1.2.8.1 It is distributed in Central and Mujagada ranges of Ghumsur North Division. Especially large number of populations can be seen in Kalimba RF of Central Range. No officially census has been done till now.

2B.1.2.9 Wild boar (S*us scrofa*):

2B.1.2.9.1. Wild boar is considered to be the wild antecedent of the domestic pig of the Indian subcontinent. It is prevalent in the all the ranges. Wild boar is the major reason for increasing the Man- Animal conflict in the division.

2B.1.3. Avifauna: (b) Birds: A large variety of birds are seen in the forest areas. 154 species of birds as detailed in list of common animals and birds are found in this division. Some of the common birds found in the division Cuckoo, Mynah, Grey Partridge, Jungle Fowl. Peafowl, Tree pie, Blue jay, Bulbul, Parakeets and other birds like Crows, Kites, Red Lapwings, white robin, night jar, white vented and red vented bulbul, doves, Wood peckers, Koel, Golden orioles, Drango and Grey horn bills. Census of birds to assess the variety and population should be carried out in

future. Gradually the ecologically value of birds is gaining importance. But, No hunting of bird is reported till now.

2B.1.3.1. Census of waterfowl

2B.1.3.1. As part of routine practice, the mid-winter water fowl census is done in every division from in all the prominent water bodies under the territorial jurisdiction of the division which witness gathering of migratory birds in significant numbers worth consideration. In Ghumsur North Division there are 19 such water bodies which witness this annual gathering of migratory birds. The range wise list of all these water bodies along with the GPS locations are given below in **Table 2B-5** and the Range wise and water body wise census results of the past 6 years from 2010 to 2015 of the division is given in **Table 2B-6**.

Table 2b-5 List Of Water Reservoirs Having Migratory Water Fowl Congregation In Ghumsur North Division

Sl No.	Name of the Range	Name of the wetland	GPS Reading
1	Central	Alikua MIP	N:19.474401 E:84.273003
		Dubalunda Reserver	N:19.502402 E:84.341900
		Bori Sagar MIP	N:19.452704 E:84.352102
2	Tarasing	Khiladi MIP	N:20.073501 E:84.421703
3	Gallery	Kumbhipalli MIP	N:20.055502 E:84.369205
		Banjarsahi Reserver	N:20.073375 E:84.363265
		Beruanbadi MIP	N:20.031807 E:84.372505
		Lembhei MIP	N:20.023202 E:84.383601
		Golabandha MIP	N:20.070401 E:84.335602
		Pudurungi MIP	N:20.035709 E:84.380903
		Nuapalli MIP	N:20.074200 E:84.343302
		Budhagocha MIP	N:20.043506 E:84.371806
		Baliapata MIP	N:20.001504 E:84.351509
		Samarada MIP	--
4	Mujagada	Rasulakonda Reservoir	N:19.570509 E:84.351609
		Daha MIP	N:19.580008 E:84.275103
		Bhanjanagar MIP	N:19.591309 E:84.340407
		Bhitiribedigoba MIP	N:20.060403 E:84.273301
5	J.N.Prasad	Lankagada MIP	N:19.595702 E:84.464303

Table 2b-6. Detailed range wise information on mid-winter waterfowl census from 2010 to 2015 in ghumsur north division					
Sl No.	**Year**	**Name of the Range**	**Water bodies carried for Census**	**Population of mid-winter water fowl Census**	**Total**
1	**2**	**3**	**4**	**5**	**6**
1	**2010**	**Mujagada**	Bhitiribedigoba (M.I.P)	Heron	30
2				Gray Crane	15
3				Cool goose	8
4				Dahuka	6
5			Daha Reservoir	Heron	52
6				Gray Crane	20
7				Cool goose	9
8				Dahuka	11
9			Bhanjanagar	Heron	72
10				Gray Crane	29
11				Cool goose	25
12				Dahuka	17
13				**Total**	**294**
14		**Central**	Dubalunda Ghai	Spot-billed pelican	12
15				Dalmation pelican	52
16				Cattle Egret	60
17				Asian openbill	9
18				Greylag goose	15
19				Spot-billed duck	22
20				Dahuka	15
21				White king fisher	10
22			Alikua M.I.P	Little cormorant	22
23				Cattle Egret	15
24				Spot-billed duck	146
25				Dahuka	24
26			Borisagar	Indian shag	32
27				Cattle Egret	44
28				Asian openbill	20
29				Spot-billed duck	140
30				Dahuka	8
31				**Total**	**646**
32	**2011**	**Mujagada**	Russellkonda Reservior	Heron	58
33				Gray Crane	30
34				Cool goose	22
35				Dahuka	10
36			Bhitiribedigoba (M.I.P)	Heron	25
37				Gray Crane	12
38				Dahuka	3
39			Daha Reservoir	Heron	53

40				Gray Crane	16
41				Cool goose	17
42				Dahuka	8
43				**Total**	**254**
44		**Central**	Dubalunda Ghai	Little cormorant	60
45				Cattle Egret	56
46				Graylag goose	18
47				Spot billed duck	13
48			Alikua M.I.P	Little cormorant	15
49				Cattle Egret	10
50				Spot billed duck	158
51			Borisagar M.I.P	Cattle Egret	68
52				Asian openbill	20
53				Spot billed duck	175
54				**Total**	**593**
55		**Tarasing**	Khiladi M.I.P	Little cormorant	4
56				Cattle Egret	15
57				Asian openbill	7
58				Spot billed duck	4
59				Brahminy kite	3
60				White breasted king fisher	2
61				**Total**	**35**
62		**Gallery**	Lembhei Ghai	Indian shag	40
63				Indian pond heron	35
64			Pudurungi Ghai	Indian shag	25
65				Indian pond heron	12
66			Budhagocha ghai	Indian shag	35
67				Indian pond heron	20
68				White breasted water hen	27
69			Baliapatta Ghai	Indian shag	12
70				Indian pond heron	15
71				**Total**	**221**
72		**J.N.Prasad**	Lankagada M.I.P	Little cormorant	120
73				Indian pond heron	40
74				Cattle Egret	130
75				Inter mediate egret	30
76				Gray heron	150
77				Asian openbill	210
78				Black winged stilt	50
79				Common sand plover	110
80				**Total**	**840**
32	**2012**	**Mujagada**	Russellkonda Reservior	Heron	45
33				Gray Crane	32
34				Cool goose	20

35				Dahuka	16
36			Bhitiribedigoba (M.I.P)	Heron	23
37				Gray Crane	8
38				Dahuka	7
39			Daha Reservoir	Heron	47
40				Gray Crane	14
41				Cool goose	13
42				Dahuka	12
43				**Total**	**237**
44		**Central**	Dubalunda Ghai	Little cormorant	55
45				Cattle Egret	65
46				Graylag goose	23
47				Spot billed duck	8
48			Alikua M.I.P	Little cormorant	7
49				Cattle Egret	18
50				Spot billed duck	143
51			Borisagar M.I.P	Cattle Egret	59
52				Asian openbill	18
53				Spot billed duck	151
54				**Total**	**547**
55		**Tarasing**	Khiladi M.I.P	Little cormorant	3
56				Cattle Egret	14
57				Asian openbill	8
58				Spot billed duck	1
59				Brahmiry kite	2
60				White breasted king fisher	5
61				**Total**	**33**
62		**Gallery**	Lembhei Ghai	Indian shag	49
63				Indian pond heron	26
64			Pudurungi Ghai	Indian shag	15
65				Indian pond heron	13
66			Budhagocha ghai	Indian shag	26
67				Indian pond heron	10
68				White breasted water hen	18
69			Baliapatta Ghai	Indian shag	12
70				Indian pond heron	10
71				**Total**	**179**
72		**J.N.Prasad**	Lankagada M.I.P	Little cormorant	113
73				Indian pond heron	32
74				Cattle Egret	126
75				Inter mediate egret	21
76				Gray heron	146
77				Asian openbill	200
78				Black winged stilit	45

79				Common sand plper	109
80				**Total**	**792**
81	**2013**	**Mujagada**	Bhitiribedigoba (M.I.P)	Heron	25
82				Gray Crane	12
83				Dahuka	3
84			Daha Reservoir	Heron	53
85				Gray Crane	16
86				Cool goose	17
87				Dahuka	8
88			Rasulakunda Reservior	Heron	58
89				Gray Crane	30
90				Cool goose	22
91				Dahuka	10
92				**Total**	**254**
93		**Central**	Dubalunda M.I.P	Little cormorant	50
94				Cattle Egret	70
95				Graylag goose	20
96				Spot billed duck	160
97			Alikua M.I.P	Little cormorant	20
98				Cattle Egret	20
99				Spot billed duck	160
100			Borisagar M.I.P	Cattle Egret	68
101				Asian openbill	20
102				Spot billed duck	175
103				White breasted water hen	8
104				**Total**	**771**
105		**Gallery**	Lembhei Ghai	Indian shag	40
106				Indian pond heron	35
107				White breasted water hen	10
108			Baliapatta Ghai	Indian shag	12
109				Indian pond heron	15
110			Samarada Ghai	Indian shag	8
111				Indian pond heron	10
112			Budhagocha ghai	Indian shag	35
113				Indian pond heron	20
114				White breasted water hen	27
115			Pudurungi Ghai	Indian shag	25
116				Indian pond heron	12
117				White breasted water hen	15
118				**Total**	**264**
119		**J.N.Prasad**	Lankagada M.I.P	Little cormorant	120
120				Indian pond heron	40

121				Cattle Egret	130
122				Asian openbill	210
123				Black winged stilit	50
124				Common sand plper	110
125				**Total**	**660**
126		**Tarasing**	Khiladi M.I.P	Little cormorant	4
127				Cattle Egret	15
128				Asian openbill	7
129				Spot billed duck	4
130				Brahmiry kite	3
131				White breasted king fisher	2
132				**Total**	**35**
133	**2014**	**Mujagada**	Bhanjanagar Reservior	Matia Hansa	300
134				Cool goose	75
135				Heron	200
136				Gray Crane	30
137				Dahuka	120
138			Daha Reservoir	Heron	500
139				Gray Crane	300
140				Small blue king fisher	70
141				Raj Hansa	40
142				Dahuka	300
143				Cool goose	300
144			Bhitiribedigoba (M.I.P)	Cool goose	65
145				Heron	48
146				Small blue king fisher	30
147				Red wattled lapwing	60
148				**Total**	**2438**
149		**Tarasing**	Khiladi M.I.P	Matia Hansa	16
150				Little grebe	26
151				Dahuka	17
152				Cool goose	27
153				Little Egret	53
154				Kain Jada	11
155				**Total**	**150**
156		**J.N.Prasad**	Lankagada M.I.P	Little Egret	27
157				Small blue king fisher	12
158				Cool goose	22
159				Little grebe	8
160				Matia Hansa	6
161				Dahuka	7
162				Kain phulia	5
163				**Total**	**87**
164		**Gallery**	Lembhei Ghai	Indian shag	40
165				Indian pond heron	35

166			Pudurungi Ghai	Indian shag	25
167				Indian pond heron	12
168				White breated water hen	15
169			Samarada Ghai	Indian shag	8
170				Indian pond heron	10
171				White breasted water hen	11
172			Baliapatta Ghai	Indian shag	12
173				Indian pond heron	15
174				Purple heron	12
175				Black stork	150
176			Budhagocha ghai	Indian shag	35
177				Indian pond heron	20
178				White breasted water hen	27
179				**Total**	**427**
180		**Central**	Borisagar M.I.P	Cattle Egret	68
181				Asian openbill	201
182				Spot billed duck	175
183				White breasted water hen	8
184			Alikua M.I.P	Little cormorant	20
185				Cattle Egret	20
186				Spot billed duck	160
187			Dubalunda M.I.P	Little cormorant	50
188				Cattle Egret	70
189				Graylag goose	20
190				Spot billed duck	15
191				**Total**	**807**
192	**2015**	**Mujagada**	Bhitiribedigoba (M.I.P)	Inter mediate egret	30
193				Asian openbill	9
194				Little cormorant	18
195				Small blue king fisher	10
196			Daha Reservoir	Inter mediate egret	12
197				Asian openbill	18
198				Large great egret	27
199				Indian pond heron	49
200				Little cormorant	35
201				Lesser whistling duck	12
202				Little grebe	14
203			Bhanjanagar	Inter mediate egret	20
204				Asian openbill	16
205				Little grebe	25
206				Indian pond heron	50
207				Little cormorant	10
208				**Total**	**355**

209		**Central**	Dubalunda Reservior	Little grebe	150
210				Little cormorant	5
211				Little Egret	5
212				Asian openbill	5
213				White breasted water hen	4
214				Black winged stilit	4
215			Borisagar M.I.P	Little grebe	145
216				Little cormorant	5
217				Little Egret	22
218				Meidan egret	8
219				Asian openbill	9
220				Strok billed king fisher	3
221				White breasted water hen	4
222			Alikua M.I.P	Indian shag	14
223				Indian pond heron	7
224				Cattle Egret	15
225				Little Egret	6
226				Meidan egret	4
227				Asian openbill	12
228				Red wattled lapwing	8
229				**Total**	**435**
230		**Tarasing**	Khiladi M.I.P	Little grebe	16
231				Little cormorant	38
232				Indian pond heron	36
233				Little Egret	22
234				Red wattled lapwing	14
235				**Total**	**126**
236		**Gallery**	Kumbhipalli Ghai	Little cormorant	6
237				Indian pond heron	8
238				Cattle Egret	12
239				Red wattled lapwing	9
240				White breasted king fisher	4
241				White breasted water hen	6
242			Banjar sahi	Little cormorant	2
243				Indian pond heron	2
244				Cattle Egret	4
245				Red wattled lapwing	2
246				White breasted king fisher	2
247				White breasted water hen	4
248			Beruanbadi Ghai	Little grebe	30
249				Little cormorant	15

250				Indian pond heron	10
251				Asian openbill	10
252				Red wattled lapwing	4
253				Small blue king fisher	20
254			Budhagocha ghai	Little grebe	10
255				Little cormorant	3
256				Indian pond heron	4
257				Large egret	8
258				Red wattled lapwing	3
259			Lembhei Ghai	Little grebe	7
260				Little cormorant	3
261				Indian pond heron	10
262				Red wattled lapwing	4
263				Small blue king fisher	2
264			Nuapalli Ghai	Little grebe	97
265				Little cormorant	31
266				Indian pond heron	2
267				Cattle Egret	8
268				Little Egret	2
269				Large egret	2
270				Asian openbill	7
271				White breasted water hen	2
272				Red wattled lapwing	2
273				Small blue king fisher	2
274				Lesser pied king fisher	1
275				White breasted water hen	2
276			Golabandha Ghai	Little cormorant	5
277				Indian pond heron	6
278				Lagre egret	21
279				Red wattled lapwing	4
280				Small blue king fisher	3
281				**Total**	**401**
282		**J.N.Prasad**	Lankagada Dam	Little grebe	3
283				Little cormorant	5
284				Indian pond heron	23
285				Little Egret	8
286				Asian openbill	15
287				Red wattled lapwing	8
288				**Total**	**62**

2B.1.4. Reptiles

2B.1.4.1 17 species of reptiles as detailed in list which are found in this division. Indian pythos are frequently rescued by the Forest Department upon fields. Other snakes are Viper, Banded crait,

Indian Cobra and King Cobra are reportedly found. Python and cobra are widely distributed throughout the Division. Monitor lizard are commonly seen. There is no detail study about reptiles in the Division.

2B.1.5. FISHES

2B.1.5.1 27 species of fishes are found in this division. Local fishes are available in Daha and Russelkonda Reservoir. The government also allowed for fishing in yearly tendering basis.

2B.2. Injuries to which the fauna is liable

2B.2.1. Poaching of wild Animals continuous in this division for variety of reasons Viz. for Skin, Meat, Trophies, Bone, & other animal product in the past. Mostly due to the crop damages by wild boars, the hunting/poaching by electrocution is increased in this division. The detection of wildlife offence cases is average. Increasing incidence of cattle grazing has also greatly reduced food for many wild animals in the forest area.

2B.2.2 Death of Elephant

2B.2.2.1 The unnatural death of Elephant in Ghumsur North Division is mainly due to Electrocution. The death of bear, Fishing Cat, Hyena, and Jackal were also noticed mainly due to road accident. The death of Elephants is furnished in **Table-2B.7**

Table 2b-7 Statement Showing The Death Of Elephant Of Ghumsur North Division, Bhanjanagar From 1995-96 To 2014-15

Year	Sex	Age	Place of Death	Date of time of occurrence	Date & time of detection	Cause of Death	Remarks
1	2	3	4	5	6	7	8
1995-2009	-	-	-	-	-	-	-
2009-10	Male	7 Year	Chandragiri R.F. C/12 of Gallery Range	-	11.12.2009 UD-7G of 2009-10 Gallery Range	Natural Death	Tusk.2 Tusk=2.425Kg
2010-11	Female	30 to 35 Year	Gallery RF C/7 Mujagada Range	11.10.2010 7Pm to 12 Pm	13.10.2010 8.30AM U.D.Case.12 M of 2010-11 Mujagada Range	Death due to falling into the ravine about 15' death	Internal Injury
	Female	4 Year	Brahamanasahi RF C/4 Tarasing Range	-	25.5.10 U/D15 T of 2010-11 Tarasing Range	Natural Death	
	Male	35	Gallery RF of Mujagada Range	23.3.2011 3 P.M.	O.R. Case No.289M of 2010-11 Mujagada Range	Due to electric current leading to cardiac shock	04 Tusks recovered 1.2'X0.7.5" (hollow-1 Ft.)=m 2 Nos. 2.1'-8"X0.7" (hollow-1 Ft.) = 2
	Male	30	Gallery RF of Mujagada Range	23.3.2011 3 P.M.	O.R. Case No.289M of 2010-11 Mujagada Range	Due to electric current leading to cardiac shock	
2011-12	Femal	35	J.N.Prasad R.F.	16.11.2011	U.D.Case No.2 JP of	Accesidental	-

	e		C/9 of Jagannath Prasad Range	5.00 A.M.	2011-12 of Jagannath Prasad Range	death	
	Femal e	2	Outside J.N.Prasad R.F. C/11	08.1.2012 8.00 AM	U.D.Case No.36 of 2011-12 of Mujagada Range	Due to cardiac shock	-
	Femal e	60	Chandragiri R.F. C/7 of Tarasing	23.2.2012 7.30A.M.	U.D.Case No.24 T of 2011-12 of Tarasing Range	Due to cardiac shock	-
	Male	40	Gallery R.F. C/23 of Gallery Range	04.03.2012 7.30 A.M	U.D.Case No.8 G of 2011-12 of Gallery Range	Due to electric current leading to cardiac shock	-
2012-13	Male	55	Outside R.F. of Mujagada Range	08.06.2012	U.D.Case No.9M of 2012-13 of Mujagada Range	Due to beat strock leading to congestive heart failure	-
	Femal e	30	Outside R.F. of Gallery Range	05.10.2012 very early morning	U.D.Case No.18G of 2012-13 of Gallery Range	Due to electric current leading to cardiac shock	-
	Calf	6 Months	Outside R.F. of Gallery Range	05.10.2012 very early morning	U.D.Case No.18G of 2012-13 of Gallery Range	Due to electric current leading to cardiac shock	-
	Femal e	35	Outside R.F. of Mujagada Range	15.12.2012 7.00AM	U.D.Case No.37M of 2012-13 of Mujagada Range	Due to electric current leading to cardiac shock	2.Tusks recovered 1. 0-"X4.5" (hollow-0-3 1/2"=2100 Gms. 2. 0-8"X0-4 1/2" (hollow-5 c.m)=175 Gms.
	Calf	-	Inside Gallery RF of Mujagada Range	03.01.2013	U.D Case No. 45M of 2012-13 of Mujagada Range	-	-
2013-14	-	-	-	-	-	-	-
2014-15	-	-	-	-	-	-	-

2B.2.3 Injury Caused By Elephants

2B.2.3.1 Depletion of wilderness and the wild habitat of different animals due to various biotic and anthropogenic pressures is the major reason for man wildlife encounter due to which either of the parties suffers untold losses. The injuries caused by the wild life to man occur in four major forms i.e. human kill, human injury, crop damage and house damage. **Table 2B-8** to **Table 2B-9, Table 2B-10, Table 2B-11** provide the number of persons deaths, human injury, house damage and crop damage respectively in the outgoing plan period caused by wild animals in Ghumsur North Division and the compassionate grants paid to people victimized of such depredation activities of wildlife.

Table 2b-8 Year wise list of Human kills and the Compensation paid in Ghumsur North Division (from 1995-96 to 2014-15)		
Year of Kill	**No. of human killed**	**Compensation paid (in Rs.)**
1	**2**	**3**
1995-96 to 2001-02	Not reported	
2002-03	2	20000
2003-04	1	10000
2004-05	2	20000
2005-06	--	Nil
2006-07	--	Nil
2007-08	--	Nil
2008-09	1	100000
2009-10	1	100000
2010-11	--	Nil
2011-12	1	100000
2012-13	1	100000
2013-14	--	--
2014-15	2	400000
Total	**11**	**850000**

Table 2b-9 Year Wise List Of Human Injury In Ghumsur North Division(From 1995-96 To 2014-15)			
Year	**No. of injury**	**Type of injury**	
		Permanent	**Temporary**
1	**2**	**3**	**4**
1995-96 to 2008-09	Not reported		
2009-10	1	1	--
2010-11	Not Reported		
2011-12	2	--	2
2012-13	2	2	--
2013-14	6	--	6
2014-15	--	--	--
Total	***11***	***3***	***8***

Table 2B-10 Year wise list of house damage and the compensation paid in Ghumsur North Division(From 1995-96 to 2014-15)					
Sanctioned in Financial year	**Total House damaged (in Nos.)**	**Total amount sanctioned (in Rs.)**	**Compassionate amount allotted by the Pr.C.C.F (Wildlife) & Odisha**	**Amount paid to the victim**	**Remark**
1	**2**	**3**	**4**	**5**	**6**
1995-2011	Not Reported				
2011-12	2	4000/-	4000/-	4000/-	2 Nos partly damaged.
2012-15	Not Reported				

Table 2B-11 Year wise list of crop damage and the compensation paid in Ghumsur North Division (From 1995-96 to 2014-15)			
Year	**Extent of area of damaged in Ac..**	**Type of damage**	**Compensation paid in Rs.**
1	**2**	**3**	**4**
2003-04	37.075	Crop Damage	91,613/-
2004-05	43.545	-do-	1,07,602/-
2005-06	20.752	-do-	51,280/-
2006-07	49.887	-do-	1,23,273/-
2007-08	26.902	-do-	66,475/-
2008-09	47.532	-do-	66,475/-
2009-10	83.903	-do-	1,62,498/-
2010-11	73.944	-do-	91,578/-
2011-12	131.72	-do-	2,84,028/-
2012-13	1510.609	Paddy, Cereal crop & Cash crop	23,90,723/-
2013-14	1059.68	-do-	15,81,301/-
2014-15	932.679		63,16,004/-
Total Damaged area	***4018.228***	***Total Compensation paid***	***1,13,32,850***

2B.2.3.2 Crop damage by wild elephant in the peripheral villages is very negligible. There are no detailed official records maintained at the divisional level on crop damage and house damage by other wild animals. The tribals who are living near the forest make their co-existence with the animals and do not have any complain as damage is generally minimal.

2B.2.4 MAJOR REASONS OF INJURIES TO WILD LIFE

2B.2.4.1 With the developmental agenda taking the fore front, the habitat destruction of the wild animals have been very conspicuous and prominent for which the wild animals are on the receiving end and at times settle scores on humans. The major reasons of injuries caused to wild life are as follows:

1) Urbanization in its various forms like creation of industries, dams, mining pits, cities and townships, agricultural fields, canals etc to accommodate the human population explosion.

2) Development of communication links and modern technologies like roads, railway tracks, high tension electricity lines, transmission towers etc. to keep pace with the global economy.

3) Corridor fragmentation and honey combing of forested areas there by squeezing the natural home of the wild life thus affecting their feeding and breeding grounds. This brings about separation amongst various populations of the species thereby shrinking their gene pool by enhancing the rate of inbreeding depression.

4) Development of urban commensalism amongst the wild life where in the natural behavior of the animals dramatically change and they become more and more dependent on human habitations and their way of living.

5) Habitat degradation in the form of loss of food and water sources due to various anthropogenic and biotic pressures like grazing of cattle, shifting cultivation, collection of timber and firewood, over exploitation of NTFP resources by adopting unsustainable and unscientific practices of collection, setting fire to forest floor.

6) Loss of forest biodiversity due to massive scale weed infestation preventing regeneration of wild and desirable species due to large gap creations which is having a synergistic effect on the enhanced rate of such infestation. These weeds cause lot of unknown diseases in the wild life when these are either ingested or the animals come in contact with them.

7) Poaching of wild animals for its meat, trophies, skins and other animal products are also other factors that cause injury to wildlife. Detection of wild life offences and the rates of conviction are often poor which does not have the desired deterrent effect on the poachers.

2B.3. Protection & Management of Fauna

2B.3.1. Measures of Protection of Fauna

2B.3.1.1. The measures for protection are highly inadequate in the Division due to extreme shortage of staff personnel and lack of infrastructure. Patrolling and combing operations are required on a regular basis for strict protection.

(1) Arms: Arms are not adequately available to all the Range staff in the Division. But due to the movement of Left wing Extremism in the area, department of Home affairs instructed to surrender the Arms to Concerned Police Headquarters. Even though Supply of arms and ammunition has to be increased and strengthened the Forest officials to tackle the smugglers and poachers.

(2) Wireless Communication: The wireless network is not well developed. For quick and better communication a few wireless station in the division have been established. The division vehicles are also facilitated with this communication. A full fledged control room at the Division is required to be installed. The Range should have net work with all important Sections and Beats. The check-gates should be provided with VHFs set. For better monitoring, the VHF with repeater should be located at strategic points as the Division is located at a wide range of altitude coupled with the hilly terrain which are refractory, connectivity has to be planned after proper trial. The following Range had been connected with wireless communication, but all the wireless installations are in a damaged condition and there is no wireless system in the recently created Range of Jagannathprasad. The list of all the locations of the wireless and their present state of functioning range wise is depicted in **Table 2B-12**.

Table 2B-12 Range wise Wireless location in Ghumsur North Division

Sl.No.	Range	Station	Status
1	Central	Kaliamba	Damaged
2	Central	Saluapalli	Damaged
3	Central	Lathipada	Damaged
4	Central	Parsulunda	Damaged
5	Central	Gangapur	Damaged
6	Central	Ragada	Damaged
7	Tarasingi	Tarasingi	Damaged
8	J.Prasad	Nil	Nil
9	Gallery	Dholapita	Damaged
10	Gallery	Tilisingi	Damaged
11	Gallery	Badangi	Damaged

Source: Field data

(3) Protection: At present the Divisional Forest Officer is provided with 60 numbers of para forest staff squads formed out of the local able bodied youth to man and protect the area in almost all the ranges under CAMPA on daily wage basis. There are 20 numbers of anti depredation squads, 50 numbers of fire fighting squads, 10 numbers of anti smuggling and anti poaching squads etc. But it is under stood that the desired results are not yielding. All squads are engaged in day night for protection of wildlife and conservation.

2B.3.2. Infrastructures Developed For Wildlife Conservation

2B.3.2.1 Game tank/Water-bodies were also created for improvement of water supply during the pinch period. **Table 2B-13** below gives the range wise list of water-bodies located in the Division and their corresponding year of creation. Maintenance and protection near water holes should be ensured.

Table 2B-13 Water holes/Game tanks/Artificial in Ghumusur North Division

Sl.No.	Name of Range	Reserve Forest	Compt.	Location	Year of Creation
1	Central	Tiliki	6	Tokaganda	2002
2	Central	Kaliamba	5	Somanathapalli	2003-04
3	Central	Kaliamba	2	Kaliamba	2006-07
4	Central	Kaliamba	5	Malichanchera	2011-12
5	Central	Dumdumi East	1	Parsulunda	2011-12
6	Central	Kaliamba	1	Gobarabandha	2012-13
7	Central	Kaliamba	4	Dimirijholi	2013-14
8	Central	Ragada	3	Khariguda	2004-05
9	Central	Ragada	1	Jadama	2006-07
10	Central	Ragada	10	Haripur	2013-14
11	Central	Ragada	6	Nuagaon	2012-13
12	Central	Vinjigiri	2	Kesera	2013-14
13	Central	Dumdumi East	-	Sunapalli	2012-13
14	Central	Dumdumi West	-	Mathasahi	2013-14
15	Central	Dumdumi East	-	Parsulunda	2013-14
16	Central	Dumdumi West	-	Kumundi	2013-14
17	Central	Vinjigiri	4	Chadiapalli	2013-14
18	Tarasingi	Chandragiri	9	Garudapathara	2009-10
19	Tarasingi	Paichallia	4	Rampoo	2010-11
20	Tarasingi	Brahmanasahi	3	Suramani	2012-13
21	Tarasingi	Chandragiri	8	Tarasingi	2012-13
22	Tarasingi	Brahmansahi	2	Nuasahi	2013-14
23	Tarasingi	Brahmansahi	3	Dangabhuin	2013-14
24	Tarasingi	Chandragiri	5	Ranganatha	2013-14
25	Tarasingi	Ambazora	10	Khurudapalli	2013-14
26	Tarasingi	Brahmansahi	4	Gadiapada	2013-14
27	Tarasingi	Gundiribadi	1	Gunduribadi	2012-13
28	Tarasingi	Ambazora	14	Kadaligada	2013-14
29	Tarasingi	Chandragiri	6	Tarasingi	2014-15
30	Tarasingi	Chandragiri	8	Garudapathara	2014-15
31	Tarasingi	Ambazora	12	Adibasi Colony	2014-15
32	Tarasingi	Gundiribadi	4	Bhogora	2014-15
33	Tarasingi	Ghogada	4	Badabhuin	2014-15
34	Tarasingi	Brahmansahi	3	Kandhasarala	2014-15

35	Tarasingi	Brahmansahi	5	Baradanda	2014-15
36	Tarasingi	Brahmansahi	1	Suramani	2014-15
37	Jagannathprasad	Jagannathprasad	8	Samarabandha	2012-13
38	Jagannathprasad	Paichallia	5	Lundrupadar	2013-14
39	Jagannathprasad	Jagannathprasad	5	Dimiripalli	2013-14
40	Jagannathprasad	Paichallia	5	Lundrupadar	2014-15
41	Jagannathprasad	Jagannathprasad	7	Penduraballi	2014-15
42	Jagannathprasad	Jagannathprasad	9	Narayanapalli	2014-15

Source: Field data

2B.3.2.2 The outgoing Plan stressed the preservation of habitat and awareness to be created and further enlisted the wild animals for special protection in the dense forest areas. It also emphasized on protection of rare species, with proper legal protection and enforcement. Creation of poaching gates, and posting of separate wildlife foresters were also prescribed. Only very few negligible improvement could be achieved in the wild life protection during the outgoing Plan period. Two game sanctuaries were proposed to be constituted in the outgoing Plan, to preserve the wild animals which were not implemented. A few water bodies in some locations has been created, salt licks and watch towers as prescribed were not constructed. So the desired levels of interventions were not achieved due to lack of funding.

2B.3.3. Legal Protection to Wildlife (Wildlife Rule)

2B.3.3.1 In the forest policy of 1894 there was no scope of any preservation concept of wildlife except the Wild Bird (Protecteion Act of 1887). It was 1912 that the Wild Bird & Animal Protection Act (Central Legislature Act VIII of 1912) was promulgated which was more or less a repetition of the Wild Bird Protection Act of 1887. This Act provide for observance of close time, besides penalty & confiscation in respect of some birds & animals. Birds included in the Schedule were Jungle fowl, Grey Partridge, Pea fowl, Pheasant, Pigeon,, Sand Goose, Heron, Wood Peckers, Egret, Rollers & Kingfisher. The animals covered under this act were Antelope, Bison, Buffalo, Deer, Gazelle, and Rhinoceros.

2B.3.3.2. The rules relating to wildlife in force in the early days were as follows:

1. The Bihar & Odisha Govt Reserve Forest Shooting Rule 1993.

2. Rules to regulate hunting,shooting,Fishing etc in protected Forest of Angul & Puri District as per clause J of Sec-32 of IFA 1927

3. Rule relating to grant of license to capture Elephant in Angul (Frame under Sec-6 of Elephant Preservation Act of 1879.

The implementation of the above Rules was far from satisfactory as per as conservation was concerned.

2B.3.3.3 In the all India conference of Wild Life 1993 it was felt that preservation of Wild Life was essential. Accordingly in the Forest Policy 1952 Emphasis was laid in the protection of Wild Animal, Particularly the rare species which were first disappearing. It was also prescribed for regulating the Wildlife by special law and to set up national park & sanctuary. Accordingly Central Board For Wild Life was constituted in 1952.

2B.3.3.4 The all India silviculture conference recommended that "where as Wildlife is an integral part of our forest 7 its preservation is admitted to be an urgent necessary, suitable forest of adequate extent be set apart in each state for preservation & perpetuation of wildlife". In 1969 the IUCN at New Delhi conference emphasis for an urgent need of a uniform law in India. With its initiation, The Wild Life Protection, ACT 1972 came into force in India.

2B.3.3.5. The Odisha (Wild life protection Rule 1972) came into force with effect from 14.08.1974.Which was amended in 1991. Again the wildlife protection act was amended in 2002 & the new Wildlife protection Amendment Act 2002 came into force from 20th January 2003.

2B.3.2.6 In addition, Govt of Odisha has prescribed the following amount for compassionate grant procedure as per wildlife (protection), Amendment Rule 2011 & 2014. The rate of compassionate grant furnished in **Table-2B.14**

TABLE 2B.14 THE COMPASSIONATE RATE AS PER WILDLIFE PROTECTION AMMENDMENT RULE-2014

Sl No	Type of Compassionate payment	Amount in Rs.
1	Human Death	3,00,000
2	Permanent Injury	1,00,000
3	Temporary Injury	5,000
4	Death of cow,Bullack & Buffaloo	5,000
5	Death of calf	2500
6	House damage full	10,000
7	House damage part	2,000
8	Crop damage Paddy & Sirals per Acre	10,000
9	Vegetation Damage	12,000

CHAPTER-III

UTILISATION OF THE FOREST PRODUCE

3.1 Agricultural Customs and Wants of the Population

3.1.1. The total population of Ghumsur North Division stands at 4,99,205 lakhs as per the 2001 Census. The density of the population is 211 per sqkm. The population has increased from 4, 33,982 in 1991 to 4, 99,205 of 2001 census. The density per sqkm has increased to 211 from 184 per sqkm. Majority of the people belong to general category. The distribution of people in the division is fairly even and no particular area is specifically more populated than the other. The people in rural areas are generally poor and depend on agriculture extensively for their sustenance. The tribes mostly are kondhos that remain closer to the forested areas. Total population of scheduled tribes is 27,651 and scheduled caste is 98,541 as per 2001 Census which is 5.54% and 19.74% respectively. The general categories constitute 74.72%. The geographical area of the Division is **2360.217** sqkm.

3.1.2. The area covered by this working Plans contains some of the most fertile lands of the state where agriculture continues to occupy an important place in the economy. The area had shown more than once constitute 72% of the net area sown. Of the total cropped area of, the area under rice, other Cereals and pulses constitute 36.6%, 10.5% and 30.82% respectively. Of the total cultivated area, The Rushikulya canal system alone provides irrigation facilities to nearly 10% of the cultivated area. Other sources of irrigation are tanks, Wells, and several minor irrigation projects. Some of the minor irrigation projects have submerged several hectares of forest area in Reserve Forest Blocks. In recent times lift irrigation schemes have been introduced in different parts of the Division to further increase the coverage of area under irrigation. The balance area continues to be rained.

3.1.3. Agricultural development has received tremendous impetus under the various five year plans. The current strategy to modernize agriculture has stimulated wide spread and pulsating changes. Several schemes to augment agricultural production are under way. These include adoption of improved methods of cultivation use of better strains of seeds, application of fertilizers and these for plant protection etc. The total and per hectare yield is bound to bring in still higher yield and per hectare yield in course of time.

3.2 Main Occupation

3.2.1 Agriculture is the main occupation of the people of Bhanjanagar Sub division of Ganjam District. It is covering 8 numbers of blocks. But, The Ghumusur North Division is covering

Bhanjanagar, Jaganathprasad, Bellaguntha, part of Aska and Part of Sorada Blocks. The agro - climatic zones of Bhanjanagar subdivision is presented below in **Table 3.1.**

TABLE 3- 1 AGRO - Climatic Zone Of Bhanjanagar Sub Division Of Ganjam District

Name of Agro Climatic Zone	Name of the Division	Name of Agricultural District	Name of the Sub Division	Name of blocks
East and South Eastern - coastal plain Zone OR/4	Ghumsur North Forest Division	Ganjam	Bhanjanagar	Bhanjanagar, Jagannath Prasad, Bellaguntha , Part of Aska, Part of Sorada Block

Source : National Agricultural Research Project, Status report on Agricultural Research & Extension, North Eastern Ghat Zone

3.2.2 Agriculture is the single largest source of livelihood of the people. They derive their income from (i) agriculture (ii) employment labour (either in the form of cultivators, agricultural laborers or other forms of employment) (iii) Siali and Sal leaves collection from forests. Paddy cultivation is concentrated in only plain areas. Forestry sector also provides employment to the people to carry out different operations Viz. Raising of nursery, Sowing, Planting, Post Planting Activities and watch and ward. Collection of non-timber forest produces like Sal, Siali and Kendu leaves provides an alternate seasonal engagement to the people for some time. Other NTFP items collected for domestic consumption include edible roots, fruits and flowers of Mahua, Myrobalan, Wild Mango in specific seasons of the year. Cultivators and Agricultural labourers are the main occupational types seen in the division as compared to household industry or other forms of occupation. **Table 3-2** describes the occupational types of different labourers.

TABLE 3-2 C.D Block Wise Occupational Types Of Population In Ghumsur North Division.

C.D Block	Cultivators	Agricultural Labourers	House Holding Industries	Other Labourers
Aska	17655	10862	1111	10305
Bellaguntha	11602	10730	674	5098
Bhanjanagar	14018	18843	1703	7841
Jagannathprasad	19785	17347	1198	4819
Surada	21436	11506	1876	4581
Bellaguntha NAC	333	457	287	852
Bhanjanagar NAC	186	286	198	3660
Total	**85015**	**70031**	**7047**	**37156**

Source: District Statistical Officer, Berhampur

3.3. Existing Pattern of Land Use

3.3.1 There is one major irrigation project at Bhanjanagar involving Rushikulya River system and one medium irrigation project at Daha. In the interior areas there are number of minor irrigation projects and the detailed list of the entire major, medium and irrigation projects have been given in chapter-1 of the part I under the heading of "Water supply". Traditional farming is seen in most of the areas and there are no cases of "**podu** "or shifting cultivation. In areas where there are tribal pockets, orthodox farming on the hill slopes are seen where paddy is raised. Soil conservation measures are required to be improved. Improved and high yielding varieties of seeds and fertilizers have been used to increased productivity. This is the most common type of irrigation in the division. Few villages use lift irrigation. The irrigation potential and the source of irrigation facilities has increased over the years and though Khariff crop is the major yield for the year, the development of irrigation potential and infrastructures to covert more and more areas to rain fed farming, this has given a new impetus to the farmers of the division. **Table 3-3** depicted the irrigation potential in different C.D. blocks within the Division. More and more areas are being brought under cultivation and the current fallows and the old fallows are getting reduced. Almost 72% of the net sown area is brought under farming every year which is a very encouraging sign for the multifarious initiatives taken by the government to support farmers and farming. **Table 3-4** the existing land use of different types of Bhanjanagar Sub-Division.

TABLE 3-3 C.D BLOCK WISE AND SOURCE WISE IRRIGATION POTENTIAL CREATED IN DIFFERENT BLOCKS OF BHANJANAGAR, GANJAM (IN HA.)

Sl. No.	Block	Year	Major and Medium irrigation project		Minor Irrigation project				Other sources		Total
					Flow		Lift				
			Khariff	Rabi	Khariff	Rabi	Khariff	Rabi	Khariff	Rabi	
1	Bhanjanagar	1998-99	5000	1403	2325	12	744	744	0	0	10228
		2004-05	1520	351	2739	952	2576	118	0	0	8256
		2008-09	4755	0	2864	151	802	670	1708	644	11594
2	Aska	1998-99	5464	0	2650	61	663	663	0	0	9501
		2004-05	5675	0	2730	168	0	420	0	0	8993
		2008-09	5404	0	2550	194	750	531	1595	1147	12171
3	Bellaguntha	1998-99	3722	837	2480	20	414	414	0	0	7887
		2004-05	2235	0	1635	650	2388	101	0	0	7009
		2008-09	3979	0	2321	12	230	278	1484	1395	9699
4	Jagannathprasad	1998-99	0	0	6520	1031	420	420	0	0	8391
		2004-05	0	0	0	0	5397	351	0	0	5748
		2008-09	0	0	7033	999	294	204	1673	940	11143
5	Soroda	1998-99	0	0	5400	410	636	636	0	0	7082
		2004-05	0	0	2770	3418	2420	326	0	0	8934
		2008-09	7005	4000	6142	601	630	680	1473	1806	22337

Source: District Statistical Officer, Ganjam

TABLE 3-4 C.D/ BLOCK WISE EXITING PATTERN OF LAND USE IN BHANJANAGAR SUB-DIVISION (INHA.)												
Sl. No.	**Block**	**Year**	**Forest**	**Misc. tree**	**Permanent pastures & other grazing land**	**Culturable waste**	**Land put to Non-Agricultural use**	**Barren & Non-Cultivable land**	**Current fallows**	**other fallows**	**Net area sown**	**Total area under survey**
1	Bhanjanagar	1998-99	2533	376	537	2400	3329	347	4116	2476	13033	***29147***
		2003-04	2018	652	351	1278	3376	1335	4113	2865	13331	***29319***
		2008-09	2957	759	522	1280	2463	1283	3345	3201	13500	***29310***
2	Aska	1998-99	151	225	148	215	2611	2602	970	333	12515	***19770***
		2003-04	216	274	322	21	2396	3285	1018	597	11969	***20098***
		2008-09	79	269	311	162	2311	2991	1329	1763	10889	***20104***
3	Bellaguntha	1998-99	117	932	210	139	2841	666	1439	391	11550	***18285***
		2003-04	42	723	254	169	2539	1299	884	357	12361	***18628***
		2008-09	441	456	186	95	2079	1125	2468	476	11132	***18458***
4	Jagannathprasad	1998-99	4660	3583	1245	1501	3457	2442	7274	3446	15676	***43284***
		2003-04	6963	2931	2815	2181	2640	3146	3248	3008	16252	***43184***
		2008-09	7285	1854	2008	1951	2481	2654	2857	2186	19995	***43271***
5	Soroda	1998-99	31383	869	803	3520	2596	1552	2207	2481	14981	***60392***
		2003-04	16139	411	794	1524	2894	7297	4756	2838	13486	***50139***
		2008-09	4867	280	1831	816	2680	17231	4489	929	17321	***50444***
Total			***79851***	***14594***	***12337***	***17252***	***40693***	***49255***	***44513***	***27347***	***207991***	***493833***

Source: District Statistical Officer, Ganjam

3.4 Market and Marketable Products

3.4.1 Markets

3.4.1. The local requirement for forest produce is generally very less; therefore, most of the forest produces especially Timber traded to outside the Division since the market is not well organized. Other non-timber forest produces are generally locally disposed in local market. The local people are dependent on the forests for their domestic use. It consists chiefly of timbers for house buildings, ploughs and other agricultural implements and for construction of carts, bamboos and brushwood for fencing, roofing and other household articles; grass for thatching and fuel for daily consumption and grazing grounds for their cattle. 'SAL' is the species mostly sought after. Poles up to 12" diameter are of common need. Grazing in Reserve Forest is high, especially during June to November, when the fields are under cultivation.

3.4.1.1 Industries: The forest based industries in this Division are of following types.
(a) Cottage Industries: These include basket-making, bamboo mat making, Rope making, and making of Agricultural equipment. These are made at individual lands.

(b)Small Scale Industries: These are the furniture units at individual levels, mainly thriving on stolen timber from the forests of this Division. No saw Mills in this division.

3.4.1.2 Nature of demand for industries
3.4.1.2.1 Huge quantities of long bamboos (preferably, 2-3 years old), Sabai grass, Broom grass, Hill broom, Kendu leaf, Kusum, Mahua Seeds, myrobalan and other Minor Forest Produces which form the raw materials for rope making, paper industry, broom making, beedi making, oil extraction and herbal medicines, respectively.

3.4.1.3 Extent of Demand and Price Trend
3.4.1.3.1 The calculation of demand of different forest produce is difficult to assess as organised industry is not there. Since the prices fixed by Orissa Forest Development Corporation Limited for timber, small timber, fuel wood, firewood & bamboos are not within the purchasing capacity of the people, they are not utilized locally. A large portion of the local demand especially firewood met from the forests.

3.4.1.4 Weekly Haats

3.4.1.4.1 Local haats are conducted throughout the Division in different locations of the Ranges. In these local haats, most of their local products such as ropes, plough implements, and various NTFP items are sold. In turn they buy their clothes, oil, salt and other items which are not grown. Range-wise important weekly haats and annual fares in the division are summarized in the **Table 3-5** below. Apart from that there are certain important haats in Ghumsur South Division areas where the forest produces from north division are traded. **Table 3-6** enlists certain important weekly haats near to the Division.

Table 3-5 List of Important Weekly Haats inside Ghumsur North Division

Range	Location of Haat	Distance from Division Headquarter (in Km.)
Jagannath Prasad	Bellaguntha	7
	Jagannath Prasad	25
Mujagada	Kullada	7
Tarsing	Jadadhar	35
Gallery	Dholapita	22
	Bodangi	30
	Gallery	25

Source: Report of Field Survey

Table 3-6 List of Haats outside Ghumsur North Division

Sl. No.	Location of Haat	Distance from Headquarters of Ghumsur North division (in Km.)
1	Buguda	40
2	Soroda	28
3	Hinjilicut	60
4	Aska	40
5	Balipadar	28
6	Panchbhuti	34

Source: Report of Field Survey

3.4.2 Marketable Products

3.4.2.1 The main marketable products are small timber, poles, palas grass, firewood, bamboo baskets, bamboo hats, and NTFP items like Siali leaf, Siali fibres, Sal seeds, Mahua flower, Harida, Bahada, Amla, nux-vomica, arrowroot, and hill broom. In absence of a valid working Plan timbers like Sal, Asan, Piasal, Kasi, dhaura, Dhamana, mundi seized as UD cases and offence case materials are usually delivered to OFDC Ltd.

3.4.2.2 The OFDC Division conducts auction at Lalsing Depot to meet local demand. The DFO also conducts public auctions of seized materials to meet local demand. After the ban on green felling, timber coupe working and salvaging operations could not take place for the first ten years of the outgoing working plan from 1995-96 to 2004-05 which created a great deficit of timber supply to the market and hence illicit removals during that period was the only source to procure the material to meet the local needs. Some of the important forest produce are described below.

3.4.2.3. Bamboo is a major source of income to the Division. Bamboo crops are concentrated in all Ranges. Bamboo is being worked by the OFDC Ltd, and JK paper mills are the raw material procurer under the supervision of DM, OFDC. They receive the materials from OFDC Ltd. Long bamboos are being supplied to public by the OFDC Ltd.

3.4.2.4 Kendu leaf is high revenue fetching forest produce for which it is called as "Green Gold", but high quality leaves are not available in the Division. Only grade IV leaves are produced. Only one Range at Bhanjanagar involving chiefly two of its sections at Bhanjanagar and Lembhei collects the leaves. After nationalization in 1973, the DFO Kendu leaf, Phulbani collects and processes leaves, which are delivered to the DM, OFDC Ltd (CKL) Division, Boudh for sale by means of public auction.

3.4.2.5. Timber: Sal is the most valuable timber in the Division in terms of both its utility and availability. Other valuable timbers are Teak, Bijasal, Bandhan and Mundi. Other marketable timbers are Dhaura, Kasi, Jamun, Arjun and Mango.

3.4.2.6. Non-Timber Forest Produces: The division is rich in non-timber forest produce. Various items like Siali leaf, Siali fibre, Sal leaves, Mahua flower, Sal seed, and hill broom are found. Bhalia is found in very limited quantity. Khalli leaf plate has the most potential market in the Division. These non-timber forest items are very valuable to the tribal communities and people living in and around the forest areas. There are various other items used by local people are as follows:

3.4.2.6.1. Khallis (Leaf plate): This is the prime activity of the division involving forest produce. Siali leaves are collected and khallis are prepared both for local use and for export. It is done through formation of many SHG's and women self-help groups and the local population has been successful to bring in sufficient institutionalization in the areas of procurement, processing and marketing of the produce. This serves as the chief seasonal activity and is the major contributor of alternate livelihood option. These leaf-plates are very much in demand in South India.

3.4.2.6.2 Cart **making:** carts are constructed for local use and are not exported outside. They are sold in the weekly haats of the division and in the neighboring division of Ghumsur South, Sal, Bandhan and Dhaura are the timbers chiefly used.

3.4.2.6.3 Bamboo articles- Bamboo is considered as poor man's timber. There are a lot of bamboo communities in the villages who prepared varied articles made out of bamboo which have a great of utility and demand among the local and the nearby population. Different types of bamboo baskets made out of strips of bamboo (like kula, changudi, jhudi, dala), mats (talei) and hats are

prepared. These are prepared by hadi, dama and betra types of communities. These are sold in the local markets and haats. Some amount of innovation and improvisation and improving the processing technique in their preparation of these articles can increase buying and can fetch better price in the market. This would not only augment the income of the artisans but also serve in providing an impetus and encourage others to take up such activity.

3.4.2.6.4 Mahua flowers availability is quite heavy during its season and is collected by the people for domestic consumption.

3.4.2.6.5 Broom-sticks-broom grass is collected from forests and bundled as broom sticks for marketing. They are sold at various local haats. They are largely exported outside.

3.4.2.7 The important NTFP items that have the potential of being exploited from the forest but in the current practices they are either not exploited/procured and if done, it is only in limited quantities only for domestic consumption are of mainly four categories namely Important oil yielding, tannin yielding, fruit bearing plants, fiber yielding is given in **Table 3-7, 3-8, 3-9, and 3-10** respectively.

Table 3-7 Important Oil Yielding forest Species of Ghumsur North Forest Division

Sl. No.	Common Name	Botanical Name	Part yielding fibre	Utilization
1	Mahua	*Madhuca indica*	Seeds	Oil used for soap, hair oil and adulterant for ghee
2	Kusum	*Schleichera oleosa*	Seed kernels	Oil for cooking, hair oil lighting, soap making
3	Karanja	*Pongamia pinnata*	Seeds	Oil used as medicine antiseptic, soap making, perfume and leather tanning

Table 3-8 Important Tannin Yielding Species of Ghumsur North Forest Division

Sl. No.	Common Name	Botanical Name	Part yielding tannin	Utilization of Produce
1	Dhaura	*Anogeissus latifolia*	Dry matured leaves	Dyeing
2	Sunari	*Cassia fistula*	Bark	Blending and tanning of leather.
3	Neem	*Azadirachta indica*	Seeds	Oil used as medicine, for soap making, oil cake as fertilizer
4	Sal	*Shorea robusta*	Seeds	For cooking, lighting, soap making , and in confectionery

Table 3-9 Important Fruit Bearing Trees of Ghumsur North Forest Division				
Sl. No	**Common Name**	**Botanical Name**	**Period of Collection**	**Utilization of Produce**
01	Amba	*Mangifera indica*	April/May	Ripe fruits are eaten and raw are used for making pickles etc. Ripe juice is prepared to ambasada.
02	Amla	*Emblica officinalis*	Oct/April	Fruit is eaten raw and used in pickle
03	Bana Khajuri	*Phoenix acaulis*	May/June	Ripe fruit are eaten
04	Bela	*Aegle marmelos*	April	Ripe fruit are eaten
05	Bhalia	*Semecarpus anacardium*	June/ July	Fruit kernel eaten and used for pickle.
06	Buru Sunga	*Murraya koenigii*	Throughout the year	Leaves eaten and used in curry.
07	Jamun	*Syzygium cumini*	June/ July	Ripe fruit are eaten.
08	Kadamba	*Anthocephalus kadamba*	October	Ripe fruit are eaten.
09	Kaju	*Anacardium occidentale*	March/ April	Hypothalamus & seeds are eaten
10	Kendu	*Diospyros melanoxylon*	May/June	Ripe fruit is eaten
11	Kusum	*Schleichera oleosa*	June/July	Fresh of the fruit is eaten
12	Mahua	*Madhuca indica*	May to July	Flowers eaten and used for preparation of country liquor, unripe fruit is used as vegetable oil from seeds used for cooking.
13	Panas	*Artocarpus integrifolia*	May /August	Unripe fruit as vegetable pickle, ripe fruits and seeds are eaten.
14	Rai	*Dillenia pentagyna*	August	Young fruits are cooked and eaten
15	Sajina	*Moringa pterigosperma*	Throughout the year	Flowers, leaves and fruits used as vegetable.
16	Tentuli	*Tamarindus indica*	Dec/Jan.	Fruits flowers and leaves are used for vegetable pickles.

Table 3-10 Important Fiber Yielding forest Species of Ghumsur Forest Division				
Sl. No.	**Common Name**	**Botanical Name**	**Part yielding fiber**	**Utilization.**
01	Bamboo	*Bambusa arundinacea*	Stem	Manufacture of paper
02	Bamboo	*Dendrocalamus strictus*	Stem	Manufacture of paper
03	Dhaman	*Grewia tiliaefolia*	Inner bark	Used for rope making
04	Kanchan	*Bauhinia variegata*	Bark	Used as cordage
05	Palas	*Butea frondosa*	Bark	Used for rope making and for caulking boats
06	Siali	*Bauhinia vahlii*	Inner Bark	Used as cordage

3.5. Demand and Supply of Forest Produce and Pressure on Forests

3.5.0. People depend on forest for a variety of needs. They subsist considerably on forests for small timber, fuel wood, fodder, food and other needs. Some tribals survive exclusively by minor forest produce. They depend on varieties of wild mushroom which they collect for food. Amongst the tribal groups kondhos are very hard working people. There is pressure on forests to meet people's various needs of timber and other forest products.

3.5.1. Timber: is required in both rural and urban areas for construction. General sizes used are beams of size 4" x 6" x 10', doors of size 3" x 4" x 6', window of size 3" x 4" x 3', planks of sizes 1" x 6", 1" x 8", 1" x 10" and 1" x 12 "of varied lengths and battens of size 2" x 1". Sal logs are required by the people for making agricultural implements, Viz, plough, carts and other implements. With the rise of population and emerging changes in their life styles, there is also an increasing demand of timber for furniture, doors and windows. Due to ban on green felling from forests, legal supply of timber to the local market has been adversely affected. Hence, illegal trade in timber and other forest products has become a very lucrative option for the miscreants.

3.5.2. Bamboo: Quite a sizeable quantity of bamboo is available in forests of this division. However, the demand for bamboo is increasing with time for construction and other purposes, including fencing and making baskets, which are sold in weekly markets. The bamboo coupes were worked out by the OFDC Ltd and paper Mills are the consumers of the bamboo produced in this division. The local demand is to be met through the OFDC Ltd.

3.5.3. Firewood: There is scarcity of firewood in both rural and urban areas. Though this Division does have two old firewood sale depots at Lasing and Bhanjanagar and two newly opened depots

at Nidhiapalli and Lembhei, these depots often face the problem of insufficient supplies of firewood. Further the price at which these depots sale the firewood, become beyond the reach of the poor people to procure. Hence, there is constant stream of head loaders and cyclists seen carrying firewood, from forests to the towns. As a result, there is severe pressure on the forest. As per a local survey done to assess the consumption of firewood in this division and as per the most conservative estimate, if it is considered that 20% of the households are not dependent on firewood, even then the local requirement of the people for firewood has been estimated to be around **11.170 M** tonnes. The economic activity has caused degradation of many forests. The legal production of firewood is far less than the requirement since the requirement of firewood is quite high.

3.5.4. Small Poles: Small poles of Sal and other species are also used to fence homestead lands and agricultural fields.

3.5.5. Non-Timber Forest Produce: The division is rich in non-timber forest produce and has a great potential for harvest. Various items like Siali leaf, Siali fibre, Sal leaves, Mahua flower, Sal seed, Bhalia, hill broom are found. These Non-Timber items are very valuable to the tribal communities and people living in and around the forest areas.

3.5.6 Impact of Handing over of MFP items

3.5.6.1 The policy on procurement and trade of minor forest produce has changed to provide freedom in trading with the objective to benefit primary collectors to the maximum. However, NTFP collection and marketing is largely un-organized at the village level. The M.F.P. gatherers are mostly women and man take their part in marketing of the products with minimal or absolutely no value addition through product processing. But most often they do not know or have full access to market linkages. No strategy has been developed for such individual or group entrepreneurship. There is no systematic study to assess potentiality, and flow of benefit, therefore during the present plan preparation an attempt has been made to inculcate and instill the same among the people through massive awareness campaigns and providing them with forward and backward support linkages. The essentials to consider so as ensuring enhanced benefit allocation for the people are as follows:

i. Annual income assessment from MFP items

ii. Comparative procurement prices at different haats

iii. Assessment of Quantity collected per family/ annum

iv. Comparative figures of traders in GPs, registration and quantity collected

3.5.6.2. On the basis of local enquiry in various gram Panchayats of the Division, it has been determined that the procurement prices are not uniform in all places e.g. Khalli per chaki in different haats varies from Rs.6.0 to Rs.8.00 in various haats. Most of the local people are forced to give away the MFP product at a cheaper price as people are innocent and do not have proper

market linkage. The traders have free access in different parts of the division, in villages or haats. The gram panchayat is unable to have complete control over these traders. Only few traders register as per the survey conducted, in various C.D. block and Gram Panchayats it is observed that entry made is only for small quantities, and traders are not registering properly. The middle men mechanism has hardly changed, as the real wholesale dealer and market forces are controlled by them. The gain to the locals is very low as fair price is not maintained. The production figure is not maintained regularly and remains unknown to the gram panchayat. Therefore, the trader has full monopoly of exploiting the produce as well as the people. The DFO will encourage active VSS and women SHGs for awareness creation and to ensure proper pricing to the primary collectors. Training should be imparted to VSS members by DFO (T). He shall also exercise silvicultural inputs for improving the crop, as per the provisions of MFP policy in force.

3.6 Methods of Harvesting and their costs

3.6.1 Felling of trees is mainly done by saw and axe but logging is generally converted by hand saw only. In bamboo coupes, bill hooks and axes are used. Extractions of timber from depot to roadside are dragged by men only to the temporary depots by the side of the forest from where the timber is loaded on to trucks and are transported to the main depots.

3.6.2 The current rate of felling, logging and extraction in forests, cost of conversion in the mills and cost of collection of major produces are provided in the **Table 3-11** and the past prices and cost of exploitation as mentioned in the outgoing plan has been given in **Table 3-12**.

Table.3-11 Current Cost Of Exploitation In Ghumsur North Division

Sl. No.	Item of Work	Rate (OFDC Works)	Rate (Departmental Works) (Cyclone
A. Timber			
1	Operational expenditure	1450/- cum	1750/-cum
B. Firewood			
1	Billeting and stacking	400/- Stacks	440/-Stacks
C. Pole			
	Operational Expenditure	20 /Per Pole	22 /Per Pole
D. Bamboo			
1	Operational expenditure(Both forest & depot) including transport	2350/- per SU	-
E. Kendu leaves			
	Not worked by this Division		
F. Sal seeds			
	Not worked by this Division		

Source: DM OFDC Ltd, Bhanjanagar (C) Division

Table 3-12. Past prices and cost of exploitation.	
Timber	
Felling, Logging including debarking.	**In cum by Saw/Axe.**
(a) Soft wood.	Rs. 30/- to 40/-
(b) Moderately hard (Sal, etc.)	Rs. 50/-
(c) Very hard (Sisoo, Kurum, etc.)	Rs. 60/-
(d) Dragging and stacking (per cum)	Rs.80/- to 120/-
(e) Selection Coupe (per cum,)	Rs.65/- to Rs.100/-
Firewood	
Billeting and Stacking of one stack of firewood of size from selection coupes (12'X3'X3')	Rs. 50/- to Rs.80/-.
Bamboo	
a) Cutting and Bundling (for Salia and Daba)	Rs.2.58/-
b) Dragging and stacking (100 bundles)	Rs. 226/-

Source: DM OFDC Ltd, Bhanjanagar (C) Division

3.7 LINES OF EXPORTS

3.7.1 Roads and Railways

3.7.1.1 No railway line passes through this Division and there is little scope of having one in the future due to hilly terrain. Vijayawada – Ranchi highway is passing through the Division. Only state highways connect Bhanjanagar to Balliguda, Phulbani, Berhampur, Daspalla and Boudh. The main lines of export are through the PWD road, which are fair weather road. Recently a number of remote villages have connected under different development schemes e.g. PMGSY and the block headquarters are connected by Other District Roads (ODR). The length and description of important roads forming communication network of this Division obtained from the office of the Executive Engineer (Roads and Building), Bhanjanagar are furnished in **Table 3-13**.

Table 3-13 Important Roads Traversing Through Ghumsur North Division			
Sl. No.	**Name of the Road**	**Category of Road**	**Total Length of Road (in KM.)**
1	Kalasandhapur-Jagannathpur-Berhampur-Phulbani Road (SH-7)	SH	65.820
2	Bhanjanagar town Road transferred from N.A.C	SH	1.245
3	Bhanjanagar By-Pass Road	SH	3.100
4	Nayagarh-Jagannathprasad Bhanjanagar Road (SH-21)	SH	44.000
5	Karasing-Khalikote-Boirani-Aska (Sugar Junction)-Balipadar-Bellaguntha Road (SH-30)	SH	56.450
6	Bhanjanagar-Tilisingi-Tarasingi-Daspalla Road (SH-37)	SH	48.846
		Sub-Total	***219.461***

7	Tilisingi-Gallery Road (MDR-18)	MDR	12.000
8	Tilisingi Village Road	MDR	1.500
		Sub-Total	***13.500***
9	Mujagada-Gallery Road (ODR)	ODR	12.000
10	Kanteipalli-Soroda Road (ODR)	ODR	22.250
11	Biranchipur-Jerrabadi Road (ODR)	ODR	18.400
12	Jagannathprasad-Sunamhani Road via Alasu	ODR	14.900
		Sub-Total	***67.550***
13	Kolisahi to Thakurani Temple Road (Bellaguntha ULB)	ODR (ULB)	0.840
14	PWD Road (SH-30) to Dhanijapalli Road (Bellaguntha ULB)	ODR (ULB)	2.025
15	PWD Road (SH-21) junction to Police Station via back side of Bus-stand and Police Barrack Road (Bhanjanagar ULB)	ODR (ULB)	0.535
16	Block Square to Power House Square via PWD office and Christian Street (Bhanjanagar (ULB)	ODR (ULB)	0.775
17	PWD Road (SH-7) to Daha irrigation Dept. (Baleshwar Temple) Road (Bhanjanagar ULB)	ODR (ULB)	0.820
		Sub-Total	***4.995***
		Total	***305.506***

Source: E.E Bhanjanagar, (R & B) Division

3.7.2 Forests Roads

3.7.2.1 The means of communication in the heartland of forests division are forest road, which are depicted in **Table 3-14** below.

3.7.2.2 Most of these roads are used for transportation of forest produce. Some of these roads have been maintained. There is still much to be done regarding improvement of forest roads. The maintenance of these forest roads are generally very poor due to paucity of funds.

Table 3-14 R.F wise List of Forest Road of Ghumsur North Division (Bhanjanagar)

Sl No.	Name of Forest Block	Name of Forest road	Distance of Forest road in Km.
1	2	3	4
1	Gallery RF	Mujagada to Dhaumundia	18
2	Gallery RF	Mujagada to Langalakhola	9
3	Darpangia RF	Langakhola to Birikote	7
4	Baiballi RF	Birikote to Baiballi	7
5	Darpangia RF	Darpangia to Mundagaon	12
6	Baiballi RF	Baiballi to Dhaumundia	5
7	Darpangia, Odinabadi	Rambha to Kupati	11
8	Gallery RF	Rambha to Brahmanapadar	8

9	Darpangia RF	Durgaprasad to Darpangia	18
10	Ragada & Tiliki RF	Ragada to Tiliki	9
11	Kaliamba & Ragada RF	Saluapalli to Tinikhandia	8
12	Kaliamba & Tiliki RF	Tiliki to Kaliamba	10
13	Ragada & Kaliamba RF	Ragada to Bankanedi	8
14	Ragada RF	Lathipada to Ragada	8
15	Ragada RF	Tiliki to Dhobadi to Nuagaon	10
16	Kaliamba RF	Kaliamba to Bankanedi	6
17	Brahmanasahi RF	Tarasingi to Banta	14
18	Jagannath Prasad RF	Jagannath Prasad to Gereda	19
19	Tiliki, Dumudumi & Kaliamba RF	Budhakendu to Gudiamba	1.5
20	Brahmanasahi & Paichhelia RF	Tirikumpa to Banta	8
21	Ambajhara & Gunduribadi RF	Gayaganda to Gunduribadi	15
22	Ambajhara & Gunduribadi RF	Rudhapadar to Gunduribadi	12
23	Chandragiri RF	Cox-Corner Road	12
24	Chandragiri & Ambajhara RF	Kathachira to Siuli	13
		Total	**252.5**

Source: DFO, Ghumsur North Division.

3.7.3 Water ways and Rivers

3.7.3.1 There is no navigable river or nallah in this Division. The only river Bada nadi is not suitable and hence is not used for transportation. The timbers during 1920's were tried to be floated down this river but the attempt was unsuccessful.

3.8 PAST AND CURRENT PRICES

3.8.1 The current prices of round and sawn sizes of different important species of timber as obtained from the Office of DM, OFDC Ltd. (C) Division, Bhanjanagar as on 25.08.2013 is enlisted in **Table 3-15** and. This clearly mentions the separate sale prices for timbers to be sold in retail sale or general sale. The retail sale is available only for the local population of the district with a maximum limit of 25 cft per year where as there is no such restriction for the general sale and people from outside the district can also purchase at the general sale price of timber as per the specifications. The past prices of important timber species per cubic meter as mentioned in Rebecca Nayar's Plan is mentioned in **Table 3-16**.

Table 3-15	General Selling Rate Of Round Timber (Rate Per Cum Excluding Taxes In Rs.)									
Girth Class	Length Class	Name of the species								
		Sal, Kasi, Panasa	Teak, Mahogany, Sisoo (Rose Wood)	Bija, Piasal, Kendu (With black portion), Haldu/Kurum	Gambhari & Champa	Bandhan, Bali, Sisoo, Acacia, Tentra, Sirisa, Kangada & Mitkinia	Asan (Sahaja), Jamu, Arjun, L.Moi, S.Moi & Sidha	Mango, Chakunda, Kakapoi, Dhaura, Neem, Kendu (Without black portion)	Harida, Bahada, Mahula, Kusum, Veru, Babula, Manguim, Phasi & Other hardwood	Patuli, Kauchia, Karada, Eucalyptus, Simuli, Rai, Maj, Salia, Chatiana, Nilagiri & Other Softwood, Sundari
1	2	3	4	5	6	7	8	9	10	11
45 to 59 Cm.	Under 2 Mtr	To be sold as pole	12025	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole
	2 to 3.74 Mtr	To be sold as pole	16020	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole
	3.75 to 4.99 Mtr	To be sold as pole	22030	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole
	5Mtr & Up	To be sold as pole	28004	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole	To be sold as pole
60 to 74 Cm.	Under 2 Mtr	10736	24156	13957	12883	9662	7515	5368	4294	3221
	2 to 3.74 Mtr	14303	32182	18594	17164	12873	10012	7152	5721	4291
	3.75 to 4.99 Mtr	19670	44258	25571	23604	17703	13769	9835	7868	5901
	5Mtr & Up	25003	56257	32504	30004	22503	17502	12502	10001	7501
75 to 89 Cm.	Under 2 Mtr	12890	29003	16757	15468	11601	9023	6445	5156	3867
	2 to 3.74 Mtr	17092	38457	22220	20510	15383	11964	8546	6837	5128
	3.75 to 4.99 Mtr	23520	52920	30576	28224	21168	16464	11760	9408	7056
	5Mtr & Up	29947	67381	38931	35936	26952	20963	14974	11979	8984
90 to 119 Cm.	Under 2 Mtr	15327	34486	19925	18392	13794	10729	7664	6131	4598
	2 to 3.74 Mtr	20341	45767	26443	24409	18307	14239	10171	8136	6102
	3.75 to 4.99 Mtr	28005	63011	36407	33606	25205	19604	14003		8402

	5Mtr & Up	35668	80253	46368	42802	32101	24968	17834	14267	10700
120 to 149 Cm.	Under 2 Mtr	26769	60230	34800	32123	24092	18738	13385	10708	8031
	2 to 3.74 Mtr	35668	80253	46368	42802	32101	24968	17834	14267	10700
	3.75 to 4.99 Mtr	49053	110369	63769	58864	44148	34337	24527	19621	14716
	5Mtr & Up	62402	140405	81123	74882	56162	43681	31201	24961	18721
150 to 179 Cm.	Under 2 Mtr	27157	61103	35304	32588	24441	19010	13579	10863	8147
	2 to 3.74 Mtr	36163	81367	47012	43396	32547	25314	18082	14465	10849
	3.75 to 4.99 Mtr	49759	111958	64687	59711	44783	34831	24880	19904	14928
	5Mtr & Up	63284	142389	82269	75941	56956	44299	31642	25314	18985
180Cm & Up.	Under 2 Mtr	28535	64204	37096	34242	25682	19975	14268	11414	8561
	2 to 3.74 Mtr	37999	85498	49399	45599	34199	26599	19000	15200	11400
	3.75 to 4.99 Mtr	52231	117520	67900	62677	47008	36562	26116	20892	15669
	5Mtr & Up	66463	149542	86402	79756	59817	46524	33232	26585	19939
Chandan, Khaira & Red Sanders will not be sold at General or Retail Selling rate. Their sale will be decided by H.O.										

TABLE 3-16 PAST PRICES LOGS OF IMPORTANT TIMBER SPECIES PREVALENT IN GHUMSUR NORTH DIVISION					
Class of produce (per cum) in Rs.	**1990-91**	**1991-92**	**1992-93**	**1993-94**	**1994-95**
1	**2**	**3**	**4**	**5**	**6**
Teak Logs	--	5827	--	--	--
Sal Logs.	4874	4167	4097	4132	4662
Pia-Sal Logs.	521	7098	7911	7805	8334
Halanda Logs.	4202	4344	5685	4379	5827
Bandhan Logs.	3178	3567	4026	3602	4273
Sisoo Logs.	5156	8299	8545	5756	1324
Asan Logs.	2295	2507	2331	2896	3214
S.Moi Logs.	1978	1660	1377	1519	3319
Dhau Logs.	1554	2048	1554	1165	1624
Salia Bamboos. (INDUSTRIAL)	67	94	99	104	111
Per 100 piece. Salia (Long)	42	347	295	--	--
Daba (Industrial) Per 100 pieces.	180	241	247	259	276
Daba (Long)	798	1371	786	--	--

Source: Rebeca Nayar's Plan.

CHAPTER-IV

ACTIVITIES OF FOREST DEVELOPMENT CORPORATION

4.1 Harvesting and Marketing of Forest Produce

4.1.1 Orissa Forest Development Corporation is the main agency for harvesting of different forest produces in the Division. Marketing is also organized by the same sector. The primary objective of the OFDC is to harvest the silviculturally exploitable trees as per the prescription of current working Plan in force in a particular territorial Division. Secondly, the organization is responsible for marketing forest produce through public auctions to fetch maximum financial return to the state exchequer. Third, the OFDC (Ltd) also raises plantations of economic and horticultural importance. Besides, this it has to merchandize import and export of the forest produces. In the past, private contractors used to extract timbers from various coupes of this Division mainly for the purpose of meeting the demand of railway sleepers. However, after nationalization, timber working was handed over to the OFDC Ltd, a govt. of Orissa undertaking from 1973 onwards. The current Bamboo lease is with the OFDC (Ltd). Bamboo is being worked by the OFDC Ltd in the Division and also through a Raw Material Procurer (RMP) for collection i.e. M/S J.K. Paper Mills Rayagada. Kendu leaves are not being marketed through DM, Bhanjanagar (c) Division. The Divisional Manager (C) Bhanjanagar OFDC Ltd in Ganjam district is the concerned OFDC Ltd Division for Ghumsur North territorial jurisdiction.

4.2. Organizational Structure, Functions and Constraints

4.2.1. The Bhanjanagar Commercial Division of the Orissa Forest Development Corporation is under the administrative charge of a Divisional Manager in the rank of Deputy Conservator of Forests with headquarters at Bhanjanagar. A Gazetted officer in the rank of Assistant Conservator of Forests is posted to assist the Divisional Manager. The current staff in position at the supervisory level is only 2 as against the sanctioned strength of 7, 40 numbers of field staff including 8 numbers of sectional supervisor and 32 numbers of field assistants are in position as against the sanctioned strength of 31, 7 numbers of ministerial staff are there as against the sanctioned strength of 14 and 41 numbers of Group D employees are there as against the sanctioned strength of 5 respectively including 28 numbers of daily wages employees. Though there are excess postings in the area of field staff and other workers but there is 50% staff shortage at the clerical level and 70% shortage of staff at the supervisory level. The present strength of staff of the Commercial Division as on 31.8.2014 is summarized in the **Table 4-1** below.

Table 4-1 Existing position of staff strength in Bhanjanagar (C) Division				
Sl. No.	**Name and designation of staff**	**Strength**	**Staff position**	**Vacancy position**
A.	**Supervisory Staff**	**07**	**02**	**05**
B.	**Field Staff**	**31**	**40**	
C.	**Clerical Staff**	**14**	**07**	**07**
D.	**Other Staff**	**05**	**41**	
	TOTAL	**57**	**90**	**12**

Source: D.M. OFDC Ltd, Bhanjanagar

4.2.2 In Ghumsur North Division there are no saw mills and sawing has never occurred since 1989-90 since the ban on green felling has been imposed in the district of Ganjam. Only round timbers and firewood stacks obtained through regular timber coupe working and salvaged timbers and seized timbers (including sawn timber illicitly converted and sawn) are handed to OFDC Ltd. There are total of four fire wood depots being managed by DM, OFDC Ltd, Bhanjanagar (C) Division. Whereas the depots at Bhanjanagar and the Lalsingi are two old permanent depots, two new temporary depots at Nidhiapalli and Lembhei have recently been established for storage for their own use and also the people of Ghumsur North division are being supplied with firewood from these depots. There are no separate private firewood depots in the Division. During 2016, one private saw mill has sanctioned by DFO in the Division. The total quantity of timber, firewood, poles and bamboo received and disposed by the office of DM, OFDC, Bhanjanagar (C) Division from 1995-96 to 2013-14 is summarized below in **Table 4-2**. Also, the different types of forest produce received from Ghumsur North Division and the royalty paid during the outgoing plan period of 20 years is depicted in **Table 4-3**.

Table 4-2 Year wise total forest produce received and disposed by Bhanjanagar (C) Division								
Year	**Total quantity of timber received (cum)**	**Total quantity of timber disposed (cum)**	**Poles received (Nos.)**	**Poles disposed (Nos.)**	**Firewood received (MT)**	**Firewood disposed (MT)**	**Bamboo received (S.U)**	**Bamboo disposed (S.U)**
1	**2**	**3**	**5**	**6**	**8**	**9**	**11**	**12**
1995-96	6000.4896	2385.6030	0	0	678.200	164.500	8407.27	8407.27
1996-97	4693.0759	7073.3702	0	0	391.800	651.740	10828.71	10827.03
1997-98	1128.4122	2999.1054	0	0	58.000	237.000	5519.63	5519.67
1998-99	1133.0249	1239.3180	0	0	141.500	74.500	4615.12	4615.12
1999-2000	6541.3420	1494.3102	2520	0	860.280	98.830	5120.65	4939.00
2000-01	7406.2114	5290.9266	4965	0	426.000	738.011	0	0
2001-02	1520.5510	6266.1107	230	1266	398.830	631.276	0	0
2002-03	1595.2869	3551.4592	240	4163	946.310	883.170	0	0
2003-04	672.6820	1184.1735	44	161	728.327	590.307	5006.03	5006.03
2004-05	511.0611	537.9975	106	138	791.260	1004.545	20603.87	20603.87

2005-06	357.6283	646.8202	10	1	561.930	617.830	27236.72	27236.72
2006-07	1105.8051	886.3930	66	42	596.879	563.770	21529.43	21529.43
2007-08	1327.2258	1355.6875	189	145	793.225	719.681	21230.77	21230.77
2008-09	1753.7285	1562.1141	57	254	770.160	676.005	15744.02	15744.02
2009-10	2387.9125	2207.5752	510	143	539.630	450.290	10966.34	10966.34
2010-11	2908.1502	2378.4138	14	-	657.830	540.300	18235.04	18235.04
2011-12	5549.0550	3321.5190	110	386	1302.043	726.255	20239.37	20239.37
2012-13	2743.2186	3834.6218	130	77	729.127	980.057	60.24	60.24
2013-14	5760.8690	2898.9436	3380	172	1641.433	554.325	1186.42	-

Source: D.M. OFDC Ltd, Bhanjanagar

TABLE4-3 Year Wise Forest Produce Received From Ghumsur North Division And The Royalty Paid

Year	Item	Department working	Salvaging	O.R.	U.D.	Total	Royalty (Rs.)
1995-96	Timber	-	4813.0958			4813.0958	2106478
	Poles	-					
	Firewood	-	1231			1231	
	Bamboo	6956.8132 SU(OPM)				6956.8132	3699487
1996-97	Timber	-	1715.3096			1715.3096	8226066
	Poles	-					
	Firewood	-	261			261	
	Bamboo	10180.9280 SU(OPM)				10180.9280	5665664
1997-98	Timber	-	596.2514			596.2514	2903585
	Poles	-					
	Firewood	-	80			80	
	Bamboo	8087.9398 SU(OPM)				8087.9398	4721714
1998-99	Timber	-	632.1059			632.1059	3731641
	Poles	-					
	Firewood	-	260			260	
	Bamboo	1800.2083 SU(OFDC)				1800.2083	1106858
1999-2000	Timber	-	5352.6778			5352.6778	34537066
	Poles	-					
	Firewood	-	2136			2136	
	Bamboo	4129.0107 SU(JK)				4129.0107	2648053
2000-01	Timber		6104.0705			6104.0705	35852357
	Poles						
	Firewood		747			747	
	Bamboo	No working					
2001-02	Timber		1673.8657			1673.8657	8013441
	Poles						
	Firewood		423			423	
	Bamboo	No working					
2002-03	Timber		1333.9663			1333.9663	6812224
	Poles						
	Firewood		1594			1594	
	Bamboo	No working					
2003-04	Timber		471.2632			471.2632	2558403
	Poles						

	Firewood		282			282	
	Bamboo	2085.4028 SU (OFDC)				2085.4028	729891
2004-05	Timber		156.4825			156.4825	919890
	Poles		91			91	
	Firewood		257			257	
	Bamboo	7342.3712 SU (JK)				7342.3712	2991300
2005-06	Timber	328.8858	164.5889			493.4747	1866520
	Poles						
	Firewood	31	272			303	
	Bamboo	10170.5785 SU (JK)				10170.5785	3508912
2006-07	Timber	476.2663	106.2596			582.5259	2622603
	Poles		11			11	
	Firewood	126	48			174	
	Bamboo	7157.45 SU (JK)				7157.45	2335444
2007-08	Timber	1253.8955	64.7107			1318.6062	3477947
	Poles						
	Firewood	238.50				238.50	
	Bamboo	5553.28 SU (JK)				5553.28	1792179
2008-09	Timber	1119.3160	178.3896			1297.7056	3853082
	Poles						
	Firewood	91	288.00			379	
	Bamboo	7019.8842 SU (JK)				7019.8842	2285641
2009-10	Timber	1302.3887	59.3821			1361.7708	4598283
	Poles		15			15	
	Firewood	170	127			297	
	Bamboo	4349.7885SU (JK)				4349.7885	1885586
2010-11	Timber	1618.5408	92.3596			1710.9004	5789565
	Poles		18			18	
	Firewood	282	107.00			389	
	Bamboo	8411.7057 SU (JK)				8411.7057	3582963
2011-12	Timber	1631.0892	108.9757			1740.0649	6523974
	Poles		9			9	
	Firewood	320	48.00			368	
	Bamboo	4763.2328 SU (JK)				4763.2328	1935990
2012-13	Timber	1753.3949	17.2737			1770.6686	6799826
	Poles		41			41	
	Firewood	276	41			317	
	Bamboo	125.9542 SU (OFDC)				125.9542	16374
2013-14	Timber	3488.5500	1592.1143			5080.6643	15630216 (Royalty not assessed for Phailin salvaged materials of 13-14)
	Poles	607	3240			3847	
	Firewood	616	409			1025	
	Bamboo	762.2614 SU(OFDC)				762.2614	

Source: D.M. OFDC Ltd, Bhanjanagar

4.2.3 There is a Kendu leaf Range at Bhanjanagar which is under the control of DFO (KL) Phulbani. Two sections under it namely Bhanjanagar and Lembhei and one section in part namely Panchbhuti are currently collecting Kendu leaves from the forest areas under the territorial

jurisdiction of Ghumsur North division. Earlier there was another section namely Gandadhar which merged into Bhanjanagar section in the year 2009-10 and the phadi at Gandadhar was brought under the administrative control of Panchbhuti section. The same are being marketed by DM, OFDC Ltd, (CKL) Division, Boudh. Mainly grade IV types of leaves are being collected from these areas. It is seen that the quantity of leaves being collected are continuously in a decreasing trend over the past decade. The reason can be attributed to the fact that either the kendu bushes have become sparse or old and there is a need to rejuvenate the growing stock or that the need for the product and the skilled man power engaged in the job are showing a downward trend. However, in both the circumstances special administrative and afforestation measures need to be taken to capitalize on better harvest, both in terms of quantity and quality so as to make this activity more vibrant and people friendly keeping in view that this is prime source of income for many of the marginalized rural work force. The list of phadi houses under these sections are given in **Table 4-4** and the details of total collection of these leaves section wise from 2002-03 until 2012-13 data was available which has been given in **Table 4-5**.

Table 4-4		**List Of Different Phadis Section Wise Under Bhanjanagar Kl Range**			
1	Lembhei Section	Rudhapadar	13	Panchbhuti Section	Gandadhara
2		Khajuripalli	14	Bhanjanagar Section	Ripitipalli
3		Gayaganda	15		Mahaguda
4		Jadadhar	16		Nandinipalli
5		Barapalli	17		Biripadar
6		Tuludi	18		Brahmanpadar
7		Kokalaba	19		Domuhani
8		Suramani	20		Sorisamuli
9		Khetamundali	21		Baliapata
10		Sisunda	22		Bankatara
11		Lingidibadi	23		Kotagadia
12		Lembhei	24		Samarabandha

Source: Range Officer, Bhanjanagar KL Range, Phulbani KL Division

Table 4-5	**Section Wise Kendu Leaves Collected From Ghumsur North Division (In Bags)**			
Year	**Gandadhar**	**Bhanjanagar**	**Lembhei**	**Total**
2002-03	379	820	977	2176
2003-04	393	676	871	1940
2004-05	104	570	625	1299
2005-06	158	535	517	1210
2006-07	316	616	637	1569
2007-08	247	468	621	1336

2008-09	211	486	586	1283
2009-10	0	971	307	1278
2010-11	0	543	468	1011
2011-12	0	731	632	1363
2012-13	0	586	578	1164

4.2.4 The activity of timber coupe working could not start from the year 1995-96 due to the imposition of ban on green felling and could only commence after 10 years of the outgoing plan had elapsed i.e. from 2005-06 in the selection working circle. During the period of working of annual timber coupes, no advance coupe working has been done. The abstract of the number of felling series and the coupes offered, delivered, marked and the outturn of Timber in cum and firewood in stacks from 1995-96 to 2013-14 have been given in **Table 4-6.**

TABLE 4-6 WORKING OF TIMBER COUPES IN GHUMSUR NORTH DIVISION

Year	Name of the felling series	No. of coupes offered	No. of coupes taken delivery	No. of coupes worked	No. of trees marked	No. of trees felled and converted	Outturn of timber (cum)	Outturn of F/W (stacks)
1	2	3	4	5	6	7	8	9
1995-96	No coupe working							
1996-97	No coupe working							
1997-98	No coupe working							
1998-99	No coupe working							
1999-2000	No coupe working							
2000-01	No coupe working							
2001-02	No coupe working							
2002-03	No coupe working							
2003-04	No coupe working							
2004-05	No coupe working							
2005-06	Bodangi	14	14	14	131	131	44.0392	
	Siuli				61	61	21.2605	
	Paichalia				20	20	20.8744	
	Gunduribadi				25	25	32.2597	6
	Eastern				02	02	0.9013	
	Ghogodo				98	98	97.7900	18
	Rambha				09	09	3.2926	
	Tarasing				63	63	29.4667	
	Ragada				02	02	0.6348	1
	Central				11	11	11.2710	
	Chandragiri				32	32	17.4153	
	Darpangia				07	07	4.4860	
	Western				34	34	11.6537	
	Baibali				33	33	33.5412	6
	TOTAL	**14**	**14**	**14**	**588**	**588**	**328.8864**	**31**
2006-07	Western	11	11	11	269	269	117.8027	24
	Chandragiri				23	23	9.7759	

	Siuli				01	01	0.7818	
	Tarasing				16	16	12.1544	
	Ghogada				155	155	110.7212	30
	Gunduribadi				127	127	108.2260	24
	Baibali				84	84	45.5380	48
	Darpangia				13	13	12.1772	
	Paichalia				15	15	7.4119	
	Bodangi				65	65	48.4749	
	Rambha				07	07	3.2023	
	TOTAL	**11**	**11**	**11**	**775**	**775**	**476.2663**	**126**
2007-08	Western	13	13	13	67	67	51.9023	1.50
	Central				21	21	5.5971	0
	Rambha				11	11	9.8377	3
	Darpangia				18	18	5.5427	6
	Baibali				142	142	76.4448	24
	Bodangi				330	330	112.6458	25
	Chandragiri				75	75	32.1252	6
	Paichalia				17	17	31.4187	3
	Tarasing				104	104	55.6993	2
	Siuli				151	151	65.6692	6
	Ghogada				301	301	206.2658	24
	Gunduribadi				371	371	295.5163	48
	Eastern				333	333	305.2306	90
	TOTAL	**13**	**13**	**13**	**1941**	**1941**	**1253.8955**	**238.50**
2008-09	Western	14	14	14	97	97	63.3091	6
	Rambha				5	5	0	6
	Darpangia				15	15	4.8950	0
	Baibali				28	28	7.8853	10
	Central				15	15	28.5689	0
	Bodangi				333	333	151.4433	12
	Chandragiri				32	32	11.4283	0
	Eastern				257	257	168.3177	21
	Paichalia				117	117	85.4611	6
	Tarasing				112	112	67.9826	3
	Siuli				32	32	24.5288	3
	Gunduribadi				291	291	164.9980	6
	J.N.Prasad				9	9	1.6449	0
	Ghogada				383	383	338.8530	18
	TOTAL	**14**	**14**	**14**	**1726**	**1726**	**1119.3160**	**91**
2009-10	Western	13	13	13	208	208	52.9823	0
	Rambha				34	34	28.9732	6
	Darpangia				6	6	0	6
	Baibali				205	205	49.8830	5
	Chandragiri				29	29	24.9107	6
	Bodangi				301	301	91.1851	15
	Eastern				261	261	144.9326	24
	Paichalia				37	37	20.8952	3
	Tarasing				301	301	200.6954	18

	Siuli				555	555	293.7186	30
	Gunduribadi				237	237	161.8932	33
	Ghogada				316	316	223.0333	24
	J.N.Prasad				10	10	9.2861	0
	TOTAL	**13**	**13**	**13**	**2500**	**2500**	**1302.3887**	**170**
2010-11	Western	13	13	13	139	139	54.6744	6
	Darpangia				51	51	29.1060	11
	Baibali				15	15	0	6
	Ragada				10	10	10.4640	2
	Central				52	52	63.3537	3
	Chandragiri				22	22	16.7648	3
	Bodangi				68	68	35.6041	6
	Eastern				248	248	142.7401	12
	J.N.Prasad				24	24	21.1660	3
	Tarasing				201	201	163.6594	24
	Siuli				291	291	173.8774	54
	Ghogada				376	376	266.7097	42
	Gunduribadi				717	717	640.4212	110
	TOTAL	**13**	**13**	**13**	**2214**	**2214**	**1618.5408**	**282**
2011-12	Western	12	12	12	98	98	34.1916	6
	Chandragiri				37	37	31.9178	6
	Gunduribadi				521	521	383.0793	72
	Bodangi				39	39	13.7674	12
	Darpangia				421	421	182.6771	18
	Ghogada				365	365	269.9770	90
	Tarasing				141	141	97.6314	18
	Eastern				222	222	158.0014	24
	Baibali				97	97	54.2382	12
	Rambha				106	106	73.8532	12
	Siuli				392	392	322.5444	48
	Ragada				12	12	9.2104	2
	TOTAL	**12**	**12**	**12**	**2451**	**2451**	**1631.0892**	**320**
2012-13	J.N.Prasad	13	13	13	71	71	58.0183	6
	Tarasing				25	25	19.5983	6
	Siuli				87	87	99.2111	30
	Ghogada				325	325	363.6260	90
	Gunduribadi				447	447	427.0378	48
	Western				127	127	32.2304	6
	Rambha				217	217	189.1843	18
	Darpangia				56	56	34.2119	6
	Baibali				21	21	8.3889	0
	Central				42	42	27.6096	3
	Chandragiri				105	105	87.9696	15
	Bodangi				117	117	103.5182	18
	Eastern				287	287	302.7905	30
	TOTAL	**13**	**13**	**13**	**1927**	**1927**	**1753.3949**	**276**
2013-14	Ragada	13	13	13	750	750	120.8106	40
	Rambha				1363	1363	379.9080	82

	Western				1445	1445	682.7166	96
	Darpangia				250	250	79.0783	12
	Gunduribadi				480	480	238.0070	30
	Ghogada				336	336	144.5939	24
	Siuli				20	20	19.7124	6
	J.N.Prasad				25	25	14.8849	6
	Tarasing				548	548	300.4722	60
	Eastern				1260	1260	1181.1868	166
	Chandragiri				221	221	160.5635	12
	Bodangi				594	594	124.0038	76
	Central				53	53	42.6120	6
	TOTAL	**13**	**13**	**13**	**7345**	**7345**	**3488.5500**	**616**
2014-15	Darpangia WFS	**Exempted from working of coupes sanctioned vide memo no 16501 Dt 29/9/2014 by PCCF, Odisha.**						
	Darpangia FS							
	Eastern							
	Rambha							
	Siuli							
	Ghogoda							
	Tarasingi							
	Gunduribadi							
	Jaganathprasad							
	Chandragiri							
	Central							
	Paichalia	**No trees available for Marking**						
	Badangi				45	45	7	6
	Baibali				22	22	5	3
	Ragada				30	30	16	4
	Total	3			97	97	28	13

Source: D.M, Bhanjanagar (C) Division

4.2.5 The Bamboo coupes are being worked by OFDC Ltd regularly after the said annual coupes were delivered by DFO Ghumsur North division except that the coupes could not be worked for consecutively three years namely 2001-02, 2002-03 and 2003-04.The abstract of cutting series offered, delivered, marked and worked and the outturn from 1995-96 to 2013-14 is given in **Table 4-7.**

Table 4-7 Working of Bamboo coupes of Ghumsur North Division									
Year	**Name of the felling series**	**No. of coupes offered**	**Name of coupes offered**	**No. of coupes taken delivery**	**Name of coupes taken delivery**	**No. of coupes worked**	**Name of coupes worked**	**Outturn of Commercial bamboo in SU**	**Outturn of IB/SU**
1995-96	Gunduribadi	17 Nos.	Gunduribadi A	17 Nos.	Gunduribadi A	14 Nos.	Gunduribadi A	7.59	1392.8512
	Ambajhara		Ambajhara A		Ambajhara A		Ambajhara A	6.14	1528.8660
	Lembhei		Lembhei A		Lembhei A		Lembhei A	0	292.0942
	Tarasing		Tarasing A		Tarasing A		Tarasing A	0	338.0798
	Nabagochha		Nabagochha A		Nabagochha A		Nabagochha A	0	190.9862
	Banta		Banta A		Banta A		Banta A	0	200.9078
	Ragada		Ragada A		Ragada A		-	0	0
	Kaliamba		Kaliamba A		Kaliamba A		Kaliamba A	0	245.7564
	Birikote		Birikote A		Birikote A		Birikote A	0	709.6075
	Rambha		Rambha A		Rambha A		Rambha A	0	146.1175
	Baibali		Baibali A		Baibali A		Baibali A	0	525.7656
	Bapangi		Bapangi A		Bapangi A		-	0	0
	Durgaprasad		Durgaprasad A		Durgaprasad A		Durgaprasad A	0	50.1917
	Gopadar		Gopadar A		Gopadar A		Gopadar A	0	875.4274
	Khamanasahi		Khamanasahi A		Khamanasahi A		Khamanasahi A	0	323.9722
	Kathachira		Kathachira A		Kathachira A		Kathachira A	0	122.4612
	Dimirijholi		Dimirijholi A		Dimirijholi A		-	0	0
							TOTAL	**13.73**	**6943.0847**
1996-97	Gunduribadi	17 Nos.	Gunduribadi B	17 Nos.	Gunduribadi B	15 Nos.	Gunduribadi B	54.4485	2427.5881
	Ambajhara		Ambajhara B		Ambajhara B		Ambajhara B	0	772.8905
	Lembhei		Lembhei B		Lembhei B		Lembhei B	0	393.4035
	Tarasing		Tarasing B		Tarasing B		Tarasing B	0	559.3039
	Nabagochha		Nabagochha B		Nabagochha B		Nabagochha B	4.1285	774.8728
	Banta		Banta B		Banta B		Banta B	11.3828	435.666
	Ragada		Ragada B		Ragada B		Ragada B	73.6771	764.7902
	Kaliamba		Kaliamba B		Kaliamba B		Kaliamba B	0	1113.3854
	Birikote		Birikote B		Birikote B		Birikote B	26.7571	683.5858
	Rambha		Rambha B		Rambha B		Rambha B	0	271.4057
	Baibali		Baibali B		Baibali B		Baibali B	0	0
	Bapangi		Bapangi B		Bapangi B		Bapangi B	0	473.2091
	Durgaprasad		Durgaprasad B		Durgaprasad B		Durgaprasad B	0	78.6384

	Gopadar		Gopadar B		Gopadar B		Gopadar B	12.8771	861.672
	Khamanasahi		Khamanasahi B		Khamanasahi B		Khamanasahi B	0	261.5847
	Kathachira		Kathachira B		Kathachira B		Kathachira B	0	125.6605
	Dimirijholi		Dimirijholi B		Dimirijholi B		-	0	0
							TOTAL	**183.2711**	**9997.6566**
1997-98	Gunduribadi	17 Nos.	Gundurib adi C	17 Nos.	Gunduribadi C	16 Nos.	Gunduribadi C	31.30	680.869
	Ambajhara		Ambajhara C		Ambajhara C		Ambajhara C	48.8885	2103.3241
	Lembhei		Lembhei C		Lembhei C		Lembhei C	0	226.7886
	Tarasing		Tarasing C		Tarasing C		Tarasing C	0	233.0776
	Nabagochha		Nabagochha C		Nabagochha C		Nabagochha C	0	294.2677
	Banta		Banta C		Banta C		Banta C	0	581.049
	Ragada		Ragada C		Ragada C		Ragada C	0	160.3358
	Kaliamba		Kaliamba C		Kaliamba C		Kaliamba C	31.94	1025.0467
	Birikote		Birikote C		Birikote C		Birikote C	30.5571	710.3118
	Rambha		Rambha C		Rambha C		Rambha C	0	254.7623
	Baibali		Baibali C		Baibali C		Baibali C	0	130.3596
	Bapangi		Bapangi C		Bapangi C		Bapangi C	0	204.6209
	Durgaprasad		Durgaprasad C		Durgaprasad C		Durgaprasad C	0	180.5413
	Gopadar		Gopadar C		Gopadar C		Gopadar C	12.4428	729.6821
	Khamanasahi		Khamanasahi C		Khamanasahi C		Khamanasahi C	0	316.687
	Kathachira		Kathachira C		Kathachira C		Kathachira C	0	101.0878
	Dimirijholi		Dimirijholi C		Dimirijholi C		-	0	0
							TOTAL	**155.1284**	**7932.8113**
1998-99	Gunduribadi	17 Nos.	Gundurib adi D	17 Nos.	Gunduribadi D	15 Nos.	Gunduribadi D	0	224.6855
	Ambajhara		Ambajhara D		Ambajhara D		Ambajhara D	12.8571	170.1166
	Lembhei		Lembhei D		Lembhei D		Lembhei D	0	129.6050
	Tarasing		Tarasing D		Tarasing D		Tarasing D	0	75.2675
	Nabagochha		Nabagochha D		Nabagochha D		Nabagochha D	0	120.7500
	Banta		Banta D		Banta D		Banta D	0	93.5812
	Ragada		Ragada D		Ragada D		Ragada D	0	164.7231
	Kaliamba		Kaliamba D		Kaliamba D		-	0	0
	Birikote		Birikote D		Birikote D		Birikote D	0	135.2299
	Rambha		Rambha D		Rambha D		Rambha D	0	65.6075
	Baibali		Baibali D		Baibali D		Baibali D	0	41.8197
	Bapangi		Bapangi D		Bapangi D		Bapangi D	0	168.9695
	Durgaprasad		Durgaprasad D		Durgaprasad D		Durgaprasad D	0	36.2250
	Gopada		Gopadar		Gopadar D		Gopadar D	0	198.3922

	r		D						
	Khamanasahi		Khamanasahi D		Khamanasahi D		Khamanasahi D	0	145.2723
	Kathachira		Kathachira D		Kathachira D		Kathachira D	0	17.1062
	Dimirijholi		Dimirijholi D		Dimirijholi D		-	0	0
							TOTAL	**12.8571**	**1787.3512**
1999-2000	Gunduribadi	17 Nos.	Gundurib adi A	17 Nos.	Gunduribadi A	15 Nos.	Gunduribadi A	76.1371	1221.2856
	Ambajhara		Ambajhara A		Ambajhara A		Ambajhara A	30.0628	560.5315
	Lembhei		Lembhei A		Lembhei A		Lembhei A	0	33.4578
	Tarasing		Tarasing A		Tarasing A		Tarasing A	0	220.8215
	Nabagochha		Nabagochha A		Nabagochha A		Nabagochha A	0	115.2055
	Banta		Banta A		Banta A		Banta A	0	119.9349
	Ragada		Ragada A		Ragada A		Ragada A	0	234.6373
	Kaliamba		Kaliamba A		Kaliamba A		Kaliamba A	0	155.1235
	Birikote		Birikote A		Birikote A		Birikote A	7.12	296.9343
	Rambha		Rambha A		Rambha A		Rambha A	0	20.2658
	Baibali		Baibali A		Baibali A		Baibali A	8.64	165.7193
	Bapangi		Bapangi A		Bapangi A		-	0	0
	Durgaprasad		Durgapras ad A		Durgaprasad A		Durgaprasad A	0	9.5392
	Gopadar		Gopadar A		Gopadar A		Gopadar A	0	586.3418
	Khamanasahi		Khamanasahi A		Khamanasahi A		Khamanasahi A	0	167.7620
	Kathachira		Kathachira A		Kathachira A		Kathachira A	0	99.4879
	Dimirijholi		Dimirijholi A		Dimirijholi A		-	0	0
							TOTAL	**121.9599**	**4007.0479**
2000-2001, 2001-2002 & 2002-2003 not worked									
2003-04	Gundurib adi	17 Nos.	Gundurib adi A	17 Nos.	Gunduribadi A	06 Nos.	Gunduribadi A	22.8571	765.1525
	Ambajhara		Ambajhara A		Ambajhara A		Ambajhara A	32.8571	636.57
	Lembhei		Lembhei A		Lembhei A		-	0	0
	Tarasing		Tarasing A		Tarasing A		-	0	0
	Nabagochha		Nabagochha A		Nabagochha A		-	0	0
	Banta		Banta A		Banta A		-	0	0
	Ragada		Ragada A		Ragada A		Ragada A	0	103.7443
	Kaliamba		Kaliamba A		Kaliamba A		Kaliamba A	0	174.6346
	Birikote		Birikote A		Birikote A		Birikote A	0	76.5957
	Rambha		Rambha A		Rambha A		-	0	0
	Baibali		Baibali A		Baibali A		-	0	0
	Bapangi		Bapangi A		Bapangi A		-	0	0
	Durgaprasad		Durgapras ad A		Durgaprasad A		-	0	0
	Gopadar		Gopadar A		Gopadar A		Gopadar A	21.4285	251.5625
	Khamana		Khamanas		Khamanasahi A		-	0	0

	sahi		ahi A						
	Kathachira		Kathachira A		Kathachira A		-	0	0
	Dimirijholi		Dimirijholi A		Dimirijholi A		-	0	0
							TOTAL	**77.1427**	**2008.2596**
2004-05	Gundurib adi	17 Nos.	Gundurib adi B	17 Nos.	Gunduribadi B	14 Nos.	Gunduribadi B	62.4485	2468.1300
	Ambajhara		Ambajhara B		Ambajhara B		Ambajhara B	0	430.0611
	Lembhei		Lembhei B		Lembhei B		Lembhei B	0	187.0316
	Tarasing		Tarasing B		Tarasing B		Tarasing B	0	46.8308
	Nabagochha		Nabagochha B		Nabagochha B		Nabagochha B	0	253.4508
	Banta		Banta B		Banta B		Banta B	0	190.1007
	Ragada		Ragada B		Ragada B		Ragada B	7.8685	995.2281
	Kaliamba		Kaliamba B		Kaliamba B		Kaliamba B	5.777	1106.0934
	Birikote		Birikote B		Birikote B		Birikote B	0	604.7361
	Rambha		Rambha B		Rambha B		Rambha B	0	23.4053
	Baibali		Baibali B		Baibali B		-	0	0
	Bapangi		Bapangi B		Bapangi B		-	0	0
	Durgaprasad		Durgaprasad B		Durgaprasad B		Durgaprasad B	0	51.0168
	Gopadar		Gopadar B		Gopadar B		Gopadar B	0	642.6415
	Khamanasahi		Khamanasahi B		Khamanasahi B		Khamanasahi B	0	206.4020
	Kathachira		Kathachira B		Kathachira B		Kathachira B	0	61.1498
	Dimirijholi		Dimirijholi B		Dimirijholi B		-	0	0
							TOTAL	**76.0940**	**7266.278**
2005-06	Gundurib adi	17 Nos.	Gundurib adi C	17 Nos.	Gunduribadi C	15 Nos.	Gunduribadi C	0	1669.53
	Ambajhara		Ambajhara C		Ambajhara C		Ambajhara C	13.4285	2628.21
	Lembhei		Lembhei C		Lembhei C		Lembhei C	0	303.92
	Tarasing		Tarasing C		Tarasing C		Tarasing C	0	93.43
	Nabagochha		Nabagochha C		Nabagochha C		Nabagochha C	0	328.02
	Banta		Banta C		Banta C		Banta C	0	355.39
	Ragada		Ragada C		Ragada C		Ragada C	4.4000	301.89
	Kaliamba		Kaliamba C		Kaliamba C		-	0	1808.02
	Birikote		Birikote C		Birikote C		Birikote C	0	655.98
	Rambha		Rambha C		Rambha C		Rambha C	0	65.06
	Baibali		Baibali C		Baibali C		Baibali C	0	233.43
	Bapangi		Bapangi C		Bapangi C		Bapangi C	0	198.34
	Durgaprasad		Durgaprasad C		Durgaprasad C		Durgaprasad C	0	100.85
	Gopadar		Gopadar C		Gopadar C		Gopadar C	0	868.30
	Khamanasahi		Khamanasahi C		Khamanasahi C		Khamanasahi C	0	443.45
	Kathachira		Kathachira C		Kathachira C		Kathachira C	0	98.93
	Dimirijholi		Dimirijholi C		Dimirijholi C		-	0	0

							TOTAL	**17.8285**	**10152.75**
2006-07	Gundurib adi	17 Nos.	Gundurib adi D	17 Nos.	Gunduribadi D	15 Nos.	Gunduribadi D	0	322.00
	Ambajhara		Ambajhara D		Ambajhara D		Ambajhara D	14.857	1043.62
	Lembhei		Lembhei D		Lembhei D		Lembhei D	0	221.74
	Tarasing		Tarasing D		Tarasing D		Tarasing D	0	282.36
	Nabagoch ha		Nabagoch ha D		Nabagochha D		Nabagochha D	8.571	1475.05
	Banta		Banta D		Banta D		Banta D	0	244.26
	Ragada		Ragada D		Ragada D		Ragada D	8.571	1224.12
	Kaliamba		Kaliamba D		Kaliamba D		Kaliamba D	0	114.59
	Birikote		Birikote D		Birikote D		Birikote D	0	451.70
	Rambha		Rambha D		Rambha D		Rambha D	0	132.57
	Baibali		Baibali D		Baibali D		Baibali D	0	189.92
	Bapangi		Bapangi D		Bapangi D		Bapangi D	0	444.58
	Durgapras ad		Durgapras ad D		Durgaprasad D		-	0	0
	Gopadar		Gopadar D		Gopadar D		Gopadar D	0	575.28
	Khamana sahi		Khamanas ahi D		Khamanasahi D		Khamanasahi D	0	300.09
	Kathachir a		Kathachir a D		Kathachira D		Kathachira D	0	103.57
	Dimirijhol i		Dimirijholi D		Dimirijholi D		-	0	0
							TOTAL	**31.999**	**7125.45**
2007-08	Gundurib adi	17 Nos.	Gundurib adi A	17 Nos.	Gunduribadi A	15 Nos.	Gunduribadi A	11.428	1020.00
	Ambajhara		Ambajhara A		Ambajhara A		Ambajhara A	5.714	1160.58
	Lembhei		Lembhei A		Lembhei A		Lembhei A	0	324.26
	Tarasing		Tarasing A		Tarasing A		Tarasing A	0	346.20
	Nabagoch ha		Nabagoch ha A		Nabagochha A		Nabagochha A	0	344.25
	Banta		Banta A		Banta A		Banta A	0	155.46
	Ragada		Ragada A		Ragada A		Ragada A	0	298.78
	Kaliamba		Kaliamba A		Kaliamba A		Kaliamba A	0	423.00
	Birikote		Birikote A		Birikote A		Birikote A	0	258.12
	Rambha		Rambha A		Rambha A		Rambha A	0	142.14
	Baibali		Baibali A		Baibali A		Baibali A	0	175.31
	Bapangi		Bapangi A		Bapangi A		Bapangi A	0	118.04
	Durgapras ad		Durgapras ad A		Durgaprasad A		-	0	0
	Gopadar		Gopadar A		Gopadar A		Gopadar A	0	660.01
	Khamana sahi		Khamanas ahi A		Khamanasahi A		Khamanasahi A	0	60.73
	Kathachir a		Kathachir a A		Kathachira A		Kathachira A	0	66.40
	Dimirijhol i		Dimirijholi A		Dimirijholi A		-	0	0
							TOTAL	**17.142**	**5553.28**
2008-09	Gundurib adi	17 Nos.	Gundurib adi B	17 Nos.	Gunduribadi B	15 Nos.	Gunduribadi B	20.000	1518.391

	Ambajhara		Ambajhara B		Ambajhara B		Ambajhara B	0	392.68
	Lembhei		Lembhei B		Lembhei B		Lembhei B	0	326.621
	Tarasing		Tarasing B		Tarasing B		Tarasing B	0	311.052
	Nabagochha		Nabagochha B		Nabagochha B		Nabagochha B	0	305.654
	Banta		Banta B		Banta B		Banta B	0	214.304
	Ragada		Ragada B		Ragada B		Ragada B	8.600	1120.157
	Kaliamba		Kaliamba B		Kaliamba B		Kaliamba B	5.714	1007.719
	Birikote		Birikote B		Birikote B		Birikote B	0	500.911
	Rambha		Rambha B		Rambha B		Rambha B	0	78.89
	Baibali		Baibali B		Baibali B		Baibali B	0	84.525
	Bapangi		Bapangi B		Bapangi B		Bapangi B	0	286.298
	Durgaprasad		Durgaprasad B		Durgaprasad B		-	0	0
	Gopadar		Gopadar B		Gopadar B		Gopadar B	0	585.637
	Khamanasahi		Khamanasahi B		Khamanasahi B		Khamanasahi B	0	202.205
	Kathachira		Kathachira B		Kathachira B		Kathachira B	0	50.513
	Dimirijholi		Dimirijholi B		Dimirijholi B		-	0	0
							TOTAL	**34.314**	**6985.557**
2009-10	Gundurib adi	17 Nos.	Gundurib adi C	17 Nos.	Gunduribadi C	11 Nos.	Gunduribadi C	15.234	1067.389
	Ambajhara		Ambajhara C		Ambajhara C		Ambajhara C	0	1074.443
	Lembhei		Lembhei C		Lembhei C		Lembhei C	0	70.437
	Tarasing		Tarasing C		Tarasing C		-	0	0
	Nabagochha		Nabagochha C		Nabagochha C		Nabagochha C	0	236.709
	Banta		Banta C		Banta C		Banta C	0	195.303
	Ragada		Ragada C		Ragada C		Ragada C	0	245.883
	Kaliamba		Kaliamba C		Kaliamba C		Kaliamba C	4.614	845.179
	Birikote		Birikote C		Birikote C		Birikote C	0	271.335
	Rambha		Rambha C		Rambha C		-	0	0
	Baibali		Baibali C		Baibali C		-	0	0
	Bapangi		Bapangi C		Bapangi C		Bapangi C	0	86.034
	Durgaprasad		Durgaprasad C		Durgaprasad C		-	0	0
	Gopadar		Gopadar C		Gopadar C		Gopadar C	0	184.385
	Khamanasahi		Khamanasahi C		Khamanasahi C		Khamanasahi C	0	43.852
	Kathachira		Kathachira C		Kathachira C		-	0	0
	Dimirijholi		Dimirijholi C		Dimirijholi C		-	0	0
							TOTAL	**19.848**	**4320.949**
2010-11	Gundurib adi	17 Nos.	Gundurib adi D	17 Nos.	Gunduribadi D	14 Nos.	Gunduribadi D	0	409.479
	Ambajhara		Ambajhara D		Ambajhara D		Ambajhara D	14.285	1444.703
	Lembhei		Lembhei D		Lembhei D		Lembhei D	0	170.579
	Tarasing		Tarasing D		Tarasing D		Tarasing D	0	165.085
	Nabagochha		Nabagochha D		Nabagochha D		Nabagochha D	0	1044.031

	Banta		Banta D		Banta D		Banta D	0	171.306
	Ragada		Ragada D		Ragada D		Ragada D	5.300	2748.538
	Kaliamba		Kaliamba D		Kaliamba D		Kaliamba D	0	219.999
	Birikote		Birikote D		Birikote D		Birikote D	0	362.954
	Rambha		Rambha D		Rambha D		-	0	0
	Baibali		Baibali D		Baibali D		Baibali	0	222.270
	Bapangi		Bapangi D		Bapangi D		Bapangi	0	605.188
	Durgaprasad		Durgaprasad D		Durgaprasad D		-	0	0
	Gopadar		Gopadar D		Gopadar D		Gopadar D	0	645.445
	Khamanasahi		Khamanasahi D		Khamanasahi D		Khamanasahi D	0	148.935
	Kathachira		Kathachira D		Kathachira D		Kathachira D	0	33.608
	Dimirijholi		Dimirijholi D		Dimirijholi D		-	0	0
							TOTAL	**19.585**	**8392.12**
2011-12	Gundurib adi	17 Nos.	Gundurib adi A	17 Nos.	Gunduribadi A	13 Nos.	Gunduribadi A	10.614	901.207
	Ambajhara		Ambajhara A		Ambajhara A		Ambajhara A	0	895.562
	Lembhei		Lembhei A		Lembhei A		Lembhei A	0	159.430
	Tarasing		Tarasing A		Tarasing A		Tarasing A	0	251.562
	Nabagochha		Nabagochha A		Nabagochha A		Nabagochha A	0	400.869
	Banta		Banta A		Banta A		Banta A	0	153.664
	Ragada		Ragada A		Ragada A		Ragada A	0	531.293
	Kaliamba		Kaliamba A		Kaliamba A		Kaliamba A	0	463.750
	Birikote		Birikote A		Birikote A		Birikote A	5.028	126.042
	Rambha		Rambha A		Rambha A		-	0	0
	Baibali		Baibali A		Baibali A		Baibali A	0	195.232
	Bapangi		Bapangi A		Bapangi A		Bapangi A	0	98.572
	Durgaprasad		Durgaprasad A		Durgaprasad A		-	0	0
	Gopadar		Gopadar A		Gopadar A		Gopadar A	0	411.730
	Khamanasahi		Khamanasahi A		Khamanasahi A		Khamanasahi A	0	158.684
	Kathachira		Kathachira A		Kathachira A		-	0	0
	Dimirijholi		Dimirijholi A		Dimirijholi A		-	0	0
							TOTAL	**15.642**	**4747.597**
2012-13	Gundurib adi	17 Nos.	Gundurib adi B	17 Nos.	Gunduribadi B		Gunduribadi B	22.857	50.31
	Ambajhara		Ambajhara B		Ambajhara B		-	0	0
	Lembhei		Lembhei B		Lembhei B		-	0	0
	Tarasing		Tarasing B		Tarasing B		-	0	0
	Nabagochha		Nabagochha B		Nabagochha B		-	0	0
	Banta		Banta B		Banta B		-	0	0
	Ragada		Ragada B		Ragada B		Ragada B	37.142	5.23
	Kaliamba		Kaliamba B		Kaliamba B		Kaliamba B	5.714	4.70
	Birikote		Birikote B		Birikote B		-	0	0

	Rambha		Rambha B		Rambha B		-	0	0
	Baibali		Baibali B		Baibali B		-	0	0
	Bapangi		Bapangi B		Bapangi B		-	0	0
	Durgaprasad		Durgaprasad B		Durgaprasad B		-	0	0
	Gopadar		Gopadar B		Gopadar B		-	0	0
	Khamanasahi		Khamanasahi B		Khamanasahi B		-	0	0
	Kathachira		Kathachira B		Kathachira B		-	0	0
	Dimirijholi		Dimirijholi B		Dimirijholi B		-	0	0
							TOTAL	**65.713**	**60.24**
2013-14	Gunduribadi	17 Nos.	Gunduribadi C	17 Nos.	Gunduribadi C	05 Nos.	Gunduribadi C	0	322.00
	Ambajhara		Ambajhara C		Ambajhara C		Ambajhara C	0	181.13
	Lembhei		Lembhei C		Lembhei C		-	0	0
	Tarasing		Tarasing C		Tarasing C		-	0	0
	Nabagochha		Nabagochha C		Nabagochha C		-	0	0
	Banta		Banta C		Banta C		-	0	0
	Ragada		Ragada C		Ragada C		Ragada C	5.911	61.69
	Kaliamba		Kaliamba C		Kaliamba C		Kaliamba C	0	105.48
	Birikote		Birikote C		Birikote C		Birikote C	0	86.05
	Rambha		Rambha C		Rambha C		-	0	0
	Baibali		Baibali C		Baibali C		-	0	0
	Bapangi		Bapangi C		Bapangi C		-	0	0
	Durgaprasad		Durgaprasad C		Durgaprasad C		-	0	0
	Gopadar		Gopadar C		Gopadar C		-	0	0
	Khamanasahi		Khamanasahi C		Khamanasahi C		-	0	0
	Kathachira		Kathachira C		Kathachira C		-	0	0
	Dimirijholi		Dimirijholi C		Dimirijholi C		-	0	0
							TOTAL	**5.911**	**756.35**
2014-15	Ambazora	17	Ambazora D	17	Ambazora D	3	Ambazora D	0	10.06
	Gunduribadi		Gunduribadi D		Gunduribadi D				
	Lembei		Lembei D		Lembei D				
	Nabagochha		Nabagochha D		Nabagochha D				
	Banta		Banta D		Banta D				
	Tarasing		Tarasing D		Tarasing D				
	Gopadar		Gopadar D		Gopadar D				
	Khamanasahi		Khamanasahi D		Khamanasahi D				
	Dimirijholi		Dimirijholi D		Dimirijholi D				
	Kathachira		Kathachira D		Kathachira D				
	Rambha		Rambha D		Rambha D				
	Baibali		Baibali D		Baibali D				
	Bapangi		Bapangi D		Bapangi D				

	Birikote		Birikote D		Birikote D				
	Durgaprasad		Durgaprasad D		Durgaprasad D				
	Ragada		Ragada D		Ragada D		Ragada D	0	8.05
	Kaliamba		Kaliamba D		Kaliamba D		Kaliamba D	0	3.02
							Total	**0**	**21.13**

4.2.6 Constraints

4.2.6.1 The OFDC has many constraints and a problem, particularly the financial position is very critical. The establishment of the organization is too large and heavy liabilities due to huge losses in the past have continued to worsen the condition. Some factors are as follows:

i. After the imposition of ban on green felling by the state government, timber and firewood supply were reduced drastically. Only seized produced were handed over to them, these timbers could not fetch good market prices. The quality of timber affected the revenue.

ii. As per the Minor Forest Produce 2000 policy, the management and control have been transferred to the G.P. Earlier several MFP items were being worked by OFDC Ltd. Now even Sal seed has been transferred under the control of the gram Panchayat.

iii. Bamboo working could not be decided to the benefit of OFDC for many years. Either Raw Material Procurer will be working or by OFDC, still in confused stage.

iv. The staff structure was designed for timber coupe working. Since there was no coupe working, the staff surplus situation became a burden to the organization.

v. OFDC is trying to diversify, but not much progress has been made in this Division.

4.3 Demographic Profile

4.3.1 The total population of Ghumsur North Forest Division stands at 499205 as per the 2001 Census with a medium density of 211 persons per sq.km. Majority of the population in the entire division belongs to the general category. The people are generally poor and depend primarily on agriculture. 74.72% of the total populations belong to general and other categories whereas the SC and the ST population stands at 19.74% and 5.54% respectively. This demographic composition has not changed much from the previous census of 1991. This gives an impression that the population has attained stability in the area. The ST population is more confined to rural and far flung areas and which are concentrated in Soroda Block than any other block. The population census data of 1991 and 2001 have been enlisted in **Table 4-8** and **4-9**. Though the recent population census of 2011 has been concluded, but until now the CD block wise final population figures are not available.

Table 4-8	Human Population of Ghumsur North Division by cast and sex CD Block wise of 1991 census																
Sl. No.	Name of CD Block	Rural/ Urban	Total Population			SC Population			%	ST Population			%	Other Population			%
			Male	Female	Total	Male	Female	Total		Male	Female	Total		Male	Female	Total	
1	Bellaguntha	Rural	42827	46400	89227	6006	6286	12292	13.78	263	260	523	0.59	36561	39854	76415	85.64
2	Bhanjanagar	Rural	53386	53407	106793	11817	11845	23662	22.16	3395	3302	6697	6.27	38174	38260	76434	71.57
3	Jagannathprasad	Rural	52477	52232	104709	12172	11973	24145	23.06	2951	2740	5691	5.44	37354	37519	74873	71.51
4	Soroda	Rural	53307	52986	106293	10737	10649	21386	20.12	5136	5204	10340	9.73	37434	37133	74567	70.15
5	Aska	Rural	60027	62009	122036	11052	11416	22468	18.41	421	388	809	0.66	48554	50205	98759	80.93
6	Bellaguntha	Urban	4353	4485	8838	484	518	1002	11.34	117	127	244	2.76	3752	3840	7592	85.90
7	Bhanjanagar	Urban	8791	9331	18122	1492	1469	2961	16.34	112	85	197	1.09	7187	7777	14964	82.57
Total			**275168**	**280850**	**556018**	**53760**	**54156**	**107916**	**19.41**	**12395**	**12106**	**24501**	**4.41**	**209016**	**214588**	**423604**	**76.19**

Table 4-9	Human Population of Ghumsur North Division by cast and sex CD Block wise of 2001 census																
Sl. No.	Name of CD Block	Rural/ Urban	Total Population			SC Population			%	ST Population			%	Other Population			%
			Male	Female	Total	Male	Female	Total		Male	Female	Total		Male	Female	Total	
1	Bellaguntha	Rural	49938	53139	103077	7065	7566	14631	14.19	329	349	678	0.66	42544	45224	87768	85.15
2	Bhanjanagar	Rural	61604	60845	122449	13047	12964	26011	21.24	3968	3837	7805	6.37	44589	44044	88633	72.38
3	Jagannathprasad	Rural	58354	59540	117894	13716	13812	27528	23.35	3037	2758	5795	4.92	41601	42970	84571	71.73
4	Soroda	Rural	63064	63011	126075	12787	12703	25490	20.22	6270	6574	12844	10.19	44007	43734	87741	69.59
5	Aska	Rural	68051	70311	138362	12242	12519	24761	17.90	464	485	949	0.69	55345	57307	112652	81.42
6	Bellaguntha	Urban	4937	5025	9962	704	748	1452	14.58	125	127	252	2.53	4108	4150	8258	82.90
7	Bhanjanagar	Urban	10226	9522	19748	1671	1758	3429	17.36	152	125	277	1.40	8403	7639	16042	81.23
Total			**316174**	**321393**	**637567**	**61232**	**62070**	**123302**	**128.84**	**14345**	**14255**	**28600**	**26.76**	**240597**	**245068**	**485665**	**544.4**

4.4 Cattle Population

4.4.1 The livestock census is done in every five years. It is observed that there is a drastic reduction in all the categories of livestock starting from 2007 census figures to that of 2012 census data. The total cattle population including cows (both indigenous and cross bred), buffalos, goat and sheep put together came to 3,34,315 in 2007 census which reduced to 2,18,518 according to census conducted in the year 2012. This is a deficit of 1,15,797 numbers of livestock. The largest factor for such major reduction in numbers of livestock is attributed to the landslide fall in numbers of indigenous cows which reduced from 2,10,771 according to 2007 census to 1,21,108 as per 2012 census which in itself is a fall in numbers of 89,663. This can be attributed to the fact that there is a de-motivating factor amongst the common man in upkeep and maintenance of livestock and one of the major reasons for such disinterest can be due to the fact that the work of maintain live stock is a labour intrinsic work and in the presence of other easier avenues of earning a livelihood, interest in maintaining livestock has reduced. More livestock population is seen in part of Soroda block which has a greater population proportion of schedule Tribe people. **(Table 4.10, Table 4.11)**

4.4.2 The quantity of biomass consumed is estimated on the basis of logical assumption and requirement of feed per animal provided by the CDVO. It is also assumed that the biomass consumed by normal cattle per day by way of grazing over 1 ha of the forest area. As per the estimation in the Division, a total of 4, 07,270 units of cattle is estimated. One cattle unit/cow unit is = 25 kg of fodder per day. Requirement of other animal are estimated in terms of cow units. (one buffalo=2 cow units and one goat or sheep is estimated to be 0.5 cow unit). Therefore, the requirement of fodder per day which was estimated to be around 76,003 quintals as per 2007 census came down to 47,103 quintals as per 2012 census. Assuming that 40% of the fodder is met from agricultural residue, therefore, the bio-mass consumption from forest is 60% which is estimated at 28,261 quintals per day. The ideal carrying capacity is calculated on the basis 1 ha per day. Though the carrying capacity is well within the acceptable limits, keeping in view the skewed distribution of cattle population and the unavailability of forested areas on steep areas and on hills, the forest patches which are in low lying areas in Tarasingi, Jaganathprasad, Mujagada Ranges area especially are under tremendous pressure. There is no separate grazing management plan or alternate arrangement in the district.

Table 4-10 Live Stock Census data of Ghumsur North Division for the year 2007													
Sl. No.	**Name of the Block**	**Ind. (Cow)**	**CB (Cow)**	**Total (Cow)**	**Buffalo**	**Goat**	**Sheep**	**Pig**	**Dog**	**Fowls**	**Duck**	**Others**	**Fowls in farms**
1	Bellaguntha	30614	1356	31970	3134	7567	7399	139	15	10560	34	0	12010
2	Soroda	71118	362	71480	3787	26988	6533	2297	1697	32943	36	0	5645
3	Bhanjanagar	42846	1226	44072	3332	18708	5826	442	1260	27202	164	0	2250
4	Jagannathprasad	30954	324	31278	3187	8891	4406	104	616	7385	23	7	2300
5	Aska	30021	1950	31971	7540	11939	4307	764	769	19797	1100	389	101200
	Total	***205553***	***5218***	***210771***	***20980***	***74093***	***28471***	***3746***	***4357***	***97887***	***1357***	***396***	***123405***

Table 4-11 Live Stock census data of Ghumsur North Division for the year 2012													
Sl. No.	**Name of the Block**	**Ind. (Cow)**	**CB (Cow)**	**Total (Cow)**	**Buffalo**	**Goat**	**Sheep**	**Pig**	**Dog**	**Fowls**	**Duck**	**Others**	**Fowls in farms**
1	Bellaguntha	11604	0	11604	744	1589	1975	0	0	0	0	3089	0
2	Soroda	4431	131	44442	1624	18293	7555	0	0	0	0	15295	0
3	Bhanjanagar	39164	1661	40825	2341	12359	7423	568	0	0	0	18542	0
4	Jagannathprasad	34373	599	44072	2815	13127	7547	0	0	0	0	10588	0
5	Aska	27932	1213	29145	4835	9615	5568	251	216	0	0	29301	0
	Total	***117504***	***3604***	***121108***	***12359***	***54983***	***30068***	***819***	***216***	***0***	***0***	***76815***	***0***

4.5 Main Occupation

4.5.1 The main occupation is agriculture. The other important major sources of income are Siali and Sal leaf collection and plate making. Kendu leaf collection comes third and grade IV leaves are collected from the areas under territorial jurisdiction of Ghumsur north division. Other NTFP items collected include myrobalans, Mahua flower, Mahua seeds, Sal seeds and hill broom to some of the extent. All the collections are for domestic consumption and are not for trading. Hence though there is lot of local markets called hats, but forest based NTFP items do not find a place there. Forestry sector also provides employment to the local people by engaging them in different operations like raising of nursery, sowing, planting, post planting activities and watch and ward.

4.6 Assessment of Local Dependence

4.6.1 An attempt has been made to collect the socio economic status of the households of the rural poor of the villages of Ghumsur North division. It is assessed from the data that almost 70% of the population is dependent on agriculture. The other important needs on which the forest fringe dwellers are dependent on the forest resources are for fuel wood, small timber and fodder for their livestock. So moderate to heavy dependence of people on the forest resources is seen. The dependence is more pronounced in the rural areas and with Schedule Tribe community areas whereas moderate pressure is in urban and semi urban areas. Total number of workers of various categories in Ghumsur North division is given in **Table 4-12** and the C.D block wise occupation status of the population is given in **Table 4-13**.

Table 4-12 Rural and Urban Workers as percentage of total population of Ghumsur North Division.

Type Worker	Rural	Urban	Total	Percentage
Main Workers	153057	7029	160086	36.97
Marginal Workers	23706	536	24242	5.60
Cultivators	66841	519	67360	15.56
Agricultural Labour	58426	743	59169	13.67
House hold industry	5451	485	5936	1.37
Other Workers/ Forest	22339	4713	27052	6.25
Total	***329820***	***14025***	***343845***	***97.41***

Table 4-13 C.D Block wise occupational types of population in Ghumsur North Division.

C.D Block	Cultivators	Agricultural Labourers	House Holding Industries	Other Labourers and Forest
Aska	17655	10862	1111	10305
Bellaguntha	11602	10730	674	5098

Bhanjanagar	14018	18843	1703	7841
Jagannathprasad	19785	17347	1198	4819
Surada	21436	11506	1876	4581
Bellaguntha NAC	333	457	287	852
Bhanjanagar NAC	186	286	198	3660
Total	**85015**	**70031**	**7047**	**37156**

4.7. Socio Economic Survey of Ghumsur North Forest Division

4.7.1 Introduction

4.7.1.1 Socio-economic survey of the forest fringe villages of Ghumsur North Division is an attempt to unfold the socio-economic status of the forest fringe dweller. It attempts to throw light on the living status, life style of those people who have been neglected and denied facilities and infrastructure because of different reasons. Forests acts as mother to these people who have been pressed to earn a livelihood mainly from the forests and obtain most of their daily requirements from the forest. Forests come forwards as a mother to nourish her ill-fated children and to redress their woes in all aspects of life. As such forest plays crucial role in regulating their life style and is the lifeline of the forest dwellers.

- ✓ It gives food, clothing, shelter, agricultural implements, medicine and raw material of different industries.
- ✓ It protects the earth crust from erosion, flood and from harmful radiation of the sun.
- ✓ It gives oxygen to sustain life for the existence of mankind and animal kingdom.
- ✓ It provides water in form of rain that harnesses the temperature of earth and diminishes the scorching heat of sun in the process of evaporation and cooling.
- ✓ Forest acts as a shelter of wildlife habitat.

4.7.1.2 But in recent years the pressure mounted on the forest by increased demographic pressure to meet the subsistence demand of the people and has caused immense damage to the forests and environment. Large-scale urbanization, industrialization and pollution in different forms have also contributed to the fast depletion of forests and wildlife. Globally this has attracted the attention of the environmentalist in the 1992 Rio summit to save the Planet earth by saving forest. The summit declaration emphasizes the need to arrest degradation and manage the forest resources on a sustainable basis. As a result, attempt has been made worldwide by the politicians, environmentalist and forest managers to enact laws and policies to save forest from degradation. As such several acts have been enacted during the past 50 years which include:-

1. The Wild Life Protection Act, 1972
2. Forest Conservation Act, 1980
3. National Forest Policy, 1988
4. Joint Forest Management Programme, 1990

4.7.1.2 Attempts have been taken up to improve the socio-economic status of the rural communities through J.F.M. programme wherein the community people have been provided with labour intensive programme to improve their incomes. The involvement of villagers in forestry programmes has prompted the community to support the protection of forest and obtaining direct benefits from the forests like minor forest produce, small timber and fuel wood. A Central Govt. sponsored scheme known as National Afforestation Programme supports the Forest Development Agencies, which is a registered body in forest Divisions to take up afforestation and regeneration activities, by the active participation of the members of VSS.

4.7.2 Statistical data of Forest Economy:

4.7.2.1 Statistical abstract of the Govt. of Odisha shows recorded area of 58.13 Lakh Ha of Forest land as against 155.71 Lakhs Ha. of total geographical area of the state. This recorded forest land of 58.13 lakh Ha includes RFs, PRFs, DPFs, UDPFs and Unclassed Forests and Revenue Forests.

4.7.2.2 The contribution of forest on the economy of the forest dependent people is remarkable. Dependence of the communities is high in general but dependence on forest amongst the tribal people is extremely high as the tribal live in close proximity to the forest. Forest also contributes to a large extent to swell up the exchequer of the state in term of revenue from the sale of forest produce.

4.7.3 Methodology of Socio-economic Survey:

4.7.3.1 The socio-economic survey of dependence on forest in Ghumsur North Division covered 725 respondents from 60 villages and hamlets located around forest blocks of Division.

4.7.4 Method of Sampling

4.7.4.1 The Sample survey is based on analysis of 725 sample respondents through questionnaires and the sample survey done through stratified random sampling procedure. On an average ten villages from each range at different layer of the fringe of forest were selected as sample villages. Ten families at random from different categories were selected as respondent and put to questionnaires for evaluation of Socio-Economic Status.

4.7.5 Coverage of Study

4.7.5.1 The questionnaires based on the extent of information on households, such as family size, working member of family, land holdings, extent of irrigated land, no. of crops cultivated yearly, crop yield, family income, income from agriculture, wages etc., assets of family, livestock, fodder requirement, firewood requirement, causes of degradation of forest and strategy for protection, conservation of degraded forest.

4.7.6 Result of Questionnaires

4.7.6.1 The replies of the sample respondents were grouped together in to different categories which included Sex composition, family size, age structure, caste distribution and occupational structure. Out of 725 nos. of respondents 599 were males and 126 were females which constitute 82.62 % and 17.37% respectively in the sample. The age distribution of respondents, caste distribution and occupation distribution etc. are given in details in **Table 4.14.**

Table 4.14.The age distribution of respondents, caste distribution and occupation distribution

Name of respondents	Number	Percentage
Age Distribution		
19-25	40	5.52
26-35	126	17.39
36-50	292	40.28
Above 50	267	36.83
Total	***725***	***100.01***
Number of respondents		
Male	599	82.62
Female	126	17.39
Total	***725***	***100.01***
Cast distribution		
SC	292	40.28
ST	267	36.83
OBC	40	5.52
General	126	17.39
Total	***725***	***100.02***
Occupation distribution		
Cultivation	418	57.66
Business	22	3.03
Service	7	0.97
Daily wages	274	37.79
Others	4	0.55
Total	***725***	***100.00***

4.7.7 Demographic study of population:

4.7.7.1 The total population of the sample households with an average family size of 4.82. Of the total population 44.3% are working members. The details of demographic data are furnished in **Table 4.15**.

Table 4.15- Demographic Study Of Population						
Caste	House Holds		Average family size	Working Members		Percentage
	No	Population		No	Ave per H.H	
SC	292	1760	6.02	314	1.07	14
ST	267	1602	6.0	300	1.12	4
OBC	40	200	5.0	59	1.4	48
GEN	126	521	4.1	156	1.23	34
All the house holds	**725**	4083	5.28	829	4.82	100.00

4.7.7.2 In the above table caste group wise variation is noticed. The average family size is found to be higher in the case of SC and lower in the case of OBC.

4.7.8 Occupational structure of different caste group:

4.7.8.1 The present sampling reveals that amongst the different caste group there is distinct variation in occupation. Though all groups have agriculture as the main occupation but from the data in **Table 4.16** it is seen that the OBC group is better adapted to cultivation as their primary occupation and daily wage is more significant amongst the ST followed by SC.

Table -4.16 Occupational Structure Of Different Caste Group					
Caste	Cultivation	Daily wage	Business	Service	Others
SC	85	111	5	1	2
ST	137	89	0	5	0
OBC	174	64	14	0	1
GEN.	18	10	2	1	0
Minorities	4	0	1	0	1
All the households	418	274	22	7	4

4.7.9 Land ownership structure of sample respondents:

4.7.9.1 Ownership of land amongst the sample respondents can be analyzed from **Table 4.17**. The data reveals that 37.79% of the respondents are landless, 45.38% of the sample respondents own land up to 1 acre, 9.66% own land up to 2 acres., 5.93% of the sample respondents own land from 2 acres to 3 acres and 1.24% of the sample respondents own land over 3 acres.

Table 4.17 Land Ownership Structure Of Sample Respondents		
Land size (acres)	Respondents	Percentage of respondents
Land less	274	37.79
0 to 1 ha.	329	45.38
1 ha. to 2 ha.	70	9.66
2 ha. to 3 ha.	43	5.93
Above 3 ha.	9	1.24
Total	***725***	***100***

4.7.10 Domestic assets owned by various Respondents

4.7.10.1 The domestic assets owned by various sample respondents can be seen in **Table 4.18**, which can be analyzed as under. As shown in this table, 18.9% respondents owned T.V. sets and 58.43% owned Bicycles 6.0% respondent owned cooking gas, 11.5% owned motor cycle, 8.94% owned pump set 5.79 % owned bullock cart. In case of livestock 33.97% respondents owned cow, 33.16% owned bullock, 25.215% owned goat, 4.31 owned sheep and 3.34% owned buffalo. and there are 75 respondents who do not have any livestock with them.

Table 4.18 Ownership Of Assets, Life Stock And Implements		
Items	***No. of respondents***	***Percentage of respondents***
Cooking gas	59	6.00
T.V	180	18.29
Motor cycle	88	8.94
Pump set	57	5.79
Bullock cart	6	0.61
Bicycle	575	58.43
Any other	19	1.93
Total	***984***	***100.00***
Live stock		
Cows	590	33.97
Bullock	576	33.16
Goat	438	25.215
Sheep	75	4.317
Buffalo	58	3.34
Total	***1737***	***100.00***

4.7.11 Annual income of the sample respondents

4.7.11.1 Income pattern of the sample respondents can be reproduced as in **Table 4.19.** The income as shown below is considerably low as per present market condition, which shows the economically backwardness of the respondents. The major income source is from cultivation of land (57.38%) then daily wages (37.69%) followed by other 4.9%.

Table 4.19 Annual Income Of The Sample Respondents				
Source	No. of House holds	Total income in Rs.	Respondents Family	Percentage of Respondents
Agriculture	418	16442400	418	57.384
Wages	274	8085600	274	37.692
Other	33	1578000	33	4.924
Total	***725***	***26106000***	***725***	***100.00***

4.7.12. Variation of income level of different caste groups & occupational groups:

4.7.12.1 One can notice significant variations in income amongst different caste groups and occupational groups. The household income of OBC is highest and in case of others it is lowest. Per household income of occupational groups is highest in case of service and cultivation occupations whereas per household income is the lowest in case of other category. **Table 4.20** shows the different variation of income among the caste and occupational groups.

Table 4.20 Income Pattern For Caste Group And Occupational Group			
Caste group	**Family**	**Total Income (In Rs.)**	**Per house hold income (In Rs.)**
SC	292	6744000	23096.00
ST	266	7848800	29507.00
OBC	39	9615400	24655.00
GEN	125	1535500	12285.00
Others	3	362300	12077.00
Total	725	26106000	
			Occupational Groups
Caste group	**Family**	**Total Income (In Rs.)**	**Per house hold income (In Rs.)**
Cultivation	418	16442400	39336.00
Business	22	878000	39909.00
Service	7	589000	84143.00
Daily wage	274	8085600	29510.00
Others	4	111000	27750.00
Total	**725**	**26106000**	**220648.00**

4.7.13 Dependence of People on Forest

4.7.13.1 An attempt has been made to assess the dependence of local villagers on nearby forests for **c**ollection of firewood, N.T.F.P., fodder, small timber, food items, medicinal plants etc. The response of the villagers is presented in **Table No. 4.21.** It is apparent that the dependence of forest fringe dwellers on forests for firewood and small timber is very high considering the fact that no suitable substitute is available to them. The details of firewood required have already been reflected in **Chapter-III.** The forest fringe dwellers depend on various medicinal plants found in the

forests. Dependence on forests for medicinal plants is also very high. Available data reveals that for common medicinal use 56 species of plants are being used. Some of the common ailments like stomach disorders, common cold etc. are treated with certain species available in the forest areas. Even the above species can be used for the treatment of some of the domestic animals.

Table No.4.21: Dependence of Forest Dwellers upon various species.			
Sl. No.	**Dependence On various items**	**No. of respondents**	**Respondent (Percentage)**
1	Firewood	308	42.48
2	Small Timber	210	28.97
3	N.T.F.P.	76	10.48
4	Fodder	54	7.448
5	Food items	21	2.897
6	Medicine	56	7.724
Total		725	100

4.7.14 Causes of degradation of forests

4.7.14.1 It has been ascertained from the survey that the forest fringe villagers are aware about forest degradation **Table 4.22**. The survey clearly shows that all of the respondents stated their knowledge regarding causes of forest degradation which is mostly due to cultivation especially that of maize and collection of firewood & poles and forest fire.

Table 4.22 Activity wise Forest Degradation & Its Percentage		
Activities	No	Percentage
Podu Cultivation	54	7.45
Forest Fire	490	67.59
illegal Trading of Fire wood & Small Timber	123	16.97
Other developmental project	58	8.00
Total	***725***	***100.00***

4.7.15 Methods of forest conservation

4.7.15.1 Methods of forest conservation have been sampled in the said survey. Role of V.S.S. for forest conservation has received the maximum response followed by factors such as deployment of more Forest Personnel by the Department and afforestation activities **Table 4.23**.

Table 4.23 Method Of Forest Conservation					
Subject / scheme	**No. of respondents**	**Respondent (Percentage)**	**Subject/ scheme**	**No. of respondents**	**Respondent (Percentage)**
Afforestation	362	15.483	Village committee	85	3.635
Forest Development Agency	352	15.055	VSS	472	20.188
OFSDC(JICA)	199	8.511	Forest protection employing more forest personnel by the dept.	409	17.493
Social forestry	62	2.651	Village awareness	397	16.98

4.7.16 Recommendations: In view of the aforesaid circumstances, following measures are suggested to reduce the dependence of forest fringe villages on the forests. The focus should be on poverty alleviation measures and livelihood enhancement.

1. Since most of the villagers depend on agriculture focus should be on crop improvement methods that would optimize agricultural output.
2. Further most of them have very small operational holdings land improvement activities should be taken on priority basis especially under schemes like MGNREGA.
3. Villagers should also be exposed to secondary sources of income e.g.: poultry activities, fishery, etc.
4. Livelihood improvement in the form biogas project, solar lights, smokeless chullah can be ensured through different district level organization.
5. J.F.M. programme needs to be popularized among the forest fringe dwellers as a means of active participation for community development, through entry point activities/formation of SHG (Self Help Group) for improving the economic conditions of the villagers.
6. Total awareness programmes can be activated in forest fringe villages through the distribution of Radio set, TV sets at village level, through public meetings, Street Plays thereby highlighting forest development activities.

CHAPTER-V

FIVE YEAR PLANS

5.1 General Trends in Forestry Investment

5.1.1 The investment trend in forestry sector is generally very low. Often, it is not possible to know the immediate benefits due to long gestation period. Moreover, the investments are usually linked with rural livelihood which is not revenue oriented. Inadequate investment towards development of forestry is the main reason for degradation of forest resources. The first five-year plan commenced in 1951. Rs. 85 billion has been invested on forestry development activities in the country, during the period from 1951 to 1996-97. Afforestation activities were created over an area of 26.9 million ha. The financial allocation increased from Rs.76 million in the first Five Year Plan to Rs. 40,818 million in Eight Five Year Plan outlay of the country. But this has been always less than 1% of the total plan out lay of the country. This is the major constraint in maintaining and achieving the desired mandate.

5.1.2 A variety of forestry developmental programmes have been implemented under different Five Year Plans. The financial target and achievements under various Five Year Plans in the Division are given in **Table 5.1** during the outgoing Working Plan period. A general review of different Five Year Plans is discussed below.

5.2. Planning Commission & National Development Council

5.2.1 India being a union of states has the responsibility of economic planning both for its Central and State Government. After formation of planning commission in March 1950, the necessity of a coordinating agency between the planning commission and various states was felt. Thus the National Development Council was set up by Government of India on 6th August 1952. The planning was drafted by planning commission but the same is finally approved by National Development Council. The planning commission is headed by Prime Minister of India as Chairman having other members. Similarly the National Development Council is also headed by Prime Minister of India but the Chief Ministers of all the States of Indian Union are its members along with others.

5.3 FIVE YEAR PLAN

5.3.1 Since the time frame is fixed five years for accomplishing the objectives, it is popularly known as Five Year Plan. Attaining of higher rate of economic growth, reducing economic inequalities, developing various infrastructures are the major objectives of five year plans. In short, growth with social justice is the main theme of planning. In the mean while, ten five year

plans have already been implemented. Ghumsur Forest Division was created on Nov-1938; the expenditure of this division was started incurring expenditure from first five year plan (1951-56).

The investment in forestry sector Five year plan wise up to the 7th plan summarized in **Table 5-1**

Table 5-1: Five Year Plan wise Investments in Forestry Sector in India (in lakhs)

Plan/ Year	Total Plan		Forest and wild life Plan		Forest
	Outlay	Actual	Outlay	Actual	(%)
1	2	3	4	5	6
First Plan (1951-56)	23780	19600	76	85	0.32
Second Plan (1956-61)	45000	46720	212	212	0.47
Third Plan (1961-66)	75000	8577	458	459	0.61
Annual Plan (1968-69)	66250	66225	419	421	0.63
Fourth Plan (1969-74)	159020	157790	894	938	0.56
Fifth Plan (1974-79)	393220	394260	2088	2088	0.53
Annual Plan (1979-80)	126010	121760	683	683	0.54
Sixth Plan (1980-85)	975000	1092920	6924	NA	0.71
Seventh Plan (1985-90)	1800000	2187300	18519	19759	1.09
Annual Plan (1990-91)	647170	583690	6299	5764	0.97
Annual Plan (1991-92)	723170	647500	7831	7153	1.08

Source: Developing Wastelands, Ministry of Forests and Environment.

The five year Plan wise outlay and actual expenditure in Orissa is summarized in the **Table 5-2**.

Table 5-2: Plan wise Outlay and Expenditure for Forestry Sector in Orissa

Plan/Year	Outlay (lakh)	Actual (lakh)
First Plan (1951-56)	13.43	13.29
Second Plan (1956-60)	112.00	96.50
Third Plan (1961-66)	237.26	234.31
Fourth Plan (1969-74)	435.00	405.30
Fifth Plan (1974-79)	834.61	NA
Sixth Plan (1980-85)	1250.00	1109.02
Seventh Plan (1985-90)	7450.00	NA

Since the expiring plan already dealt till the 7th five year plan, from eighth Year Plan till recent five year plan are discussed below.

5.3.1. Eighth Plan (1992-97)

5.3.1. The main objectives of this Plan are:

I. To protect the natural environment.

II. To regenerate and restore degraded ecosystems to increase productivity and to generate employment through this activities.

III. To decentralize control over nature and natural resources.
IV. To develop and share an understanding of nature and natural process.
V. To formulate a national policy for environment and an appropriate institutional and legal framework in support of the policy.
VI. To ensure coordinated and integrated action aimed at conserving nature and sustainable use of natural resources.
VII. To make individuals and institutions more accountable to the people.

5.3.2 A comprehensive national policy on nature and natural resources was to be evolved in constitution with people. A policy which must spell out the interest and needs of the society for further benefit to the society in general and rights to the tribals, nomads, women and children, particularly to have access and control over the natural resources. There is a slight improvement of investment in 8th five year plan but it is below 1%.

5.3.3 This plan emphasized on strengthening of National parks and sanctuaries. Eco-development programmes in an around protected areas were to be implemented. Participation of the community in forest protection was ensured by supporting basic livelihood projects.

5.3.4 Bio-diversity conservation was initiated during 1992 to ensure protection of the rich diverse flora and fauna and to conserve and monitor endangered species and genetic strains by evolving a congenial policy. The convention on Biological diversity was signed by 168 countries, during Rio-summit. India becomes a protocol of the convention.

5.3.5 The eight plan further made stringent laws on protection of environment. For effective legislation and enforcement, powers were delegated to state executive authorities. The Air (Prevention and Control of Pollution) Act 1981 and the Water (Prevention and Control of Pollution) Act -1974 have been amended.

5.3.6 The Modern Forest Fire Control Method in India was introduced and implemented in 13 states during the Eight Plan Period. The First Pilot Project was launched in the Seventh Plan under the assistance of UNDP assistance.

5.3.7 The National Afforestation and Eco-development Board was created under the Ministry of Environment and Forests in July 1992. Degraded and eco-fragile eco-systems were tackled under the National Afforestation and Eco-development Board. And other wastelands were covered under the new Department of Wasteland Development in Ministry of Rural areas and Employment. An outlay of Rs. 461 crores was allocated to NAEB for development of degraded forest area. The important schemes are:

I. Integrated Afforestation and Eco-development Projects IAEP Scheme.
II. Fuel Wood and Fodder Project Scheme
III. Non-timber Forest Produce Scheme.

IV. Grants-in-aid Scheme.
V. Promotion of people's participation in Afforestation through NGO's and FDA's with special emphasis on micro-planning.

5.4 The Ninth Plan (1997-2002)

5.4.1 The main objectives of this Plan are

I. Empowerment of People.
II. Involving the industry in both private and public sector.
III. Evolving market based economic instruments to govern and control environmental regulation, pricing natural resource, appropriate fiscal reform and natural resource accounting.
IV. Evolving the rights for common property resource.
V. Inter-sectoral linkages through co-operation.
VI. Ensuring scientific and technological inputs.
VII. Peoples participation (particularly women) in management and implementation and usufruct share, through JFM
VIII. Increasing awareness-involving NGOs for building bridges between forest development and people.

5.4.2 Joint Forest Management remained the central theme of managing the resources by the people. NGO's acted as an interface between department and community for building greater/ wider extension.

I. The priority was development of villages in an around the forest fringes through plantation and entry point activities.
II. Survey and demarcation of the areas were to be made. To generate employment, the schemes were to be funded by Rural Development Department.
III. It also emphasized on research, agro-forestry, alternatives of timber, value addition to non-timber forest products, and
IV. Involving women right from micro-planning, implementation and usufruct sharing. Women Empowerment is the essence of the Ninth Plan.

5.4.3 A Review of the North Plan

5.4.3.1 The various schemes and projects like Integrated Afforestation, Eco-development, Fuel Fodder Scheme, Non-timber forest produce scheme, grant-in-aid scheme, seed development scheme was extended for enhancement. A working group was constituted by the Planning Commission to study the prospects of leasing out degraded forests land to private entrepreneurs/ corporations and to assess the terms of social, economic and environmental feasibility of lease. The working group submitted its report but has not recommended. Total outlay of 8th and 9th five year plan pertaining to forestry sector summarized in below **Table 5-3**

Table 5-3: Five Year Plan wise Investments in Forestry Sector in India(in lakhs)					
Plan/ Year	Total Plan		Forest and wild life Plan		Forest
	Outlay	Actual	Outlay	Actual	(%)
1	2	3	4	5	6
Eight Plan (1992-97)	4341000	3805240	40820	39930	0.94
Ninth Plan (1997-2002)	8592000	8592000	68228	68228	0.79

Source: Developing Wastelands, Ministry of Forests and Environment.

5.5. The Tenth Plan (2002-2007)

5.5.1 The Salient features of the Plan are

I. Bringing one third geographical area under forest cover
II. Adopting Watershed approach to develop and maintain forest cover.
III. Livelihood support for people living in around forests would be looked into.
IV. JFM approach shall be given more importance for the regeneration of the degraded forests.
V. To reduce import of timber and timber requirement will be met from community lands, private farm lands and degraded lands.
VI. Implementation of food for work programme in forest areas to ensure food security and productive employment.
VII. Protection of natural forests for better carbon trading potential to increase market avenues.
VIII. Conservation and protection of medicinal plants is given priority.
IX. Bio-diesels deriving from plants like Jatropha, Pongamia would be promoted to encourage the livelihood opportunities of the rural masses.
X. Merging of all afforestation programmes under National Afforestation and Eco-development Board (NAEB) into one single National Afforestation Programme and it would be implemented through Forest Development Agencies (FDA).

The five year Plan wise outlay and actual expenditure in Orissa is summarized in the **Table 5-4**.

Table 5-4: Plan wise Outlay and Expenditure for Forestry Sector in Orissa		
Plan/Year	Outlay (lakh)	Actual (lakh)
Eight Plan (1992-97)	105.35	143.91
Ninth Plan (1997-02)	122.75	122.59
Tenth Plan (2002-2007)	523.60	135.41

5.6. The Eleventh Plan (2007-12)

5.6.1 The eleventh five year plan looked to build upon the national environment policy, May-2006, reengineering of environmental clearance processes and notification of Environmental Impact Assessment (EIA) and review of Costal Zone Regulation notification to improve upon the quality of environmental governance during the 10th Plan period.

5.6.2 To achieve that, certain initiatives were suggested namely:

I. To make environment a concurrent subject from residual subject.
II. To set up a statutory regulatory body comprising of eminent environmental experts to guide Govt. policies and to address environmental concerns.
III. Upgrading the authority of state Pollution Control Boards with a mandate of developing regulations and standards for enforcing compliance.
IV. Review of Paryavaran Vahinis comprising of concerned citizens at district level to serve as unbiased watch dogs for first hand monitoring of environmental situations in the district.
V. Introduction of Public hearing and prior consent of local self governments before providing environmental clearances through EIA as prescribed in PESA.

Some of the Salient Features addressed in the 11th five year Plan are as follows:

5.6.3 Afforestation

5.6.3.1 Forests are under continued pressure for the want of timber, fuel wood, fodder, and NTFP items of which herbal medicines is of chief importance. To augment maximum sustainable harvest with minimal pressure on green cover, following strategies were suggested

I. Participatory management with involvement of local people through JFM.
II. Establishment of village forests outside natural high forests through social forestry
III. Extension of forestry and afforestation activities to farmlands through agro and farm forestry.

5.6.3.2 The plan targeted to bring another 5% of the country's geographical area under green cover which necessitated an additional green cover over 16 million Ha. Out of that it was planned to afforest 5million Ha. Within recorded forest area and rest would be added through social forestry and agro forestry. This five-year plan also gave stringent guidelines on improving air quality, water quality, solid waste management.

5.6.3.3 Disaster Management:

5.6.3.3.1 10th five year plan prepared in the backdrop of Odisha Super Cyclone and earthquake of Gujarat focused the disaster management in India. The plan dedicated a separate chapter to it and all the prescriptions fell in the following three categories:

I. Policy guidelines at Macro level to inform and guide preparation and implementation of developmental plans across sectors.

II. Developing operational guidelines for integrating disaster management practices into developmental plans and programmes.
III. Specific developmental schemes for prevention and mitigation of disaster. The 11th plan built upon these lines prescribed classified strategies in this line.

5.6.3.4. Miscellaneous

5.6.3.4.1 There were also significant strategies designed to address issues of biodiversity, coastal zone regulations, containing green house gases and gearing up for adopting effective and measurable strategies to tackle global warming and minimize the disastrous consequences of climate change.

5.7. The Twelfth Plan (2012-2017)

5.7.1 The Twelfth Plan Document, approved by the National Development Council (NDC) on 27th December 2012, has the basic theme of "Faster, Sustainable, and more Inclusive Growth", and lays out major targets, key challenges to meet them, and the broad strategy that may be followed to achieve the stated objectives. Ministry of Environment & Forests has been allocated an outlay of 17,874 crores, which works out to 0.41% of the Plan allocation across various Ministries/ Departments as against a share of 0.42% or 9231.00 crores in the Eleventh Plan. At current prices, the enhancement in this Ministry's Twelfth Plan outlay over the Eleventh Plan outlay, however, works out to 109%. Twelfth plan is one of the five year plans which have given utmost importance towards forest and wildlife.

5.7.2 Monitorable Targets

5.7.2.1 Twelfth Plan has identified 13 Monitorable Socio-Economic targets for this Ministry, which has been taken up for regular monitoring of progress made by the Ministry. These targets are as follows:

5.7.2.2 Environment and Climate Change:

1) Assess and remediate 12 identified contaminated sites (hazardous chemicals and wastes) with potential for ground water contamination by 2017.
2) Clean 80 per cent of critically polluted stretches in rivers by 2017 and 100 per cent by 2020.
3) States to meet National Ambient Air Quality Standards (NAAQS) in urban areas by 2017.
4) To reduce emission intensity of Gross Domestic Product (GDP) in line with the target of 20 to 25 per cent reduction over 2005 levels by 2020.

5.7.2.3 Forests and Livelihood:

5) Greening 5 million ha under GIM including 1.5 million ha of degraded lands, afforestation and eco-restoration of 0.9 million ha of ecologically sensitive areas.
6) Technology-based monitoring of forest cover, biodiversity and growing stock including change-monitoring on periodical basis through dedicated satellite by 2017 and

establishment of open web-based National Forestry & Environmental Information system for research and public accessibility by 2015.

7) Engagement of Village Green Guards/ Community Foresters for every Joint Forest Management (JFM) village by 2016.
8) Establish forestry seed bank in forest circles and Model Nursery in every district with information on public portal by 2014.

5.7.2.4 Wildlife, Ecotourism and Animal Welfare:

9) Twenty per cent of veterinary professionals in the country will be trained in treating wildlife.
10) Integrated Ecotourism District Plans covering 10 per cent of all potential Protected Areas (PAs) by 2017.
11) Promoting participation of private sector, civil societies, NGOs and philanthropists in animal welfare.
12) Restore 0.1 Mha. of wetlands/ inland lakes/ water bodies by 2017.
13) Mapping and preparation of biodiversity management plans for deserts (both cold and arid).

5.7.3. Goals

Besides, **14 Goals** have also been identified in the Plan Document, which would receive focus and special attention, inter alia, through the Annual Plans of the Ministry. These 14 Goals are set out below:

5.7.3.1 Environment

1) Epidemiological studies to assess improvement in health status due to better management of environment and ecology.
2) Promotion and adoption of cleaner technology, strengthening and initiation of reforms in regulations, policy making and enforcement institutions for environmental governance.
3) Move towards cumulative and strategic Environmental Impact Assessment (EIA).
4) Ensure ecological flows in all rivers by regulating abstractions so as to allow conservation of riverine ecosystems through developing a legal framework and management strategy for conservation of river basins.
5) Promotion of recycling and reuse of treated sewage in urban projects such as sanitation, landscaping, central air conditioning and so on.

5.7.3.2 Forests and Livelihood:

6) Improve forest productivity, production and sustainable management of biodiversity (equity in access to benefit sharing with local people).

7) Restore and intensify forest-rangelands/ grazing-land management and establish community grazing land around forest fringe villages.
8) Build capacity of Village Forest Committees/ Joint Forest Management Committees (JFMCs) for management of forest resources including ecotourism
9) Revive seed orchards and silviculture plots for various forest types of the country, as well as for enlisted species under Minor Forest Produce (MFP)/ Non Timber Forest Produce (NTFP), including genetic improvement, and establishment, of clonal orchards.

5.7.3.3 Wildlife, Ecotourism and Animal Welfare

10) Reducing and managing human–wildlife conflict.
11) Commercialisation of permissible marine products rich in poly unsaturated fatty acids (PUFAs), vitamins and so on.
12) Promotion of ecotourism and participatory eco-development support livelihood of local population.

5.7.3.4 Ecosystem and Biodiversity

13) Develop national targets and indicators related to biodiversity and support actions to strengthen implementation of Biological Diversity Act, 2002 and ensure bio-safety for economic and social development of local communities.
14) Assess coastal biodiversity resources, ensure sustainable management, restoration of mangroves, coral reefs and wetlands and support livelihood.

5.7.4 Strategies

5.7.4.1 To achieve the aforesaid goals, following sections of strategies were adopted:

1) **Programmatic Strategies:**
   I. Securing ecology of watersheds and catchments.
   II. Cumulative environmental impact assessments for vulnerable regions.
   III. Carrying capacity studies in selected river basins
   IV. Maintaining acceptable water quality and quantity through pollution control of water resources
   V. Restoration of wetland and lakes; and
   VI. Management of waste water discharge from industrial and commercial establishments into major water bodies.
2) **Organizational Strategies:**
   I. Proposed to set up a high powered committee named National environment and Forest Council (NEFC), with the Prime Minister as the Chairman and the Minister of Environment and Forests as the Vice chairman and all the related ministers of the related ministries and

a panel of experts as its members whose primary function would be to bring in harmony in functioning of various ministers and ensure evolution of all policies, laws and implementation.

II. In the similar lines of NEFC, SEFC at the state level would be constituted in every state to align the working of all other relate departments to the department of Forest and Environment.

3) Regulatory Strategies:

I. Pollution control and waste management regime: National environment Protection Authority (NEPA) is proposed to be fully empowered to restructure the existing environmental management regime.

II. EPA and notifications under it such as EIA and CRZ: Following reforms were suggested-
   a) Switching over from carbon intensive economy to carbon neutral economy
   b) Promoting alternative energy options
   c) Dealing with Challenges arising out of creation of Special Economic Zones (SEZ's)
   d) Strengthening impact assessment laws and costal laws by making local authorities more responsible and accountable

III. Forestry Wildlife and Biodiversity Regime: Reforms were proposed to be undertaken in legislations like Protection of Plant varieties and farmers' Rights Act, Schedule Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, Seeds Amendment Bill and so on towards
   a) Evolving effective and robust legal safe guards for addressing the issue of bio-safety
   a) Internalising the international commitment concerning the access and benefit sharing regime (Nagoya Protocol)
   b) Providing sufficient and effective safeguards for the protection of traditional knowledge (TK) and folk art concerning biodiversity
   c) Ensuring that India receives international recognition as the president of the CoP of the Convention on Biological Diversity (CBD) starting from 2012 in compliance with its international commitments over biodiversity issues (primarily over bio-safety, conservation of TK, equity, benefit-sharing and so on); and
   d) Developing harmony in the working of laws in the sector with the Panchayat Extension to Scheduled Areas Act, 1996.

4) Policy Reforms and Metrics Based management

I. Implementation of load-based standards to facilitate carrying capacity based cumulative EIAs, particularly for areas having concentration of developmental activities such as mines and thermal power plants.

II. Effective enforcement of the application of 'polluter pays' principle.

III. Development and deployment of cleaner technologies in the Micro, Small and Medium Enterprises (MSMEs) sector, particularly for the 17 categories of highly polluting industries.

IV. Strengthening of the National Water Quality Monitoring Network.

V. Collection and monitoring of basic data on coastal water quality, oxygen zone in the sea, transport of nitrogen and phosphorous in the rivers from agriculture.

VI. Review of existing policies to enable drafting of mitigation strategies and introduction of new effluent standards.

VII. Implementation of continuous effluent monitoring systems at industries as well as CETPs.

VIII. It is proposed to setup a National Environmental Monitoring Programme (NEMP) for monitoring forests, air and water quality, river and ocean pollution, noise and so on with sharing of real-time data from local to national levels which will also help in monitoring change.

IX. A multi-disciplinary autonomous body namely National Environment Assessment and Monitoring Authority (NEAMA) is proposed to be set up for strengthening the processes for grant of environmental clearances and monitoring thereof. NEAMA is also envisaged to grant clearances under the Environment (Protection) Act, 1986 including the coastal zone regulations and marine fisheries regulations.

X. In the Twelfth Five Year Plan, the Central and State Governments also need to invest in strengthening the mechanisms for implementing rules notified under the Environment (Protection) Act, 1986 including the CRZ Notification and the Marine Fishing Regulation Act.

5) Infrastructure/ Technology Upgrade and Investment Strategies

I. Promotion of continuous 24 × 7 online air quality monitoring which includes Continuous Ambient Air Quality Monitoring Stations (CAAQMS) and Continuous Emission Monitoring System (CEMS).

II. Introduction of cost-effective technologies such as bioremediation to address the pollution of water bodies is proposed.

III. Encouragement of use of hazardous waste of high calorific value in cement kilns, power or steel plants as a safe alternative to conventional incineration.

IV. Integration of environmental attributes into cost benefit analysis while making public investment decisions, to encourage more efficient allocation of resources.

V. Amendment to the environmental laws to introduce pollution charges and other economic instruments to enable creation of fund in order to augment allocation to the sector. This fund can be utilised for incentivising good environmental performance.

VI. Creation of a National Environment Restoration Fund (NERF) from voluntary contributions and the net proceeds of proposed economic instruments such as user fees for access to specified natural resources. The Fund may be used for restoration of environmental resources and cleanup of sites contaminated with toxic and hazardous waste

VII. Strengthening of Botanical Survey of India (BSI) and Zoological Survey of India (ZSI) in terms of manpower and infrastructure to scale up their mandated task of inventorisation of flora and fauna of the country needs to be achieved.

VIII. Validation and updating of the Indian Biodiversity Information System (IBIS), the Indian Bio Resource Information System (IBIN), India Biodiversity Portal (IBP) and the Indian Ocean Census of Marine Life (IOCoML) needs to be undertaken, for which a consortium of research organisations needs to be created.

IX. An effort to digitise and make available existing collections of taxonomic collections should be piloted.

X. The mandate of different institutes engaged in forestry, biodiversity and wildlife research requires to be broadened to accommodate emerging needs for collaborative multidisciplinary research.

5.7.5. Sanctioned outlay and Actual Expenditure during Eleventh Plan

5.7.5.1 The total amount of allocation in the field of Environment, Forestry and Wildlife and the expenditure incurred against the allocation year wise is depicted in the **Table 5-5.**

Table 5-5 Sector wise allocation of funds versus expenditure during 11th Plan in India		
Environment	1246.01	1913.34
NRCD	2540	2760.75
Forests and Wildlife	2943.99	2611.44
NAEB	3150	1826.47
Animal Welfare	120	119

5.8 Plan wise expenditure in Ghumsur North Division:

5.8.1 The information for different five year plan was available from 8th plan onwards from the year (1995-96) the abstract of expenditure incurred under various plans Scheme has been summarized in **Table 5-6** and the same has been given in graphic representation **in Figure 5(1).**

Table 5-7 Five Year Plan wise and Year wise expenditure in various plan schemes of Ghumsur North Division								
Five Years Plan	Year	CAMPA	SP	4406-COL	CP	RANC - 01 - Drought	CSP - IFM	TOTAL
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Eighth Plan	1995-96	0	298788.15	1014754.7	0	0	72253	1385795.85
	1996-97	0	364032	558305	0	0	81756	1004093
Ninth Plan	1997-98	0	300988	224436	0	0	95407	620831
	1998-99	0	359190	349850	0	0	10588	719628
	1999-00	0	454537	6000	89802	0		550339
	2000-01	0	501995	121000	1528417	0	15000	2166412
	2001-02	0	125778	145000	10050047	962490	15000	11298315
Tenth Plan	2002-03	0	0	549000	114030	650000		1313030
	2003-04	0	0	882000	20520	371542	54000	1328062
	2004-05	0	0	226700	81656	200000		508356
	2005-06	0	658000	717000	11700	0	151000	1537700
	2006-07	0	4519312	1534000	155941	0	65000	6274253
Eleventh Plan	2007-08	0	6720030	1781957	0	0	399250	8901237
	2008-09	0	7066254	2756000	125000	0	280250	10227504
	2009-10	10960222	9191381	3604162	250000	0		24005765
	2010-11	19685315	12235300	3500000	91578	0	1346200	36858393
	2011-12	17916712	11073163	3724000	0	0	9375	32723250
Twelfth Plan	2012-13	24475963	21116754	8318800	380000	0	202969	54494486
	2013-14	17685743	17029520	1071000	0	0	702375	36488638
	2014-15	53937568	24064658	3743500	0	0	0	81745726

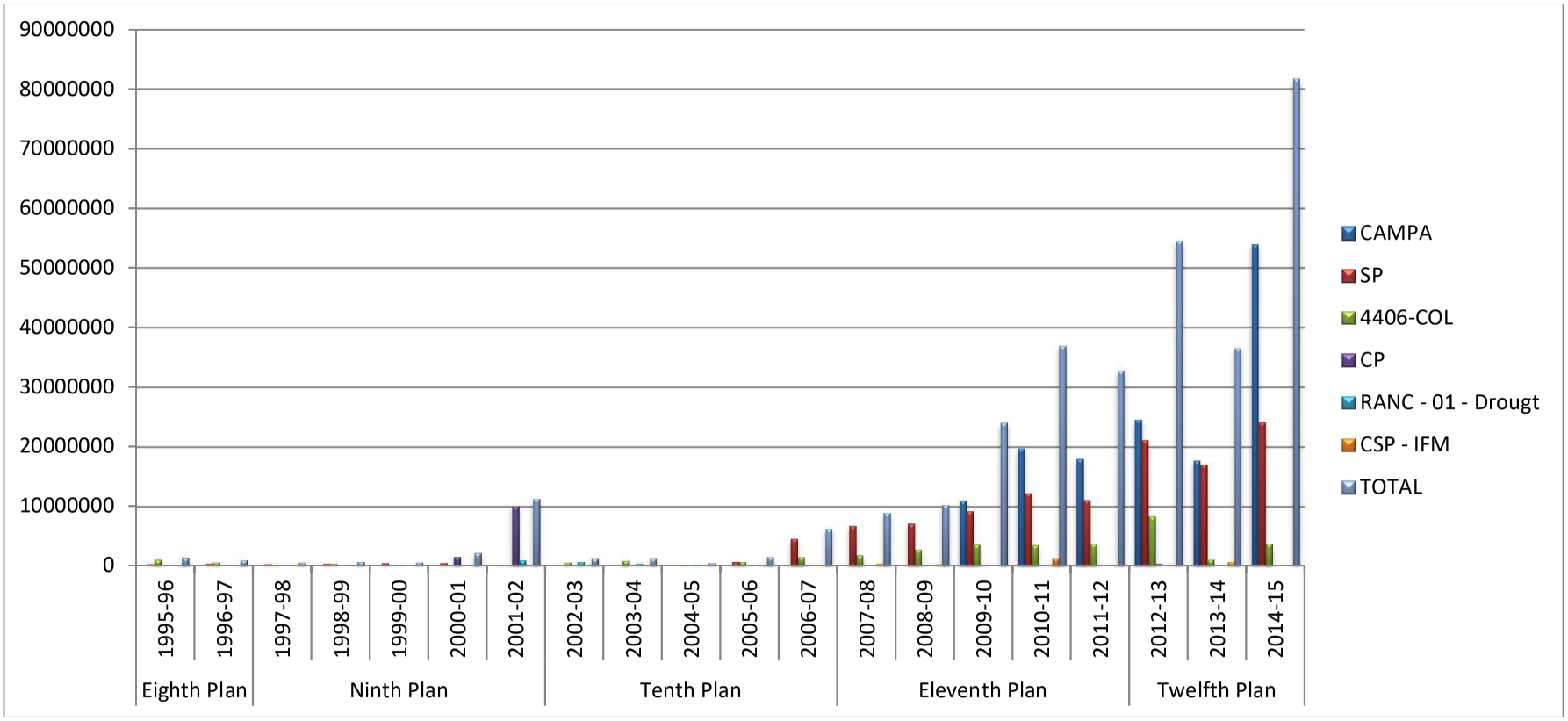


Figure 5(1) Graphic Representation of Five Year Plan wise and Year wise expenditure in various plan schemes of Ghumsur North Division

CHAPTER - VI

STAFF AND LABOUR SUPPLY

6.1 General

6.1.1 Ghumsur North Forest Division is one of the oldest Divisions in the state. It was first created on 12.11.1938. The jurisdiction of the present Ghumsur North Division is now confined to Revenue Subdivision of Bhanjanagar. The latest re-organization was in the year 2003, in which a new Range Jaganathprasad was carved out from Tarasingi Range and Mujagada Range. The chronological order of re-organization of Ghumsur North Division right from its creation is depicted below in **Table 6-1**.

Table 6-1 Chronological order of re-organization of Ghumsur North Division

Sl. No.	Year	Chronology of Events
I	1938	The forests of Ghumsur were first notified by Govt. of Odisha Notification No. 243 Dt. 12.11.1938 which was then known as Rasulkonda Forest division headquartered at Bhanjanagar.
II	1941	Rasulkonda Forest division was renamed as Ghumsur (North) Division owing to the shifting of headquarter of erstwhile Chatrapur division to Bhanjanagar which was subsequently called as Ghumsur (South) division.
III	1959	A new Range named Jaganathprasad was carved out from the existing Ranges of Tarasing and Mujagada. It comprised of three sections namely Gereda and Jaganathprasad of Tarasing Range and Bellaguntha beat of Mujagada Range which during reorganization became a section.

Source: Mrs. Rebecca Nayar's Plan

6.1.2 Ghumsur North Forest Division is under the administrative charge of a Divisional Forest Officer in the rank of Deputy Conservator of Forests with headquarters at Bhanjanagar. To assist the Divisional Forest Officer administration one attached Gazetted Officer in the rank of Assistant Conservator of forests has been posted to this Division with the same headquarters. The incumbency list of Divisional Forest Officers who held charges of Ghumsur North Division is furnished in **Table 6-2**

Table 6-2. Incumbency chart of the Divisional Forest Officers of Ghumsur North Division

Sl.No.	Name of the Officer	Period	
		From	To
1	Mr. John Brown.	1861	3-1865
2	Mr. Greizlar.	3-1865	6-1865

3	Mr. T.C.P.Naccally.	6-1865	25-09-1878
4	Mr. K.Dampier.	02-12-1878	12-1883
5	Mr. A.N.Lushington.	12-1883	10-05-1887
6	Mr. C.L.Toussaint.	24-05-1887	01-12-1887
7	Mr. A.N.Lushington.	01-12-1887	18-03-1889
		03-07-1889	06-11-1890
8	Mr. J.S.Battie.	07-11-1890	25-04-1895
9	Mr. S.Cos.	27-07-1895	24-08-1895
10	Mr. R.Miclntosh.	25-08-1895	29-06-1896
11	Mr. J.L.M.O'Leary	07-07-1896	01-03-1897
12	Mr. R.Miclntosh.	02-03-1897	17-06-1897
13	Mr. J.L.M.O'Leary	18-06-1897	17-08-1898
14	Mr. C.E.C.Fischar.	18-08-1898	16-04-1899
		18-07-1899	22-12-1901
		17-02-1902	05-01-1905
15	Mr. S.Cox.	07-01-1905	24-07-1907
16	Mr. N.C.Bonnett.	25-07-1907	05-05-1909
17	M.r.T.A.Whitehead.	06-05-1909	07-11-1909
18	Mr. N.C.Bonnett.	08-11-1909	25-11-1909
19	Mr. A.A.F. Minchin.	26-11-1913	01-05-1915
		04-08-1916	18-09-1917
		21-10-1917	04-10-1919
20	Mr. V.Narayan Ayyar.	05-10-1919	19-11-1919
21	Mr. A.A.F.Minchin.	20-11-1919	05-10-1920
22	Mr. Saiduddin Ahsad.	06-10-1920	26-11-1920
23	Mr. E.M.Crothers.	27-11-1920	23-02-1921
24	Mr. A.Wimbush.	24-02-1921	31-07-1922
25	Mr. H.P.Ward.	01-08-1922	22-10-1922
26	Mr. A.Wimbush.	23-10-1922	01-02-1923
27	Mr. O.M.C.Shelswell.	02-02-1923	09-02-1923
28	Mr. J.N.Longrigg.	10-02-1923	16-03-1923
29	Mr. H.P.Ward.	17-03-1923	10-05-1923
30	Mr. J.M.Longrigg.	20-05-1923	06-05-1925
31	Mr. F.D.Ardagh.	07-05-1925	22-04-1926
32	Mr. J.C.Wrench.	23-04-1926	17-04-1927
33	Mr. D.L.Sethe.	18-04-1927	07-02-1928
34	Mr. W.O.Dyson.	08-12-1928	05-09-1929
35	Mr. B.S.Mitchell.	06-09-1929	14-09-1929
36	Mr. A.Raju Nayar.	15-09-1929	02-01-1930
37	Mr. W.G.Dyson.	03-01-1930	07-07-1931
38	Mr. C.R.F.William.	08-07-1931	11-02-1934
39	Mr. N.A.Padshah Sahib Bahadur.	12-02-1934	01-08-1934
40	Mr. K.G.Balliappa.	02-08-1934	14-08-1938
41	Mr. N.A.Padshah Sahib Bahadur.	15-08-1933	15-10-1935

42	Mr. K.G.Balliappa.	16-10-1935	20-11-1935
43	Mr. N.A.Padshah Sahib Bahadur.	21-11-1935	24-02-1935
44	Mr. R.Sahai.	25-02-1936	02-11-1936
45	Mr. F.A.A.Nart,O.B.R.	03-11-1936	02-01-1938
46	Mr. F.A.A Nart,I.F.S	31-01-1938	23-02-1939
47	Mr. P.C.Osmaston,I.F.S.	24-02-1939	10-08-1939
48	Mr. B.P.Basu,I.F.S	11-08-1939	19-04-1944
49	Mr. Raibahadur K.L. Mullik, B.A.C.F.	20-04-1944	04-05-1944
50	Mr. W.D.N. Warran, I.F.S.	05-05-1944	20-01-1947
51	Mr. Raibahadur K.L. Mullik, B.A.C.F.	21-01-1947	04-02-1947
52	Mr. Shrespal Jes,A.C.F	05-02-1947	04-07-1947
53	Mr. Raibahadur K.L. Mullik, B.A.C.F.	05-07-1947	29-10-1947
54	Sri D.N.Choudhury,A.C.F.	30-10-1947	12-08-1948
55	Mr. W.D.N.Warran,I.F.S.	13-08-1948	24-09-1948
56	Sri H.P.Sengupta,A.C.F.	25-09-1948	21-08-1950
57	Sri Brundaban Rath,A.C.F.	22-08-1950	27-09-1950
58	Sri H.P.Sengupta,A.C.F.	28-09-1950	05-02-1952
59	Sri B.K.Joshi,A.C.F	06-02-1952	11-04-1952
60	Sri H.P.Sengupta,A.C.F.	12-04-1952	22-10-1952
61	Sri Brundaban Rath,A.C.F.	23-10-1952	10-01-1954
62	B.K.Joshi,A.C.F.	11-01-1954	31-01-1954
63	Sri Brundaban Rath,A.C.F.	01-02-1954	29-12-1954
64	Sri B.K.Joshi,A.C.F.	30-12-1954	04-01-1955
65	Sri C.L.Mohapatra,A.C.F.	05-01-1955	14-03-1955
66	Sri B.K.Joshi,A.C.F.	15-03-1955	27-03-1955
67	Sri C.L.Mohapatra,A.C.F.	28-03-1955	27.05.1956
68	Sri M.P.Dash, A.C.F	21-09-1960	10-02-1961
69	Sri P.Mahapatro A.C.F	29-03-1961	10-02-1962
70	Sri Trinath Dash, IFS	11-02-1962	13-08-1962
71	Sri S.S.Dash, IFS	14-08-1962	03-09-1962
72	Sri Trinath Dash, IFS	04-09-1962	22-09-1963
73	Sri A.B.Lal	23.09.1963	14.09.1964
74	Sri S.S.Dash, IFS	15-09-1964	13-12-1964
75	Sri N.C.Pradhan.	14-12-1964	10-07-1966
76	Sri M.N.Mitra,I.F.S.	11-07-1966	11-09-1966
77	Sri R.N.Mohanty,I.F.S.	12-09-1966	11-06-1967
78	Sri H.K.Mishra,I.F.S.	12-01-1967	29-07-1968
79	Sri P.K.Pani,I.F.S	30-07-1968	22-01-1969
80	Sri D.B.Mishra,I.F.S.	23-01-1969	31-08-1971
81	Sri G.Mohapatra,O.F.S (II)	01-09-1971	15-10-1971
82	Sri P.C.Mohapatra,I.F.S.	16-10-1971	09-07-1974
83	Sri S.Mohapatra,I.F.S.	10-07-1974	30-05-1976
84	Sri H.P.Sahu,O.F.S.(I)	01-06-1976	29-06-1976
85	Sri C.S.Dani,I.F.S.	30-06-1976	07-11-1976

86	Sri N.C.Bose,I.F.S.	08-11-1976	29-06-1978
87	Sri B.K.Mishra,I.F.S.	01-07-1978	31-08-1981
88	Sri H.K.Mishra,I.F.S.	01-09-1981	17-04-1983
89	Sri J.D.Sharma,I.F.S.	18-04-1983	27-04-1983
90	Sri L.N.Choudhary,I.F.S.	28-04-1983	22-05-1983
91	Sri J.D.Sharma,I.F.S.	23-05-1983	30-06-1984
92	Sri L.N.Choudhary,I.F.S	01-07-1984	20-07-1984
93	Sri J.D.Sharma,I.F.S.	21-07-1984	27-11-1984
94	Sri A.K.Mohapatra,I.F.S.	28-11-1984	21-12-1986
95	Sri Bhagirathi Behera,I.F.S.	22-12-1986	03-01-1988
96	Sri J.D.Sharma,I.F.S.	04-01-1988	10-05-1988
97	Sri K.J.Sekhar,I.F.S.	11-05-1988	29-08-1989
98	Sri S.C.Mishra,I.F.S.	30-08-1989	08-11-1990
99	Sri N.K.Bisht,I.F.S.	09-11-1990	07-12-1990
100	Sri S.C.Mishra,I.F.S.	08-12-1990	22-07-1991
101	Sri A.Bharthuar,I.F.S.	23-07-1991	07-06-1994
102	Sri V.Raju Reddy,I.F.S.	08-06-1994	26-06-1994
103	Sri A.Bharthuar,I.F.S.	27-06-1994	02-10-1994
104	Sri B.L.K.Reddy,I.F.S.	03-10-1994	29-09-1996
105	Sri C.B.Mohanty,I.F.S.	30-09-1996	28-02-1998
106	Sri S.K.Acharya,O.F.S.	01-03-1998	10-03-1998
107	Sri L.R.Otta, I.F.S	11-03-1998	30-07-1998
108	Mrs. Rebecca Nayar,I.F.S.	31-07-1998	23-09-1998
109	Sri S.Paul,I.F.S.	24-09-1998	15-06-1999
110	Sri.P.K.Jha,I.F.S.	16-06-1999	21-07-1999
111	Sri S.Paul,I.F.S.	22-07-1999	11-05-2000
112	Sri P.K.Jha,I.F.S.	12-05-2000	18-06-2000
113	Sri S.Paul,I.F.S.	19-06-2001	11-05-2001
114	Sri P.K.Jha,I.F.S.	12-05-2001	17-06-2001
115	Sri S.Paul,I.F.S.	18-06-2001	21-02-2002
116	Sri P.K.Jha,I.F.S.	22-02-2002	03-05-2002
117	Sri S.Nanda,I.F.S.	04-05-2002	31-05-2002
118	Sri P.K.Jha,I.F.S.	01-06-02	15-12-2002
119	Sri S.Nanda,I.F.S.	16-12-2002	06-10-2006
120	Sri E.L. Yanger Aier,I.F.S.	07-10-2006	16-11-2006
121	Sri Godabarish Panda,O.F.S (I)	17-11-2006	06-05-2008
122	Sri P.K.Mallik,I.F.S.	07-05-2008	25-11-2009
123	Sri B.B.Behera,I.F.S.	25-11-2009	31-03-2012
124	Sri P.K.Pradhan,O.F.S (II) (JB)	31-03-2012	27-05-2012
125	Sri K.C.Mishra,O.F.S.(I)	28-05-2012	31-03-2012
126	Sri Ramasamy.P,I.F.S.	31-03-2014	.....

6.2 Organizational Structure

6.2.1 The present strength of staff of the Division as on 31.08.2014 is summarized in **Table 6-3**. The total Government sanctioned current cadre strength of the division is 183 numbers including 18 numbers of ministerial staff and 10 numbers of watchers with temporary status. There are vacancies at various levels and there is an acute shortage of field staff at the level of Foresters and Forest Guards. Total cadre strength of 97, 62 Forest Guard posts are filled up till now.

Table 6.3 List of Sanction Cadre Strength Men in position of all category of staff ministerial and field staff of Ghumsur North Division for the month of AUGUST' 2016.

Sl. No.	Name of the Post	Sanction Cadre Strength	Man in position	No. of vacancy	Nature of vacancy	Remarks
1	*2*	*3*	*4*	*5*	*6*	*7*
1	D. F. O.	1	1	0		
2	A. C. F.- Enforcement	1	0	1	Retd. on 28.02.13	
	- Afforestation	1	1	0		
	Total	2	1	1		
3	Forest Ranger- Range	5	3	2	--	
	Afforestation	1	0	1		
	Enforcement	1	1	0		
	Total	7	4	3		
4	Dy. Ranger –					3 (three) Nos. of post in cadre of Dy. Ranger are created as per Notification No.III F (F) - 33/2013/3401/F&E, dtd.19.02.2014 of Govt. of Odisha, F&E Dept.
	Special striking force…	1	0	1	Not posted	
	Second officer (for Vulnerable Ranges)	5	2	3		
	Total	6	2	4		
5	Forester (36)-				Transfer/Retired expired	4 Nos. Contractual Foresters Newly recruited & joined on 25.05.2015
	Regular Forester	18	16	2		
	Contractual Forester	5	4	1		
	Sanctioned strength of VFW merged in Foresters cadre	7	1	6		
	Forester (WPO) deputed to WPO, Bhanjanagar	6	3	3		
	Total	36	24	12		
6	FEO (2)	2	0	2	Not posted	
7	Forest Guard (103) –					1. 2 (Twos) Contractual Forest
	Beat-Regular	59	55	4	Retired,	

	Beat- Contractual Basis	16	13	3	promoted, transferred & resigned	Guards resigned on 30.05.2015 & 30.01.2016. 2. 1 (one) contractual Forest Guard transferred to City Forest Division.
	Checking	18	5	13		
	Enforcement & Afftn.	6	2	4		
	Deputed to WPO, Bhanjanagar	4	2	2		
	Total	103	77	26		
8	Head Clerk	1	1	0		
9	Junior Accountant (7) -					6 (six) Nos. of post in cadre of Sr. Clerks are merged with Jr. Accountant as per Notification No.FE-FE3-FE-0485-2015/4185/F&E, dtd.01/03/2016 of Govt. of Odisha, F&E Deptt.
	Regular Jr. Accountant	1	1	0		
	Sanctioned strength of Sr. Clerks merged with Jr. Accountant	6	4	2	Transferred due to promotion	
	Total	7	5	2		
10	Jr. Stenographer	1	1	0	--	
11	Junior Clerk (9) -					
	Jr. Clerks (Regular)	8	6	2	Promotion & Retired	
	Jr. Clerks (Contractual)	1	1	0		
	Total	9	7	2		
12	Jeep Driver	2	2 +1(*)	0	*.1- excess as per O.A.T. Order	
13	Office Chowkidar	2	2	0		
14	Mali	1	1	0	--	
15	Office / Orderly Peon	2	1	1	--	one vacant post is under sub-judice.
16	Chowkidar-cum-Sweeper.	1	1	0	--	
	T O T A L	183	130 +1(*)	53		
17	Temporary status watcher	10	8	2	--	Sanctioned by Pr.C.C.F, Odisha vide M.No.3664, dt.12.03.13
	T O T A L + Temp. Status	193	138 +1(*)	55		

Source: DFO, Ghumsur North

6.2.2 The vacancy position of the Non-Gazetted staff of Ghumsur North Division as on Aug'2016 are summarized in **Table 6-4**.

Table 6.4 Vacancy position of Non-Gazetted staff of Ghumsur North Division, Bhanjanagar for the month of AUGUST' 2016.					
Category of post	**Sanction Cadre Strength**	**Staff in position**	**No. of vacancy**	**Reason of vacancy**	**Remarks**
1	**2**	**3**	**4**	**5**	**6**
Dy. Ranger –					3 (three) Nos. of post in cadre of Dy. Ranger are created as per Notification No.III F (F)-33/2013/ 3401/F&E, dtd.19.02.2014 of Govt. of Odisha, F&E Deptt.
Special striking force……	1	0	1		
Second officer (for Vulnerable Ranges)	5	2	3		
Total	**6**	**2**	**4**		
Head Clerk	1	1	0		
Jr. Accountant -					6 (six) Nos. of post in cadre of Sr. Clerks are merged with Jr. Accountant as per Notification No.FE-FE3-FE-0485-2015/4185/F&E, dtd.01/03/2016 of Govt. of Odisha, F&E Deptt.
Regular = 1	1	1	0		
Sanctioned strength of Sr. Clerk merged with Jr. Acct. = 6	6	4	2	Transfer to other division	
Total	**7**	**5**	**2**		
Jr. Stenographer	1	1	0		
Jr. Clerks -					
Regular	8	6	2		
Contractual	1	1	0		
Total	**9**	**7**	**2**		
Jeep Driver	2	2 +1	0	1-Excess as per OAT order	
Forester (33)- Regular Forester = **18**	18	16	2	i)Transfer/ Retired ii) Expired	4 Nos. Contractual Foresters Newly recruited & joined on 25.05.2015
Contractual Forester = **05**	5	4	1		
Sanctioned strength of VFW merged in Foresters cadre = **07**	7	1	6		
Forester (WPO) deputed to WPO, Bhanjanagar = **06**	6	3	3		
	36	**24**	**12**		
FEO (2)	2	0	2		
Forest Guard (103) –				i)Transfer, Resigned, Retired ii) Expired	1. 2 (Twos) Contractual Forest Guards resigned on 30.05.2015 & 30.01.2016. 2. 1 (one) contractual Forest Guard transferred to City Forest Division.
Beat (Regular)	59	55	4		
Beat (Contractual)	16	13	3		
Checking	18	5	13		
Affn. & Enforcement	6	2	4		
Deputed to WPO, Bhanjanagar	4	2	2		
	103	**77**	**26**		
Office Chowkidar	2	2	0		
Mali	1	1	0		
Office / Orderly Peon	2	1	1		one vacant post is under sub-judice.
Office Chowkidar-cum-	1	1	0		

Sweeper.					
	173	+1 **124**	**49**		
Temporary Status Watcher	10	8	2		Sanctioned by Pr.C.C.F, Odisha vide M.No.3664, dt.12.03.13
T O T A L	**183**	+1 **132**	**51**		

6.3 Labour Supply

6.3.1 Un-skilled Labour

6.3.1.1 The total work force population of Ganjam District is 1501772 (Main worker 900744+ Marginal worker 601028) as per 2011 census. The agricultural labour population is 185015. It is difficult to get labour during agricultural season, particularly during sowing and harvesting of paddy. There is shortage of availability of labour in this Division. The division is thinly populated. Availability of local labourers for forestry works is a problem. Number of daily labourers engaged in this division is given in **Table.6-5.**

Table 6-5. No. Of daily wage labourers engaged in

Name of the Division	Year	Name of Scheme	Man Days Generated			
			SC	ST	General	Total
Ghumsur North Division	2007-08	12th FCG - RWC	17170	10310	41230	68710
		PWC	1000	600	2400	4000
		NRB	2750	1650	6600	11000
		Block Plantation	800	500	1950	3250
		Eco. Plantation	7800	4800	18650	31250
		4406-COL	380	230	890	1500
		Decentralized Nursery Programme	1250	750	3000	5000
		JFM	750	450	1800	3000
		IFPS	1120	660	2660	4440
		NBM	900	540	2160	3600
		TOTAL	**33920**	**20490**	**81340**	**135750**
	2008-09	Strengthening of JFM and Microplanning	1960	1170	4710	7840
		4406-COL - Eco. Block Plantation	7880	4720	18300	30900
		4406-COL - Building	710	420	1720	2850
		Compensatory Afforestation	320	200	780	1300
		12th FCG - RWC	15670	9400	37590	62660
		12th FCG - PWC	670	410	1620	2700
		12th FCG - NRB	2910	1110	7630	11650
		IPCEA	900	540	2130	3570
		NBM	8250	4940	19800	32990
		NAP	40410	24240	96980	161630

		NREGS	8910	5350	21410	35670
		TOTAL	**88590**	**52500**	**212670**	**353760**
	2009-10	12 F.C. Award	10929	6584	26384	43897
		Decentralized Nursery Programme	106	64	255	425
		Strengthening of JFM and Microplanning	1000	600	2400	4000
		Economic Plantation	7606	4563	18257	30426
		Compensatory Afforestation (Non Plan)	402	241	965	1608
		Twelfth Finance Commission Award (Non	1900	1140	4560	7600
		O.B.D.P. (State Plan)	506	304	1216	2026
		I.P.C.E.A.	945	567	2268	3780
		4406 C.O.L. - Construction of building	458	275	1100	1833
		2314 - Elephant Management	1500	900	3600	6000
		0361 - Elephant Management (C.P.)	137	82	331	550
		NAP through F.D.A.	18461	11047	44313	73821
		NREGS	4140	3303	8963	16406
		O.B.D.A.	3413	2016	8014	13443
		CAMPA	18266	10960	43840	73066
		TOTAL	**69769**	**42646**	**166466**	**278881**
	2010-11	13TH FCG	23472	14063	56239	93774
		Decentralized Nursery Programme	417	250	999	1666
		Strengthening of JFM and Microplanning	938	562	2250	3750
		Economic Plantation Block	7000	4200	16800	28000
		O.B.D.P. (State Plan)	488	293	1169	1950
		I.P.C.E.A.	840	504	2016	3360
		4406 C.O.L. - Construction of Building	583	350	1400	2333
		2314 - Elephant Management (S.P.)	1254	752	3012	5018
		Tiger Census (C.S.P.)	275	165	660	1100
		Intensification of Forest Management (C.S.P.)	2147	1288	5153	8588
		NAP through F.D.A.	8708	5226	21098	35032
		NREGS	3746	2308	9126	15180
		O.B.D.A.	1653	1167	4325	7145
		CAMPA	44000	27000	104000	175000
		TOTAL	**95521**	**58128**	**228247**	**381896**
	2011-12	Eco. Block Plantation	11377	1467	14391	27235
		ACA - "Economic plantation / Rehabilitation	3200	0	0	3200
		OBDP	1065	224	1346	2635
		National Bamboo Mission (NBM)	787	472	1920	3179
		CAMPA APO 2010-11	0	0	116850	116850
		CAMPA APO 2011-12	0	0	22262	22262
		13th F.C.G	978	1324	3458	5760
		MGNREGS	6212	3730	14903	24845
		4406 - Construction of Building	0	0	2500	2500
		2118- Intensive Protection of Critically	0	0	3360	3360
		Urban Plantation	0	0	267	267
		2406 - I.F.M. (C.S.P.)	0	0	0	0
		NAP through FDA	19214	11528	46111	76853

		TOTAL	**42833**	**18745**	**227368**	**288946**
	2012-13	Eco. Block Plantation	4312	4393	20623	29328
		Avenue Plantation	213	0	3689	3902
		Permanent Nursery	917	565	37	1519
		Eco - Tourism 1st Phase	1520	2080	9435	13035
		OBDP	510	641	1231	2382
		National Bamboo Mission (NBM) OBDA	887	532	2129	3548
		CAMPA APO 2010-11	0	0	135900	135900
		CAMPAAPO 11-12	0	0	165309	165309
		CAMPAAPO 12-13	0	0	3733	3733
		13th FCG	30951	45404	30205	106560
		MGNREGS	5576	3345	13393	22314
		2118- Intensive Protection of Critically	338	560	1762	2660
		Urban Plantation	884	0	699	1583
		NAP through FDA	4138	2482	9933	16553
		Integrated Action Plan (IAP)	1036	621	2486	4143
		Central Sponsored Plan - IFM	877	855	0	1732
		Central Plan - Elephant Census, Crop damage	0	0	223	223
		TOTAL	**52159**	**61478**	**400787**	**514424**
	2013-14	Eco. Block Plantation	10321	8572	2479	21372
		Avenue Plantation	8456	2133	4627	15216
		OBDP Plantation	1360	225	1268	2853
		Urban Plantation	12394	7142	531	20067
		Agro Forestry	7968	3605	800	12373
		Permanent Nurseries	1177	4466	884	6527
		National Bamboo Mission (NBM)	950	568	2277	3795
		CAMPA APO 11-12	0	0	243604	243604
		CAMPA APO 12-13	0	0	94760	94760
		CAMPA APO 13-14	0	0	3913	3913
		MGNREGS	10087	6048	24210	40345
		Intensive Protection of Critically Endangered	1687	121	2216	4024
		NAP through FDA	0	0	0	0
		4406-COL--2316-Development of Eco-	2283	3429	0	5712
		Central Sponsored Plan - IFM	3987	0	0	3987
		Popularization of Fuel efficient Chullas @ Rs.400 per Chullah	0	0	0	0
		13th FCG	33248	4905	38397	76550
		TOTAL	**93918**	**41214**	**419966**	**555098**
	2014-15	Eco. Block Plnt.	11749	0	6955	18704
		Avenue Plantation	16738	0	800	17538
		OBDP Plantation	3773	0	720	4493
		Urban Plantation	22344	1600	4000	27944
		Agro Forestry	19284	1152	2861	23297
		Permanent Nursery	12268	0	533	12801
		Rehabilitation of Degraded Forest	973	0	1693	2666
		Popularization of Fuel Efficient Chullas	0	0	0	0

		Monitoring & Evaluation	0	0	0	0
		National Bamboo Mission (NBM) OBDA AAP	2421	1446	5828	9695
		2118- Intensive Protection of Critically	0	0	7200	7200
		2399-IFM	0	0	12471	12471
		4406-COL	0	0	4777	4777
		CAMPA APO 12-13	0	0	128489	128489
		CAMPA APO 13-14	0	0	172192	172192
		MGNREGS	16070	9639	38555	64264
		NAP through FDA	0	0	0	0
		13th FCG	13817	8288	33152	55257
		TOTAL	**119437**	**22125**	**420226**	**561788**

6.3.2 Skilled Labour

6.3.2.1 Skilled labourers such as masons and carpenters are available in limited numbers, at Bhanjanagar. They are scarce in interior areas like Ghogodo, Badangi and Ragada Section. For bamboo silvicultural operations local labourers are engaged. But Skilled labourers for Kendu-leaf processing and binding, salvaging of timber are engaged from outside.

6.3.3 Wages

6.3.3.1 Abundant supply of labour force greatly reduces labour wages. This can lead to exploitation of labour. Therefore, in order to enhance the welfare of rural people, various departments are encouraged to undertake a variety of development activities and generate employment opportunity for the rural poor. The government in the labour Department also prescribes a minimum wage to reduce exploitation of rural/tribal poor. And violation of the prescribed minimum wages and other labour laws may invite prosecution. The Government in the labour Department periodically revise the minimum wages, keeping in pace with rise in prices and high cost of living. A comparative statement for unskilled, semi-skilled, and highly skilled is given in **Table 6-6**.

Table 6.6 Minimum Wages in Current Price (1989 to 2015)

A-Un -Skilled Minimum wages (Rupees per day)

Type of Labour	1989	1990	1996	1998	2000	2002	2004	2006	2009	2012	2015
1. Male Mullia	11.00	25.00	30.00	32.50	40.00	50.00	52.50	55.00	90.00	150.00	200.00
2.Female Mullia	11.00	25.00	30.00	32.50	40.00	50.00	52.50	55.00	90.00	150.00	200.00
3. Mate	12.75	25.00	-	-	40.00	50.00	52.50	55.00	90.00	150.00	200.00
4. Peon	11.00	-	-	-	40.00	50.00	52.50	55.00	90.00	150.00	200.00
5. Sweeper	11.00	-	-	-	40.00	50.00	52.50	55.00	90.00	150.00	200.00
6. Mali	11.00	-	-	-	40.00	50.00	52.50	55.00	90.00	150.00	200.00

7. Chowkidar	11.00	-	-	-	40.00	50.00	52.50	55.00	90.00	150.00	200.00
8. Cleaner	11.00	-	-	-	40.00	50.00	52.50	55.00	90.00	150.00	200.00
9. Majdoor	11.00	-	-	-	40.00	50.00	52.50	55.00	90.00	150.00	200.00
10.Watcher	-	-	-	-	40.00	50.00	52.50	55.00	90.00	150.00	200.00
B. Semi-Skilled Minimum Wage (Rupees per day)											
Type of Labour	**1989**	**1990**	**1996**	**1998**	**2000**	**2002**	**2004**	**2006**	**2009**	**2012**	**2015**
1. Thatcher	-	30.00	-	32.50	48.00	60.00	62.50	65.00	130.00	170.00	220.00
2. Painter	-	-	36.00	38.50	48.00	60.00	62.50	65.00	130.00	170.00	220.00
3. Polisher	-	-	36.00	38.50	48.00	60.00	62.50	65.00	130.00	170.00	220.00
4. Cutter	-	-	-	-	48.00	60.00	62.50	65.00	130.00	170.00	220.00
5. Mahajur	12.75	-	-	-	48.00	60.00	62.50	65.00	130.00	170.00	220.00
6. Plumber	12.75	35.00	36.00	38.50	48.00	60.00	62.50	65.00	130.00	170.00	220.00
7. Black smith	16.00	35.00	-	-	48.00	60.00	62.50	65.00	130.00	170.00	220.00
8.Helper/Carpenter	12.75	25.00	36.00	38.50	48.00	60.00	62.50	65.00	130.00	170.00	220.00
9. Helper /Fitter		25.00	36.00	38.50	48.00	60.00	62.50	65.00	130.00	170.00	220.00
C. Skilled Minimum Wage (Rupees per day) in current price 1969-2002											
Type of Labour	**1989**	**1990**	**1996**	**1998**	**2000**	**2002**	**2004**	**2006**	**2009**	**2012**	**2015**
1.Carpenter 2nd Class	16.00	-	42.00	44.50	56.00	70.00	72.50	75.00	116.00	190.00	240.00
2.Mason 2nd Class	20.00	40.00	48.00	50.50	56.00	70.00	72.50	75.00	116.00	190.00	240.00
3.Blacksmith 2nd Class	16.00	35.00	-	-	-	70.00	72.50	75.00	116.00	190.00	240.00
4. Mechanic	12.75	-	-	-	-	-	72.50	75.00	116.00	190.00	240.00
5. Driver	16.00	40.00	48.00	50.50	-	70.00	72.50	75.00	116.00	190.00	240.00
6. Fitter	-	40.00	-	42.50	-	70.00	72.50	75.00	116.00	190.00	240.00
7. Plumber	-	30.00	-	-	56.00	-	72.50	75.00	116.00	190.00	240.00
8. Painter 2nd Class	-	-	36.00	38.50	56.00	70.00	72.50	75.00	116.00	190.00	240.00
9. Stone dresser	-	-	42.50	44.50	-	70.00	72.50	75.00	116.00	190.00	240.00
10. Helper to mason	-	25.00	-	-	-	-	-	75.00	116.00	190.00	240.00
11. Helper to fitter	-	25.00	-	-	-	-	-	75.00	116.00	190.00	240.00
D. High Skilled Labour											
Type of Labour	**1989**	**1990**	**1996**	**1998**	**2000**	**2002**	**2004**	**2006**	**2009**	**2012**	**2015**
1. Foremen	-	-	48.00	50.50	64.00	80.00	82.50	85.00	129.00	205.00	260.00

2. Head Mistry	-	-	48.00	50.50	64.00	80.00	82.50	85.00	129.00	205.00	260.00
3. Mason Special	-	40.00	48.00	50.50	64.00	80.00	82.50	85.00	129.00	205.00	260.00
4.Carpenter Special	-	40.00	48.00	50.50	64.00	80.00	82.50	85.00	129.00	205.00	260.00
5. Fitter Special	-	40.00	48.00	50.50	64.00	80.00	82.50	85.00	129.00	205.00	260.00
6. Driver H.V.	-	-	48.00	50.50	64.00	80.00	82.50	85.00	129.00	205.00	260.00
7. Mason 1st Class		40.00	48.00	50.50	64.00	80.00	82.50	85.00	129.00	205.00	260.00
8.Black smith Class I	20.00	40.00	48.00	-	64.00	80.00	82.50	85.00	129.00	205.00	260.00

CHAPTER-VII

GENERAL HISTORY OF THE FORESTS

7.1 General History

7.1.1 Ghumsur originally formed a part of the Ex-feudatory State of Boudh. It was inhabited mostly by the aboriginal tribes of Gondos, Gauras and Odiyas, Majority being Kondhos, they are a martial race and great freedom fighters, bold, laborious, mountainous peasants, upright in their conduct, but always very poor, neglected and suppressed.

7.1.2 In early times, it appears that the plains of Ghumsur were marshes extending as far as the line of low hills on the coast. The French General, Mr. Russel, in 1757 had difficulties with 'DENSE BAMBOOS' in plain country. He speaks of Ghumsur as 'Impenetrable' and 'one of the hottest regions of HINDUSTAN', in his early reports. His observations were: 'Bamboo covered the low country. Sal grew everywhere else. 'it is worthy to remark' he wrote, "that this tree which in some places grows to a great size, has very small branches and very few leaves, and that the ground beneath is almost everywhere free from undergrowth and bramble". This could be indicative that forest fires occurred in those days too.

7.1.3 No records are available to know the type of Forest Administration prior to the British Occupation. The Forest Administration in Ganjam was taken over by the British in 1850, but regular reservation and Forest Settlement Operations were delayed till 1885-86 and completed by 1900. Until 1936, when the new Province of 'Orissa was created, the District of Ganjam was forming a part of Madras Presidency. After the creation of this new Province (1936), it was felt necessary to reorganise the Forest Administration according to Bihar and Orissa pattern. Four Divisions were accordingly created in 1938 (vide Notification No.243 dated.12-1-1938) which were named as Chatrapur, Russelkonda, Paralakhemundi and Balliguda Division, respectively.

7.1.4 Since then there have been many alterations in the territorial jurisdictions from time to time. At present, the four Divisions are continuing, but with name and headquarters changed. The present Divisions are Ghumsur South, Ghumsur North, Paralakhemundi and Balliguda.

7.1.5 Ghumsur North Division mostly corresponds to the old Russelkonda Division with the difference, that Lathipada section of old Chatrapur Division has been added to it, and Chakapadu and Burtong Blocks have been excluded, vide Government Notification No.364 37/1F (M) – 110/59 dated.7-1-1959.

7.1.6 A new block 'ODINABADI' with an area of 576.00 acres has been reserved in 1958 vide Notification No.2066-XV-20/56 1Fs dated.6-8-1955 and added to the Ghumsur North Division. The following Forest Villages have been converted into Revenue Villages as detailed in **Table: 7-1**.

Table 7-1 List of Forest villages converted to Revenue villages of Ghumsur North Division

Sl.No.	Name of the Forest Village	Reserve Forest Block and Compartment.	Area in ha.	Notification No. & Date.
1	2	4	5	6
1.	Bibhutia.	Vinjigiri R.F. Compartment NO.1 (c)	184	10F (L) 38/82-27764/2F AM. Dated.7-10-82.
2.	Pudrangi	Chandragiri R.F Compartment No.11.	54	10F (L) 38/82-7758/FF AM.dated.7-10-82.

7.2 Past System of Management

7.2. There is nothing on record to show what kind of treatment was meted out to the Ghumsur Forests Prior to 1850. The period 1851-1900 has been described by Mr. Nayar as the period of reckless exploitation.

7.2.1 First Attempt at Organised Management

7.2.1.1 Mr. N.W. Lushington was the first trained officer to take charge of the Ghumsur Forest in the year 1883-84. In 1887-88, he made the following rough working arrangements of Ghumsur Forest,

I. Complete rest for the forests over worked under the old permit system,
II. Coppice with standards in forest where ill-treatment had been extreme and
III. Selection felling for the rest of the forests by compartments. The extent to which this Scheme was carried out is not evident from record.

7.2.2 Condition of the Forests at the End of the Nineteenth Century

7.2.2.1 Up to the year 1900 when Messrs. Cox and Cowley Brown began the preparation of the first working Plan, irregular felling continued. Exploitation of timber both in the form of logs and sleepers was being allowed during this period without any reference to silviculture. The more accessible forests were virtually ruined by the activities of fuel dealers working under the permit both from Reserved and Un-reserved forests continued unchecked and unregulated. Supplies were made to public works Department, Railways, for ship building, Ordinance factories, fire, cyclone, drought and flood affected victims and for various other purpose. Grazing was allowed in almost all the reserves owing to the continuous drought followed by flood resulting in scarcity of fodder. Annual fire was of common occurrence**. The main consideration in managing the forests then was more for revenue than sound silvicultural operations.**

7.2.2.2 In 1901, Mr. Cox took up compilation of the working plans for Mujagada and Kokolaba Ranges (Gallery, Mujagada, Kullada Ranges) and Mr. F. Cowley Brown for Buguda and Soroda Ranges of Chhatarpur Division. Their prescriptions can be summarised as follows.

I. Termination of the permit system;
II. Demarcation of plain Sal areas;
III. Introduction of special Fire Protection Measures; and
IV. Exclusion of Grazing in the demarcated plains Sal blocks and closure of Forests generally for a period of rest.

7.2.2.3 During this period cautious improvement felling was to be done in the plains Sal blocks in accordance with certain rules for Dehradun Forests. These rules intended for North Indian condition, presuppose the forest damage and also that Sal regeneration is shade bearing. Actually the felling was limited to the removal of dead and dying trees. In the inferior Sal areas of the plains, coppice coupes were to be introduced on a 30 years rotation basis, and working of small bamboo coupes on a 5 years cycle. Hill forests were to be closed for working. Regular maps were to be prepared by the survey of India and such matters as staff, departmental building and communications were to be attended to. All these things were done.

7.2.2.4 Mr. Cox's Working Plan was sanctioned in 1902-03 and in the same year Mr. Fischer Prepared another Working Plans supplemented thereto. This later plan was sanctioned in 1903-04. The Survey of India commenced the Survey of Ghumsur Forests on 4"=1 Mile scale in the year 1902-03 and completed it is 1907-08 .Messrs. Cox and Fischer's working plan remained in force up to 1914-15. During this period, Fire protection of plains Sal Blocks received special attention, the year 1905-06 had an exceptionally severe fire season and it was during this year that the system granting concessions to KONDHA villagers in return for helping the department in Fire Protection and other protective works was introduced for the first time and it yielded good results. The first bamboo coupe was opened in 1906-07 in Kaliamba Reserve and the first fuel coupe in 1907-08 in Vishnuchakra Reserve, now in Ghumusur South Division. In 1908-09, the Madras Government ordered the closure of all resources to sale by permits, and in the following year new timber transit rules for the Ghumsur Taluk were sanctioned.

7.2.2.5 In its financial side, the period began with a small surplus which continued till 1905-06. From the following year and up to 1912-13, the Forest District was run at a deficit which rose to its maximum (Rs.45, 581/-) in 1910-11. The remaining two years of the period again booked a small surplus. Exploitation was carried out throughout the period partly by departmental agency and partly through the agency of purchasers and consumers. Construction of roads and buildings continued as also re-distribution of ranges and creation of new ones.

7.2.2.6 In 1913, the period of Mr. Cox's plans came to an end. A new and detailed working plan was felt to be necessary. In order to carry on the works in the meantime, an Interim plan was drawn up by Mr. A.F. Minchin during 1915 embodying the prescription of the two previous plans.

At the same time, he undertook the task of compiling the current working plan besides his normal duties as District Forest Officer. The preparation of the plan took some four years and working under it started in April'1919.

7.2.3 Mr. Minchin's Working Plan: (1919-20 to 1929-30)

7.2.3. Seven working Circles were constituted in Mr. Minchin's Plan which remained in force from 1919-20 to 1929-30 as detailed below:

7.2.3.1 The Plains Sal Timber Working Circle (Minchin's Plan)

7.2.3.1.1 This included all the plains of Sal Quality I & II areas (in both Mr. Minchin's plan and in that of Mr. Nayar I, II & III Quality Sal were taken to be those attaining a height growth of 90'-110'. 70'-90' and below 70'respectively, as against the Dehradun standard of over 110', 90'-110'and 70'-90'respectively). This was to be worked under conversion to uniform system with a rotation of 60 years, divided up into four periods of 15 years each. (It was estimated that Quality II Sal attains a girth of 4'3"in 60 years.). The periodic Block-I coupe of the year was to be Clear felled and all advance growth in the 'Switch Stage' cut back. In Periodic Block II '**Light Improvement Felling''** and in periodic Blocks III & IV "**Heavy Improvement Felling"** were prescribed. In addition, removal of mature trees of 4'6"girth and over in Periodic Blocks III & IV were also provided for. The policy prescribed stipulated that all species other than Sal were to be discouraged. For the young crop in clear felled coupes of Periodic Block-I, a cleaning was prescribed at the age of 6 (Six) months and thinning were prescribed at ages 5, 10 and 15 years.

7.2.3.2 Results

7.2.3.2. 1 The conversion felling prescribed gave good result. Young healthy crop sprang up assisted by Cultural Operations. The improvement felling prescribed for Periodic Blocks II, III and IV were not a success. The felling carried out under improvement was so heavy that after the operations were over, the coupe presented the appearance of a coppice with standard coupe. 'Improvement Felling' were discontinued from 1924 under orders of the Chief Conservator of Forests, Odisha.

7.2.3.3 The Plains Sal Pole Working Circle (Minchin's Plan)

7.2.3.3.1 The plains Sal Pole Working Circle included all Quality III (Dehradun, Quality IV) Sal areas to be worked under simple coppice on a rotation of 25 years. Only part of the area of the Working Circle was allotted Felling Series. It was estimated that a rotation of 25 years would produce poles of average 1'8"girth. A sixth year thinning was prescribed in the young crop. Thinning was also prescribed for the older coupes felled under the previous Plan.

7.2.3.4 Result

7.2.3.4.1 Mr. Minchin while recognizing the value of an early cleaning from a silvicultural point of view he did not prescribed it. There was a considerable area of old coppice crops that had not been tended before and some of them were 15 years old. The coupes actually thinned were not

taken up in the order given in the programme with the result that the crops which required more urgent attention were ignored. The rotation of 25 years was also too short.

7.2.3.5 The Ravine Working Circle (Minchin's plan)

7.2.3.5.1 The Ravine Working Circle included all good quality hill side Sal forests to be worked under 'Conversion to Uniform System' with a rotation of 90 years (estimated average girth at 80 years being about 4'9" to 5'0"). The method of regeneration was the same as that for plains Sal timber Working circle except that where Sal advance growth in 'Switch Stage' was deficient, artificial planting with suggested species was prescribed. In periodic Blocks other than periodic Blocks I, heavy 'Improvement felling' and removal of mature timbers were prescribed.

7.2.3.6 Result

7.2.3.6.1 The Result of conversion felling in the Ravine Working Circle coupes were far from satisfactory. Clear felling of forests of this kind was a step in the wrong direction. The policy also artificially planting up Sal areas with Teak was a wrong one. Sal is a valuable species though not as valuable as teak. But the locality concerned is a natural habitat of Sal and not of Teak, and the cost of artificial planting is high. Like those in the plains Sal Timber working Circle, 'Improvement Felling' in periodic Blocks II to IV proved a failure. It was difficult to induce contractors to buy 'Improvement 'coupes. Departmental Felling were uneconomic and, therefore, by the end of 1923-24 large arrears had accumulated. Improvement Felling were therefore discontinued under orders of the Chief Conservator of Forests.

7.2.3.7 The Selection Working Circle (Minchin's Plan)

7.2.3.7.1 The Selection Working Circle included some $2\frac{1}{2}$ Lakhs acres of main hill forests and was to be worked on a 20 years cycle. Mature timber (diameter or girth limit not specified but left to the discretion of the District Forest Officer and Working Officer) was to be removed where this could be done economically. No tending or cultural operations were prescribed except that creeper cutting was to be done along with marking.

7.2.3.8 Results

7.2.3.8.1 The most serious defect in the prescriptions for this Working Circle was that no definite exploitable girth (or diameter) limit was fixed. It was suggested that the girth of Sal trees at maturity in the type of forest allotted to this working Circle varied according to quality from 3'6" to 6'6"and within these limits, the Working Officer was to have exercised his discretion. In the heat created by the operation of the saw Mill, however, not only was this thrown to the winds and every sound Sal tree down to 3'6"cut and removed from the coupe of the year, but with increasing difficulty experienced in keeping the mill supplied with logs of the kind required, these felling were extended first to the coupes laid down for working in subsequent years and finally to every other part of the reserve, irrespective of silvicultural requirements and working plans prescription.

7.2.3.9 The Lower Hill Working Circle (Minchin's Plan)

7.2.3.9 The Lower Hill working Circle included inferior and irregular hills forest of the Low Hill Ranges, this Working Circle was prescribed for working on a 25 year rotation simple coppice. No tending or cultural operations were prescribed.

7.2.3.10 The Scrub Jungle Fuel Working Circle (Minchin's Plan)

7.2.3.10.1 The scrub jungle Fuel Working Circle included scrub Jungle in outlying and isolated hills it prescribed for working under 'Simple Coppice' with 20 years rotation period.

7.2.3.11 Result

7.2.3.11.1 These were worked mainly for fuel under simple coppice with a rotation of 25 years for the Lower Hill, and 20 years for the scrub Jungle Fuel Working Circle. No tending was done.

7.2.3.12 Bamboo Working Circle (Minchin's Plan)

7.2.3.12.1 Cutting Cycle was tentatively fixed at 5 years but no bamboo cutting rules were prescribed.

7.2.3.13 Results

7.2.3.13.1 As no felling rules were prescribed, bamboo was extracted from those parts of a coupe which were comparatively more accessible. The exploitation was irregular and in most cases incomplete.

7.2.3.14 Fire Protection

7.2.3.14.1 Stress was laid on the necessity of comprehensive fire protection. Better quality Sal areas and young crops of all Working Circles were to be rigidly protected. The cost of fire tracing the enormous length of block lines surrounding un-felled Sal areas was large and it is doubtful if the cost was commensurate with the results obtained.

7.2.4 Mr. Nayar's Working Plan (1930-31 to 1939-40)

7.2.4.1 After expiry of the Minchin's plan, it was revised by Mr. Nayar which came into operation from the year 1930-31. Mr. Nayar's plan followed by and large the prescriptions of its predecessor, but the more important changes introduced were as fellows.

- ✓ The two Fuel Working Circle under Mr. Minchin's plan was amalgamated into one, and two new working Circle for Minor Forest produce and grazing were constituted. Other Working Circles were retained as they were but with altered areas allotted to each, in the light of new stock mapping.
- ✓ The rotation for the plains Sal Pole working Circle was raised from 25 years to 40 years. In the Fuel Working Circle, the rotation was fixed at 25 years, and in the Bamboo Working Circle, the rotation varied from 3 to 5 years.

- ✓ In the Selection, the exploitable girth was definitely fixed at 4'6", a great improvement from the previous prescriptions.
- ✓ The periodic Block System in the plains Sal Timber and Ravine Working Circle was abolished and "Improvement Felling" in periodic Blocks other than the first discontinued.
- ✓ Collection and burning of debris immediately following clear felling, was definitely prescribed for the coupes of the plains Sal Timber and Ravine Working Circle.

7.2.4.2 The Plains Sal Timber Working Circle (Nayar's Plan)

7.2.4.2.1 The plains Sal Timber Working Circle included plains Sal Forests of Quality I and II. The system of management was High Forest Clear felling System with natural regeneration obtained from the outback Sal advance growth. The rotation of 60 years adopted earlier by Minchin, was retained. But the periodic Blocks System was temporarily discontinued. The clear felling operations prescribed were to be concentrated in the annual coupes. Improvement felling in areas other than clear felling coupes were discontinued. No definite Marking Rules were laid down as the coupes were to be clear felled. Immediately after the main felling a very rigorous programme of regeneration operation, which included complete burning of the coupe, cutting back of all advance growth in Switch and seedling stages, was stressed upon. This was followed by cleanings to two consecutive years (till the third year) and climber cutting in the 4^{th} year. Definite rules for cleaning operation were laid down. Only two thinning in the 8^{th} and 13^{th} year were prescribed. Subsequent thinning was left to be decided in the next revision.

7.2.4.3 Results

The working of the plains Sal Timber working Circle were a success in so far as it resulted with more or less well-stocked, healthy and uniform young crops of Sal in the various coupes worked during the period. The plan insisted on complete clear felling and thereafter a complete burning of the debris followed by the cutting back of regeneration in switch stage. While these operation certainly cleared the ground and made the crop absolutely over aged and minimised damage from possible future accidental outbreaks of fires, these operations were expensive.

7.2.4.4 The rotation was kept at its original figure of 60 years which is certainly too short. It was claimed that quality II Sal (Dehradun, Quality III) which constitutes the bulk of this working Circle, would attain a girth 4'-5''at the age of 60 years and thereafter tend to be unsound. According to towards yield table for Sal Quality III (High Forest, Shelter wood), average girth at age 60 is 2'8". The average diameter at 60 years of even quality II Sal is only 12.5"which corresponds to a girth of just below 40"or 3'4". The assumption, therefore that it would attain a girth of 4'3"in 60 years was too optimistic. No Improvement felling's prescribed for areas which were not due for clear felling during the working plan period. Such felling was necessary in improving the growing stock.

7.2.4.5 The Plains Sal Pole Working Circle (Nayar's Plan)

7.2.4.5.1 The Plan in Sal pole working Circle included all quality III (Dehradun, Quality IV) Sal areas. The system was 'simple coppice' with 40 years rotation (clear-felling 25 years of Mr. Minchin's plan). No cleaning was prescribed following felling and until the third year of life of the young crop. The first thinning was prescribed at the age of 15 years, and a second one at the age of 25.

7.2.4.6 Result

7.2.4.6.1 "Clear felling" was prescribed but not burning and cutting back. No provision was made for retention of standards which should have been done with a double purpose of acting as seed bearers and as a source of some big timber. Valuable species other than Sal should not have been ignored. No cleaning was prescribed following felling which could have given better results. The first thinning prescribed at the 15th year was rather late. However, the results were generally satisfactory.

7.2.4.7 The Ravine Working Circle (Nayar's Plan)

7.2.4.7.1 This included the ravine Sal Forests of the plains including the past clear felled areas. The silvicultural system was "Clearfelling" with natural regeneration from Sal advance growth. A rotation of 80 years was fixed anticipating a girth of 5' for Sal. Rests of the operations were similar to the plain Sal Timber Working Circle except that 10 acres of Teak and 5 acres of Gambhar plantations in clearfelled areas deficient in Sal regeneration were prescribed to be raised.

7.2.4.8 Results

7.2.4.8.1 This Working Circle included patches of Sal forest generally with a fair amount of regeneration on the ground, situated in valleys or hill slopes remote from markets and difficult of access. Owing to their long lead from the markets, no trees before 3' girth could be profitably exploited from these coupes. Clear felling's therefore not only involved frightful waste of material, but the subsequent collection and burning of debris and cutting back operations for economic reasons alone should never have been prescribed. The rotation was fixed at 80 years and was intended to produces trees of 5'0" girth. Areas allotted to this Working Circle can at best be classed as Quality II (and that is probably and over estimate) which under the shelter wood system would produce an average girth of 4'0" or thereabouts at the age of 80. It was thus too optimistic to assume that 5'0" girth would he produced in 80 years. The Working Plan further prescribed planting up with Teak of about 10 acres annually in the clear felled coupe "irrespective of the presence of Sal regeneration", and with Gambhar of about 5 acres annually. These prescriptions could hardly be justified. Not only is artificial planting an expansive operation, but the wisdom of attempting to replace good Sal forests by teak is a locality where Sal is an indigenous species, and teak is not, is open to question. *Gmelina arborea* on the other hand is not a suitable species for pure planting. These plantations are scattered all over the place and even assuming that teak will grow well in those localities and such scattered plantations in remote localities are hardly likely to probe a profitable investment.

7.2.4.9 Fuel Working Circle (Nayar's Plan)

7.2.4.9.1 It included area in the Lower Hill Fuel Working Circle and Scrub Jungle Fuel Working Circle of Minchin's plan with a rotation of 25 years.

7.2.4.10 Result

7.2.4.10.1 The constitution of this Working Circle could hardly he justified. There were a large number of Felling Series under Plains Sal Pole Working Circle, and, cut materials from these coupes should have been enough to meet local requirements for firewood. For the same reason, several fuel Wood felling series remained un-worked. The rotation of 25 years was too short.

7.2.4.11 Selection Working Circle (Nayar's Plan)

7.2.4.11.1 It included all the hill forests. The system was Selection System with felling cycle of 20 years. The exploitable girth fixed for all species was 4'6" without any elasticity. Definite marking rules had been laid down. Cultural Operations followed the main felling, and improvement felling was prohibited. It was stipulated that coupes should be worked by the Department.

7.2.4.12 Result

7.2.4.12.1 Prohibition of cultural operations subsequent to main felling, stoppage of improvement felling and provision for exploitation through departmental agency was perhaps the measure aimed at, toward-off over felling of immature trees in the best interest of the forests. However, these factors reduced the working to more lumbering operations without any attempt at crop improvement. Subsequently, from 1937-38 the coupes were sold standing, to contractors. This change not only yielded a better price but encouraged more economic conversion and also left the Range staff with more time to attend to other important silvicultural works.

7.2.4.13 Bamboo Working Circle (Nayar's Plan)

7.2.4.13.1 In reserves now under Russelkonda Division, twelve bamboo felling Series were formed, covering a total area of 79,791 acres. The felling cycle varied from 3 to 5 years. No felling rules were prescribed in the Plan. The only direction given was that selected culms should be felled in each clump. In 1932-33, however, certain felling rules were introduced through the medium of agreements entered into with bamboo coupe purchasers whereby a minimum of 2 to 5 older culms (according to the size of the clump) were to have been left uncut in each clump, in addition to the first year's culms.

7.2.4.14 Results

7.2.4.14.1 In actual working, these rules did not seem to have observed. In accessible areas where demand was high, almost every utilizable Culm was removed from the clump whereas inaccessible areas, the clumps remained practically untouched.

7.2.4.15 The Grazing Working Circle (Nayar's Plan)

7.2.4.15.1 Grazing was permitted everywhere except in the Plains Sal Timber Working Circle, the portions of quality IV natural Sal forests felling within the demarcated Sal blocks, and the worked coupes of the Plains Sal pole, the Ravine, and the Fuel Working Circle – the last named for five years after felling. The grazing unit prescribed in the Working Plan was the range, but this was subsequently abolished, and the whole Division taken as one unit for purpose of grazing was not fixed in the Working Plan but in actual practice, it was not too severe.

7.2.4.16 Fire Protection (Nayar's Plan)

7.2.4.16.1 A comprehensive fire protection programme was prescribed in the Working Plan. The prescriptions were virtually the same as those in Mr. Minchin's Working Plan of 1919-20 to 1929-30. The unworked quality II and quality III Sal forests of the Plains Sal Timber Working Circle as well as all the worked coupes of the Plains Sal Timber, The Ravine, the Plains Sal Pole, and the Fuel Working Circle were under rigid protection, while areas felling in the Selection Working Circle were under 'Partial' Protection. Although no specific prescriptions were laid down in respect of the rest of the area of Reserved Forests, it is apparent that general protection was to be accorded to every part of it & all accidental outbreaks were to be promptly put out.

7.2.4.16.2 All areas under rigid protection were isolated from the rest of reserve by a clear fire-traced line 15' in width (the line round the worked out fuel coupes were 10' wide) and patrolled by special Fire Watchers to be appointed at the discretion of the District Forest Officer. These operations cost the department considerable sums of money annually, and while such expenditure was amply justified so far as it related to the protection of young crops in worked over coupes, a similar justification could hardly be claimed for protection of unfelled quality II and quality III Sal forests or of old worked coupes in which the crop is big enough to resist damage by accidental fires.

7.2.5 Mr. Khan's Plan of Russelkonda Division (1939-40 to 1958-59) and Chatrapur Division (1940-41 to 1959-60)

7.2.5.1 Mr. Nayar's Plan was revised by Mr. B. K. Khan, I.F.S., Ghumsur Forests which by then had been broken down to three divisions namely: Russelkonda, Chhatrapur and Balliguda. He revised the Working Plans for both Chhatrapur and Russelkonda Divisions separately. They came into force with effect from 1940-41 and 1939-40 respectively. As Lathipada Section of Ex-Chatrapur Division (Ghumsur South) is now under the jurisdiction of Ghumsur North Division (then

Russelkonda) both the Plans have been dealt with simultaneously. The Plans are identical and can be summarized as under:

7.2.5.2 Khan constituted the following Working Circles:

I. Selection Working Circle
II. Uniform Working Circle
III. Coppice Working Circle
IV. Bamboo (Overlapping) Working Circle and
V. Miscellaneous Working Circle.

7.2.5.3 SELECTION WORKING CIRCLE (B.K. KHAN'S PLAN):

7.2.5.3.1 It included major parts of the Selection and the Ravine Working Circle; some part of Plains Sal Timber and Plains Sal Pole Working Circles, of Mr. Nayar's Plan, occupying the hills and the hill slopes having Sal of Quality II/III. Exploitable sizes were fixed species wise depending upon their economic importance and market demands. He divided them into three categories that are to say, Principal, Useful and Inferior. The exploitable diameter limit was 16" for all species except Hallando, Mundi and Sandhan for which 15" and 12" respectively was fixed.

7.2.5.3.2 He allowed felling of all exploitable trees except some of the good Principal species up to 4" diameter bigger than the exploitable size and prescribed improvement marking of the trees down to 12" diameter and thinning in congested groups of poles to be carried out simultaneously along with the marking. In open eroded areas, he allowed felling of these marketable exploitable trees whose rotation was not required on the silvicultural ground or for anti erosion measures.

7.2.5.3.3 Results

7.2.5.3.3.1 Khan lowered the exploitable size of the Principal species to 16" from 18" adopted in the previous Plan even after admitting the stock to be very unsound and depleted of the older age classes. This resulted in marked depletion of higher girth classes (above 3' girth) throughout the Division. To compensate to this reduction, he adopted a longer felling cycle of 30 years (against 20 years of the earlier Plan) with a view to give the forests a period of rest and to make good of the past heavy fellings. However, his assumption proved to be wrong.

7.2.5.4 Uniform Working Circle (B.K. Khan's plan)

7.2.5.4.1 It included the bulk of better quality plain Sal Forests of the Division fairly accessible near Bhanjanagar. Considerable areas of open eroded land, usually containing an extremely open crop hardly justifiable to any kind of working were also included in this Working Circle. Three Felling Series were formed and the silvicultural System adopted was the 'Uniform System'. It was intended to convert the irregular forests to approximately even aged condition which was also the policy adopted in the earlier plans. Regeneration was expected to be both from coppice as well as natural regeneration. The conversion period was fixed at 80 years (60 years in Previous Plan)

under four Periodic Blocks of 20 years each. The yield was regulated by reduced area considering quality as the reduction factor.

7.2.5.4.2 Results

7.2.5.4.2.1 Khan's application of 'Uniform System' to bring the irregular forests to approximately even aged condition was basically wrong. Actually it was 'High Forest", 'Clear Cutting System' with the regeneration Operation concentrated in the annual coupes. He prescribed the 'Periodic Block' without going through all the stages of regeneration operations required under a 'periodic Block system'. He presupposed adequate 'Sal' natural regeneration in Periodic Block II so that after conversion he visualised a well converted even aged Sal forest. But this proved to be wrong. Most of the area allotted to this Working Circle were either completely hilly, eroded or having only dry miscellaneous growth wherein Sal occurred in small pockets without sufficient regeneration. After conversion therefore, the resultant crop become pure Dry-Miscellaneous or Scrub-jungle in the Plains. The hills were denuded completely of tree growth which for years to come will never recoup. A glaring example of this will be seen in the Gallery Reserve Forest in Central N and Western Felling Series. All these defects were chiefly due to lack of field studies and absence of accurate stock maps. He relied upon the old stock maps prepared 35 years earlier. These were not all correct.

7.2.5.5 Coppice Working Circle (B.K. Khan's plan)

7.2.5.5.1 Areas allotted to this Working Circle were the III/IV quality Sal forests and also the poor type of dry mixed forests with bamboo. Two coppice rotations of 60 years and 40 years respectively were adopted to meet the local demand of firewood, poles and small timbers. The silvicultural System was 'Coppice with Standards'. He also prescribed three periodic blocks of 20 years each in 60 years Felling Series. In all, 8 Felling Series were constituted. Regeneration was expected both from coppice and seedling origin. He wanted to record the progress of regeneration when a coupe came up for working. The percentage of coupe area that was (a) half stocked (b) partly stocked and (c) blanks were to be noted down in the Compartment Histories. After five years of working the position was to be reviewed to ascertain whether sufficient regeneration was being obtained to justify the silvicultural system prescribed. Similarly in 60 Years rotation felling series, he advised to keep a careful watch on the mortality of large sized stumps which would cause deterioration of the crop. If this happened, he advised for induction of sufficient seedling regeneration or to shorten the rotation.

7.2.5.5.2 Results

7.2.5.5.2 In Coppice Working Circle, the high hills of Tiliki, Kaliamba, Ragada, Malati, Kullado, Vinjigiri were clear felled in the name of "Coppice Felling" Which Brought in immediately the 'Bamboos'. In some of the hills of Ragada, Vinjigiri, Malati, and Lenkada (Jaganathprasad) which were already very poor, the soil was exposed and erosion was accelerated. In case of Malati, coupe could not be opened up because the only vegetation it had was Bamboo (99%). So was also

the case with some coupes of Kullado, Jagannathprasad, Kaliamba and Tiliki Felling Series. In some of these, the resultant crop came out to be the poor dry-miscellaneous trees or pure bamboo or scrub jungle.

7.2.5.6 Bamboo (Overlapping) Working Circle (B.K. Khan's plan)

7.2.5.6.1 It overlapped some of the areas allotted to the Timber working circle and at close proximity to Bhanjanagar. Standard Bamboo Cutting Rules were prescribed. The Felling Cycle was fixed at four years. In all 13 Felling Series comprising an area of 63,558.8 acres were constituted. Later 10 more felling Series were added after 1960 as additional areas. Definite coupes were laid down in each Felling Series. Initially the sale was by Public Auction but subsequently exploitation was done through the department as the Bamboo Forests were completely spoiled by the purchasers by almost clear felling the clumps.

7.2.5.6.2 Results

7.2.5.6.2.1 Mr. Khan had prescribed standard marking rules in vogue then through the Country. This should have helped working of Bamboos more scientifically. But the coupe purchasers did not follow them. The rules were abused and as per the old practice they almost clear felled Bamboo clumps. The condition deteriorated to such an extent that departmental exploitations had to be introduced for some time. The situation improved when two paper mills i.e. Messer's Orient Paper Mills Ltd. and Straw Products Ltd. took over the exploitation of Bamboo Forests from the year 1957 and 1958 respectively.

7.2.5.7 Miscellaneous Working Circle (B.K. Khan's Plan)

7.2.5.7.1 It Included three forest villages namely; Gopadar in Ambazora, Pudrangi in Chandragiri and Bibhutia in Ragada-Vinjigiri Reserve Forests respectively. One patch of forest in Dimirijholi Reserve proposed to be dereserved for a Minor Irrigation Project and the proposed Burtong Block was included in this Working Circle.

7.2.5.7.2 Results

7.2.5.7.2.1 Out of the three forest villages, Gopadar was abandoned in 1940-41 by the KONDHAS owing to the constant depredations caused by wild elephants. No steps however, were taken to merge it in the adjacent reserve. Meanwhile outsiders came in and started cultivating the lands. Pudrangi and Bibhutia Forest Villages remained as such but no effective control was exercised by the Department to regulate activities. No-resident tenants started settling in them. Lands more than that was agreed upon were under cultivation indirectly by the local land-lords. An area of 17 acres in Dimirijholi was dereserved vide Notification No.2690 dated.11-10-1939.

7.2.5.8 Effects of World War II (1938-39 to 1945-46):

7.2.5.8.1 Mr. Khan's Plan received an initial set-back immediately after its Introduction owing to the unprecedented demand for war timbers of all species and kind. Outside Contractors were brought in and five year long term leases were granted on a sliding royalty basis to be calculated on actual outturn of Sal sleepers which were converted chiefly from big sized Sal trees of and over 16" diameter. Irregular advance felling was allowed in almost every coupe. Worst of it, the Contractors were permitted hand sawing in the forest to hasten the pace of the supplies. Local consumption and the export of timbers for private purpose were very negligible and everything that came out of the forests was exported as war supplies.

7.2.5.8.2 The outturn of round timbers alone during six years of war has been given below in **Table 7-2**:

Table 7-2 Year wise outturn timber during World War II in Ghumsur North Division	
1939-40	3,58,000 Cft.
1940-41	11,47,000 Cft.
1941-42	7,82,000 Cft.
1942-43	11,38,000 Cft.
1943-44	12,05,000 Cft.
1944-45	7,60,000 Cft.

7.2.5.9 Interim Revision (1954-55) (Khan's PLAN):

7.2.5.9.1 As envisaged in the Working Plan an interim revision was undertaken after 10 years of the commencement of the Plan by Late Mr. A.B. Lei, Assistant Working Plans Officer. He finally submitted it in the year 1955 but for some reason or the other it was not given effect to. Khan's Plan was allowed to continue with little amendments here and there.

7.2.6 First Extension (1958-59 to 1963-64) For Ghumsur North Plan and (1959-60 to 1964-65) For Ghumsur South Plan

7.2.6.1 The Plan Period expired for Ghumsur North Division in 1958-59 and for Ghumsur South Division in 1955-56. But regular revision could not be taken up forthwith. Since there was also no possibility of a full scale revision immediately, both the Plans were given extension of five years each. It was at the same time contemplated that the regular revision would be undertaken within this extended period. The Plans were further allowed to continue with some minor modifications to the prescriptions till the enforcement of this Plan.

7.2.7 Second Extension (1963-64 to 1968-69) For Ghumsur North Division Plan and (1966-65 To 1969-70) For Ghumsur South Division Plan

7.2.7.1 Even after expiry of the first extension period, no regular revision could be taken up. Hence the Plans were given another extension of 5 years.

7.2.8 Third extension

7.2.8.1 The Second Extension Period came to an end in 1969 but because the revision of the Plan was under progress, fresh coupes could not be allotted. Another extension was, therefore, recommended hoping the new Plan to be ready by 1972.

7.2.8.2 The gist of the recommendations were

I. Stoppage of all works in the Uniform Working and the Coppice Working Circle except in Lenkada and Kullada Felling Series. In these two Felling Series only Selection Marking was allowed in hills. Exploitable diameter for all species was fixed at 16". In Plains, the number of standards to be retained was raised to 20/25 per acre.
II. Out of the four Felling Series in Selection Working Circle only three were allotted, Felling Series IV being left out. The exploitation girth limit was tentatively raised by 2" for Sal & 4" for other species to safeguard over exploitation.
III. No fresh plantation was allowed.

7.2.8.3 This arrangement continued for one year i.e. only 1969. Then fresh coupes as per the Revised Pattnaik's Plan were allotted to be worked from 1970. None of the three extensions and the amendments made from time to time has received Government sanction.

7.2.9 Mr. Pattnaik's Plan (from 1970-71 to 1989-90)

7.2.9.1 In Mr. Pattnaik's Plan, a (eight) Working Circles were constituted which are as follows:

- Selection Working Circle.
- Sal Improvement Working Circle;
- Coppice Working Circle;
- Plantation Working Circle;
- Bamboo (Overlapping) Working Circle;
- Minor Forest Produce Working Circle;
- Soil Conservation Working Circle;
- Miscellaneous Working Circle.

7.2.9.2 Khan's Plan and Pattnaik's Plan had 4 (four) working Circles in common. Areas allotted to Uniform Working Circle in Khan's Plan excluding the existing plantations and compartments under soil Conservation Working Circle were allotted to Sal Improvement Working Circle in the Pattnaik's Plan. In addition, three new Working Circles were constituted as follows

- Plantation Working Circle
- Minor Forest Produce (overlapping) Working Circle and
- Soil Conservation Working Circle.

7.2.9.2.1 The details of management under different Working Circles in Pattnaik's Plan are discussed below:

7.2.9.3 Selection Working Circle (Pattnaik's Plan)

7.2.9.3.1 The Selection Working Circle comprised all the areas allotted to the Selection Working Circle and most of the high hills of Kaliamba, Tiliki, Ragada, and Vinjigiri blocks allotted to Coppice Working Circle in the previous Plan (Khan's Plan). The total area in this Circle extended over 56.576.69 ha. This had 12 (twelve) Felling Series. They were made smaller in extent than the previous Plan to ensure better working and supervision.

7.2.9.3.2 The species present in the Reserve Forests were classified into three groups i.e. Principal, Secondary and Inferior. The Principal Species included Sal, Teak, Piasal, Sissoo, Gambhar, Tangiri and Bandhan. Sahaj, Hallando, Mundimundi, Siris, Kasi, Amba, Toons, Tentra comprised the Secondary Species. All other species not included above were grouped under inferior species. For the purpose of exploitation, the species were categorized into six groups. Keeping into consideration the current market demands, the quality of crop the site is capable of producing and the size after which unsoundness develops in each locality the exploitable diameter limits fixed for different Felling Series were as shown in **Table 7-3**.

Table 7-3 Different exploitable diameters in different Felling series for six types of species class

SPECIES.	Ragada.	Baiballi, Darpangia.	Gundiribadi.	Rambha, Ghogodo, Paichalia, Jagannathprasad, Siuli, Tarasing, Bodangi, Chandragiri
Diameter in inches (Centimeters) at breast height over bark.				
Sal.	18" (45 cm.)	18" (45 cm.)	20" (50 cm.)	20" (50 cm.)
Teak.	24" (60 cm.)	Wherever available.		
Pia-Sal, Halanda, Mundi, Siris, Tentra, Semal, Manu, Asan.	20" (50 cm.)	22" (55 cm.)	22" (55 cm.)	
Gambhari, Sissoo, Tangiri, Kasi.	20" (45 cm.)	20" (45 cm.)	20" (45 cm.)	20" (45 cm.)
Bandhan.	14" (35 cm.)	For all Felling Series.		
Others.	18" (45 cm.)	20" (50 cm.)	20" (50 cm.)	20" (50 cm.)

7.2.9.3.3 The Felling Cycle was kept at 20 years except for Ragada Felling Series where it was fixed at 30 years. The yield was not calculated in volume. It was fixed by area and an attempt was made to make the coupe roughly equi-productive basing on the stock maps. Demarcation of annual coupes, rules for marking and execution of felling etc. were prescribed in great detail. Subsidiary

silvicultural Operation entailed sowing and planting, cleaning, supplementary felling, thinning and climber cutting. These were described in detail. Other regulations regarding grazing and fire protection were also indicated in detail.

7.2.9.3.4 Results

7.2.9.3.4.1 The marking rules described in detail the procedure to be adopted for felling trees of exploitable diameter. These overtly have not been followed. There is no list of retention trees in the coupe sale list. These forests have been over exploited. Climber cutting was to be done at an interval of 10 years or whenever the Divisional Forest Officer thought fit to carry out this operation. This seems to have been completely overlooked. As a result climbers have invaded the inaccessible areas and in many places strangulated good tree growth.

7.2.9.3.5 Encroachments with large clearings are noticed in Rambha, Chandragiri, Ghogodo, Gundiribadi and Ambazora reserve Forest Blocks. Grazing have gone on inside the reserves uncontrolled and unregulated. Regeneration could not be protected from fire and grazing. As a result, trees of all age gradations are difficult to be seen. Illicit fellings in these reserve forests are on the increase. Large sized Pia-Sal and Sissoo trees have been selectively removed. Nonetheless, the compartments in this Working Circle still contain good forests to be worked under the Selection Working Circle.

7.2.9.4 Sal Improvement Working Circle (Pattnaik's plan):

7.2.9.4.1 This Working Circle comprised of all the forests under the Uniform Working Circle in Khan's Plan except compartment Nos. 10, 11, 12 of Baiballi Block transferred to the soil Conservation Working Circle and Khan's Sub-compartment 10 of Chandragiri Block transferred to the Selection Working Circle. This Working Circle contained 42, 162.90 ha of forests. The forests are mostly even aged Sal with Sahaj and Dhaura occurring occasionally. A striking feature of these forests was the absence of older age classes i.e. trees of 3 feet girth and above.

7.2.9.4.2 The objective was to nurse, tend and improve upon the existing young 'Sal Forests' and to maintain and protect the vegetal cover on the hills and the eroded areas to check further deterioration of site. No silvicultural System for the area to be worked under this Circle was prescribed. The reason being that the previous System of conversion to uniform could not be allowed any longer due to the deterioration of the crop. It was therefore intended to deter it for a period of 20 years. 'Thinning' in areas already clear felled and 'Improvement Felling – cum – Cleaning' in the rest of the areas were the main silvicultural operations prescribed. Eroded areas and hills were to have separate treatments. For removal of older trees scattered here and there desired silviculturally, the exploitable size was fixed at 50cm (dbh) for all species except Bandhan for which it was 35 cm. (dbh). Taking into consideration the All India Sal Yield Table as well as the measurements of sample plots within the Division, the rotation period was considered to be 100 years. All the 80 annual coupes corresponding to conversion period of 80 years in Khan's Plan

were kept as such in Pattnaik's Plan. Thinning at regular intervals was prescribed for the first 30 clear felled coupes and the rest 50 to be improved upon by taking two and half coupes annually. No regular yield was anticipated from this Working Circle. The method of execution of felling, subsidiary silvicultural operations and other miscellaneous regulations were described in detail. The provision of intermediate revision after a period of 10 years was also made. While nothing that the proper implementation of the prescriptions required through technical knowledge and skill, it recommended departmental working.

7.2.9.4.3 Results

7.2.9.4.3.1 It was prescribed that strict protections were provided to ensure natural regeneration as well as regeneration through coppice shoots. However, these areas could not be protected effectively from fire, grazing and illicit felling. Thinning in all the converted areas prescribed in the 10^{th}, 25^{th} and 40^{th} year have not been adhered to. Climber cutting prescribed in the 10^{th} year in all the improvement coupes was ignored. Negligence in carrying out this operation in time has adversely affected the improvement of the crop. The regeneration areas could not be protected due to budgetary constraints. Cleaning and other subsidiary silvicultural operations were not carried out. As a result, the improvement aimed at has not been achieved. The area under this Working Circle needs total protection from fire, grazing and other biotic interference.

7.2.9.5 Coppice Working Circle (Pattnaik's Plan):

7.2.9.5.1 This Working Circle consisted of some of the Plain Sal Forests of quality II & III. Most of these have been worked under the Coppice Working Circle earlier and contain poor quality Sal with high percentage of Dry-Miscellaneous species and bamboos. Extensive patches of eroded areas, having poor tree growth over 11,900 ha were also included in this Working Circle. Considering the local demands, accessibility to forests and the existing condition of the crop, this Working Circle was divided into eight Felling Series. The silvicultural System adopted was coppice with standards. Besides keeping the prescribed number of standards and coppicing back the rest of the crop, special attention was given to reserve groups of trees over the hills and eroded patches, to maintain a protective soil cover. Natural reproduction was bought to be obtained from the 'Switch State'.

7.2.9.5.2 Basing on the quality of the crop and the site, a rotation of sixty years was fixed for Kullada, Gerada, Vinjigiri and Kaliamba Felling Series and forty years for the remaining felling series. The felling series having 40 years rotation period were supposed to cater to the needs of the people in respect of their demand aimed at supplying small timbers for building and agricultural purposes in addition to fuel wood. Yield was regulated by laying out coupes of approximately equal areas. Annual coupes, equal in no. to the years of rotation, were laid out. The demarcation of annual coupes, rules for working, subsidiary silvicultural operations and other miscellaneous regulations were prescribed in detail. All healthy trees of Sissoo and Bandhan up to 14" in diameter and all Sandal trees were to be retained as 'Reserves'. Fruit bearing trees such as

Mango, Tamarind, Karada, Mahua, Kusum, Jamun, etc., Standing on either side of permanent roads were to be retained as 'Standards' in addition to 15-50 poles of Sal, per acre within the dia. Range of 4-12". The subsidiary silvicultural operations included sowing and planting, climber cutting. Strict closure for 10 years from grazing was prescribed in the worked out coupes for 10 years provision for intermediate revision was also made during the Plan Period.

7.2.9.5.3 Results

7.2.9.5.3.1 The area is now understocked and open due to maltreatment and irregular felling by the local people. These forest areas being surrounded by thickly populated areas are prone to heavy illicit felling, grazing and fire. The standards were reduced immediately after the coupe working. The Sal shoots were continuously removed for fuel wood and other household purposes. The subsidiary silvicultural operations were not carried out. Moreover, the closure of the worked out coupes from grazing and the concomitant fire protection measures were not ensured. As a result, some of the forest areas in the Kaliamba and Tiliki Reserve Forest Blocks were completely denuded. Most of the forest blocks allotted to this Working Circle have been converted to scrub jungle with Sal shoots still struggling for existence. Of late, some of the Village Forest Protection Committees have come forward to protect these patches. Encouraging results have been seen.

7.2.9.6 Plantation Working Circle (Pattnaik's Plan):

7.2.9.6.1 This Working Circle comprised of such areas of Ghogoda, Ragada, Kaliamba, Malati and Dumdumi Reserve Forest Blocks where new plantations were intended to be raised. It also included all the existing plantations of the Division. This Working Circle covered an area of 4,144.07Ha. Five Planting Series were constituted in this Working Circle. All the areas for planting were to be thinned out regularly in the 8^{th}, 14^{th}, 20^{th}, 30^{th}, 40^{th}, and 55^{th} year. The first thinning was prescribed to be mechanical and the rest to be 'C' Grade and 'D' Grade thinning was to be recommended. No regular yield was anticipated. The choice of species to be planted in different planting series was based on suitability of area. A rotation of 70-80 years was fixed for teak keeping in view the exploitable girth as 5' to 5'6". Clear felling of annual coupes was envisaged in all the areas excluding the hills.

7.2.9.6.2 Results

7.2.9.6.2.1 Bulk plantations raised in the past have been on scale and are scattered throughout the Division. Various trial and error methods of planting then known, beginning from broadcast sowing, dibbling, transplanting naked seedlings was 'Done' and root-shoot cutting have been tried . No detailed records are available for any of these plantations. Their maintenance was neglected. Heavy illicit felling wiped out some of the good teak plantation, leaving only the coppice shoots. This is particularly so in Malati and Dumdumi Reserve Forest Blocks. Elsewhere, there is too much of suppression and strangulation of the planted species by the neighbouring growth. Some plantations have been raised under these Working Circle. However, these could not be taken up regularly in the annual coupes earmarked for the purpose. Thinning and Climber Cuttings have

been totally neglected. Regulated grazing and fire control measures as prescribed have not been ensured.

7.2.9.7 Bamboo (Overlapping) Working Circle (Pattnaik's plan)

7.2.9.7.1 This Working Circle overlapped all the areas allotted to the Selection Working Circle and portions of Sal Improvement Working Circle. The total area covered in this Working Circle was 60,048,689 ha. There were 17 Felling Series in this Working Circle and the Felling Cycle was fixed at 4 years. The silvicultural System for Kanta was clear felling and was to be worked simultaneously along with 'SALIA'. The method of execution of felling, Cutting Rules, Grazing and Fire Protection and other regulation were prescribed in detail. The Cutting Rules were amended in 1990-91 during extension of the Working plan. The yield was regulated by area. A provision for intermediate revision after 10 years was made.

7.2.9.7.2 Results

7.2.9.7.2.1 The bamboo forests have responded reasonably well to the prescriptions of the Working Plan except for the areas prone to illicit cutting. Of late, however, the amended cutting rules are not being followed assiduously. Over exploitation from accessible areas and under exploitation from slightly inaccessible areas are noticed. Fire protection measures have not been followed. Planting of Bamboo in 'C' Type areas have not been undertaken.

7.2.9.8 Soil Conservation Working Circle (Pattnaik's Plan)

7.2.9.8.1 This Working Circle included areas where soil erosion was acute viz.; Baiballi RF C/10, C/11, C/12, Ragada 3b and Vinjigiri 2b & 2c. The total area covered in this Working Circle was 1,846.447 ha. Mechanical and silvicultural Methods were prescribed to check incipient, sheet and gully erosion. Climber Cutting was to be done every 5th year. Other anti-erosion measures were prescribed and grazing and browsing strictly prohibited. Provision was made for intermediate revision after five years.

7.2.9.8.2 Results

7.2.9.8.2.1 None of the operations and treatments suggested was taken up due to paucity of funds. This has resulted in further deterioration of these sites. Certain fragile areas have to be adopted for anti-erosion measures immediately to stop the degradation from becoming irreversible.

7.2.9.9 Minor Forest Produce (Overlapping Working Circle) (Pattnaik's Plan)

7.2.9.9.1 This Working Circle overlaps all the forests of this Division covering an area of 92,273.727 ha. The cycle of collection of all items of Minor Forest Produce except Sunari bark was fixed for one year and for the latter it was in a cycle of 10 years. Each Range was constituted as a coupe for all types of Minor Forest Produce except Sunari bark where the section was considered the annual coupe. The method of execution of working, allotment of coupes, Subsidiary silvicultural

Operations and other regulations were elaborately discussed. A provision for intermediate revision as and when required was also made. Several items of Minor Forest Produce are available but only the items intended to be regulated were:

I. Kendu Leaf,
II. Sal Seeds,
III. Sabai Grass,
IV. Siali leaves and fibres,
V. Sunari bark,
VI. Broom Grass,
VII. Genduli Gum

7.2.9.9.2 Results

7.2.9.9.2.1 Due to lack of control on removal of bark, the Sunari trees have suffered badly. Then it is not advisable to allow removal of bark from Sunari trees. The Subsidiary silvicultural Operations entailing plantation of medicinal and other trees of economic importance were not taken up.

7.2.9.10 Miscellaneous Working Circle (Pattnaik's Plan)

7.2.9.10.1 This Working Circle included special categories of areas such as forest villages, areas under the process of reservation, areas proposed for reservations, encroachments, preservation plots and nurseries, etc., Different methods of treatment had been prescribed for different types of areas, miscellaneous regulations were suggested. Conditions for irregular exploitation, Grazing and the fire protection measures to be adopted were described in detail.

7.2.9.10.2 Results

7.2.9.10.2.1 The two forest village's viz. (1) Bibhutia & (2) Pudrangi have been now converted into Revenue Villages. The areas released for grazing have been allowed to be grazed unhindered. Rotational grazing has not been followed at all. Fire Protection Measures & other miscellaneous regulations have also not been adhered to. Preservation plots have not been maintained at all.

7.2.9.11. Deviations

7.2.9.11.1 A number of deviations have taken place during the outgoing Plan Period. The deviations were mainly due to the unprecedented cyclone in the year 1973-74, non-availability of crop in some of the coupes and the ban imposed by Government on felling of trees in Ganjam District from 1989-90.

7.2.10 First Extension (Pattnaik's Plan)

7.2.10.1 The First Extension of the Pattnaik's Plan was for the period from 1900-91 to 1992-93 with the following amendments:

I. All the provisions of sub-clause 2(iv) of the Forest (Conservation) Amendment Act were made applicable to the extension period.

II. In Selection Working Circle and Sal Improvement Working Circle, the felling was restricted to removal of dead, dying and uprooted trees only.
III. Felling of trees were not to be carried out in the district as per the ban imposed by the State Report vide their No.27591/FFAN. Dated.19-11-1990.
IV. The Working Bamboo (Overlapping) Working Circle was to be done as per the amended Bamboo Cutting Rules, 1990.

7.2.11 Second Extension (Pattnaik's Plan)

7.2.11.1 The Second Extension of the Pattnaik's Plan was from 1993-94 to 1994-95 or until further revisions, whichever was earlier. In addition to the amendments made in the First Extension, It suggested the following:

I. In the Selections Working Circle, the Sal Improvement Working Circle and the Coppice Working Circle, the felling of trees will be restricted to the removal of dead, uprooted and wind- fallen trees:
II. In the Plantation Working Circle, the plantations will be taken up only in the existing gaps of the prescribed area without resorting to clearance of tree growth, and
III. The construction of buildings will be taken up outside the forest area.

7.2.12 Mrs. Rebecca Nayar's Plan (1995-96 TO 2014-15)

7.2.12.1 Mrs. R. Nayar's plan had five working circles, in which two were independent working circles and three were overlapping. They were as follows:-

I. Selection Working Circle
II. Rehabilitation Working circle
III. Bamboo (Overlapping) Working circle
IV. Wildlife Management (Overlapping) working Circle
V. Minor Forest Produce (Overlapping) Working Circle

7.2.12.2 This plan had three working circles in common to the previous working plan of Mr. Pattnaik namely Selection Working Circle, Bamboo (Overlapping) Working circle and Minor Forest Produce (Overlapping) Working Circle. The Rehabilitation working circle was constituted by amalgamating three working circles namely Coppice Working Circle, Plantation Working Circle and Miscellaneous Working Circle of the outgoing plan of Mr. Pattnaik. One working circle namely the Wildlife management (Overlapping) Working Circle was newly introduced. In the outgoing plan of Mr. Pattnaik wildlife were dealt under Miscellaneous Working Circle, but in this plan a separate Working Circle was created. The detail constitution of the working circles, results observed in the field of the previous working circles as prescribed in Pattnaik's plan and the prescriptions in the working circles of Mrs. R. Nayar's plan are discussed below:

7.2.12.3 Selection Working Circle (Rebecca Nayar's Plan)

7.2.12.3.1 This working circle comprised of all the areas allotted to Selection working Circle known as Type A areas and Sal Improvement Working Circle except Chadhiapalli Reserve Forest and

Compartment No. 2a of Vinjigiri Reserve Forest known as Type B areas of Pattnaik's working plan. The area statement of this Working Circle is as follows:

Type 'A' Areas-		**55,500.708 Ha.**
Type 'B' Areas	**-**	**15,968.431 Ha.**
TOTAL AREA	**-**	**71,469.139 Ha.**

7.2.12.3.2 Out of the total Reserve Forest area of the division which is 92,048.74 Ha. The area constituted under selection working circle occupied a lion's share of 77.6%. This working circle comprised of 15 felling series (including 12 felling series of the Selection Working Circle known as Type A areas and 3 felling series of Sal Improvement Working Circle known as Type B areas of the previous plan). All the fifteen felling series were kept intact as per the previous plan of Mr. Pattnaik, except certain minor changes in the area. The area of Chadhiapalli Reserve Forest and Compartment 2a of Vinjigiri Reserve forest which were previously in the Selection working circle now known as Type A areas were kept out of this working Circle as conspicuous degradation of forest growth were noticed in these areas. **Table 7-4** and **Table 7-5** depict the statement of areas allotted to different felling series in Type-A and Type-B areas respectively.

Table 7-4 Statement showing areas allotted to different felling series of Type-A areas

Sl. No.	Name of the Range	Name of felling series	Name of the Block	Compartment No.	Total area of felling series (in Ha.)
1	TARASING	Gundiribadi	Az	16,17,18,19	4801.913
			Gd	1,2a,3,4	
2		Siuli	Az	10a,11a,12,13a,14,15	3947.203
3		Tarasing	Az	7a,8,9a	3408.099
			Chg	4,5a,6a	
4		Paichalia	Pl	1,2,3,4,5a	3294.064
5		Ghogodo	Go	1,2,3a,4a,5a,6	3395.37
6		Jagannathprasad	Bs	1,2	3910.664
			Jp	1,2a,3a,4	
7		Chandragiri	Chg	7a,8	740.591
	GALLERY	Chandragiri	Chg	1,2,3	2409.025
8		Bodangi	Az	1,2,3a,4,5,6a	3891.3
9	Mujagada	Rambha	Rm	1a,2,3,4a,5,6a,7a	6731.079
			Dj	1a,2a	
10		Darpangia	Dp	1a,2,3,4,5,6,7	5493.646
			Od	1	
11		Baiballi	Bl	1,2,3,4,5,6,7,8,9	6291.744
12	CENTRAL	Ragada	Rg	1,2a,3a,6a,7a,8,9,10a	7186.01
			Km	1,2	
			Ti	1b,2b,3b	

Table 7-5 Statement showing areas allotted to different felling series of Type-B areas					
Sl. No.	**Name of the Range**	**Name of felling series**	**Name of the Block**	**Compartment No.**	**Total area of felling series (in Ha.)**
1	TARASING	Eastern	Bs	3,4,5a,6a	2699.386
			Chg	7b,9,10	
2	GALLERY	Central	Chg	11,12	6450.343
			Gl	18a,19a,20a,21,22,23a, 16a,13,14,15,17	
3	MUJAGADA	Western	Gl	1,2,3a,4a,5a,6a,7a,8a,9a, 10,11a,12	6818.702
			Dp	8,9,10,11,12	

7.2.12.3.3. The felling cycle was fixed for 20 years for all felling series except for Ragada series for which a felling cycle was prescribed for 30 years in Mr. Pattanaik's working plan. But in this plan a uniform felling cycle of 20 years for all the 15 felling series was prescribed in order to work in the unworked areas of Mr. Khan's plan. The exploitable diameter for Bandhan was fixed at 35cm, 55cm for Piasal, Haland, Mundi, Siris, Tentera, Simuli, Jamu and Asan and 50 Cm for all other species including Sal and Teak. The yield was regulated by Smithy's safeguarding formula. The findings in the plan mentions that the forest areas allotted to this working circle earlier had experienced over exploitation the major reason for which was illicit fellings. Hence this plan prescribed to close the worked out coupes for five years to prevent grazing and during this time, maintain strict vigil to prevent fire and illicit felling incidents and other forms of biotic and anthropogenic pressure and conducting subsidiary silvicultural operations sincerely so as to encourage regeneration and restock the forests.

7.2.12.3.4 The prescriptions aimed at:-

I. Conserving and Improving forest cover to augment soil and moisture conservation
II. Build up growing stock and improve stand structure through cultural operations
III. To encourage natural regeneration in establishing and tending the same
IV. To ensure maximum sustained yield.

7.2.12.3.5 Result

7.2.12.3.5.1 The illicit fellings and increasing biotic and anthropogenic pressures in the form of encroachments, podu cultivation and illicit removals continued and the plan was not revisited after 10 years with a view to bring in necessary changes with the changing scenario of forest management as suggested in the Intermediate revision para at the end of the prescriptions of this working circle. Coupled with that, green felling was stopped from 1989-90 to 2004-05 due to ban on felling by Govt. of Odisha. Hence the coupes could not be worked. The subsidiary silvicultural operations could not be done. Due to lack of scientific management of forests for a decade, diseased, malformed, suppressed trees which are silviculturally undesirable occurred in the area. Unwanted and uncontrolled growth of climbers deteriorated the stand quality and also thwarted

regeneration. As a result of all this number of exploitable trees available for marking was found far less in number in comparison to the exploitable trees to be marked per hectare as per the prescriptions of the working plan.

7.2.12.3.5.2 For example- In Chandragiri felling series, Coupe-IX, the maximum number of exploitable trees to be marked was 1048 i.e. 6.7 trees per hectare, whereas during the marking of coupes only 32 trees i.e. 0.2 trees per hectare were found available for marking. The reason for this may either be attributed to over exploitation, unscientific management of the forests for over a decade or inaccurate enumeration during the preparation of working plan. As a result three felling series namely Paichalia, Jagannathprasad and Ragada covering part of 6 Reserve forests (part) have no trees of exploitable girth left that can be removed on the basis of sound silvicultural practices. Hence they need to be moved to Rehabilitation Working circle until desirable growth is attained.

7.2.12.4 Rehabilitation Working Circle (Rebecca Nayar's Plan)

7.2.12.4.1 his working circle chiefly comprises of all the blocks and compartments included in Coppice Working Circle, Plantation Working Circle and Miscellaneous Working Circle along with compartment No.2a of Vinjigiri Reserve Forest and Chadhiapalli Reserve Forest earlier included in Selection Working Circle of the outgoing plan of Mr. Pattnaik.

7.2.12.4.2 The Area Statement Of This Working Circle Is As Follows

7.2.12.4.2.1 The Working Circle was having an area of 20,579.334 Ha. It covered almost all the blocks and compartments that could not form a part of Selection Working Circle. The area statement block wise is furnished below in **Table 7-6**.

Table 7-6 Statement showing Blank and Plantation areas of Rehabilitation Working Circle of Ghumsur North Division

Sl.No.	Block	Compartment Nos.	Area of plantation raised (in Ha.)	Area of blanks (in Ha.)	Total area (in Ha.)
1	Tiliki	1a,1c,2a,3a,4,5a,5b,6a,6b	205	115.631	3179.695
2	Kaliamba	3,4a,4b,5a,5b,6a,6b	402.952	160.505	2089.6
3	Malati	1a,1b	569.278	197.132	766.41
4	Dumdumi (East)	1a,1b	214.914	374.038	588.952
5	Dumdumi (West)	1a,1b	140	303.424	443.424
6	Vinjigiri	1a,1b,2a,2b,3a,3b,4a,4b	277.971	184.463	2039.39
7	Ragada	2b,3b,4a,4b,5a,5b, 6b,7b,10b	522.673	191.341	2091.814
8	Dimirijholi	1b,1c,2b,2c	75.198	25.738	100.936
9	Chadhiapalli	1a,1b,1c	75	21.781	328.167
10	Ambazora	3b,6b,7b,9b,10b,11b,13b	75	79.198	154.198
11	Gallery	16b,18b,19b,20b,23b,23c,3b,	391.642	410.039	801.681

		4b,4c,5b,5c,6b,6c,6d,7b,7c, 7d,7e,8b,9b,11b			
12	Rambha	1b,4b,6b,7b	90.776	43.75	134.516
13	Darpangia	1b	12.91	0	12.91
14	Kullada	1a,1b,2a,2b,3a,3b,4	238	37.5	1570.417
15	Baiballi	10,11,12	0	0	1249.697
16	Jagannathprasad	2b,3b,5a,5b,6a,6b,7,8, 9a,9b,10a,10b, 11a,11b	364.777	20	4161.392
17	Ghogodo	3b,3c,4b,4c,4d,5b,5c,5d	294.531	71.096	735.994
18	Paichalia	5b	8	0	8
19	Chandragiri	5b,6b	32.141	0	32.141
20	Gunduribadi	2b	0	25	25
21	Brahmansahi	5b,6b	65	0	65

7.2.12.4.2.2 Since areas of different working circles of the previous plan were clubbed in this single working circle, different types of crop requiring different silvicultural treatments were present. Hence the areas were divided into four categories namely:

Category-I- Included areas previously being worked under Coppice working circle. The area showed good coppices. Hence operations like singling, pruning, climber cutting, removal of high stumps and other tending operations were prescribed.

Category-2- Included Sal rooted waste areas which needed tending.

Category-3- Completely barren, eroded and plain areas devoid of forest growth were prescribed to be restocked with fast growing species along with adequate and appropriate soil and moisture conservation measures.

Category-4- Already planted up area that needed thinning which was prescribed for especially old teak plantation areas to be carried out on the 8^{th}, 13^{th}, 30^{th}, 40^{th} and 55^{th} year along with other tending operations.

7.2.12.4.3 The Special Objectives Of Management Of This Working Circle Were As Follows

I. To tend the existing crop to get optimum growth.
II. To restock the barren and blank patches by planting fast growing hardy species.
III. To adopt soil and moisture conservation measures to improve upon the soil depth and to augment the soil moisture regime.
IV. To improve the density of the forest by adopting proper tending measures.
V. To provide effective protection against illicit removal, grazing and fire hazards and check further retrogression of site and destruction of left over forest growth.
VI. To provide adequate rehabilitation measures to protect hill slopes.

7.2.12.4.4 Result

7.2.12.4.4.1 As per the available information, Plantation over 18,122 ha Has been undertaken and in the balance areas, coppice regeneration has come up. But it was observed that the planted areas are not looking that promising as they should have come up. This may be due to lack of effective implementation of post plantation tending operations, wrong selection of species and inadequate protection of the planted areas from fire hazards and biotic interferences like grazing and illicit removals. Thinning in the old teak plantation areas, pruning in recently planted areas and singling of coppice shoots in the areas being treated under Category-I of this plan could not be done due to ban on green felling since 1989-90. The economically important Sal and other timber species had to face stiff competition from other undesirable, suppressed, malformed species and climbers for which the expected growth could not be achieved. As a result no area previously allotted in this working circle could graduate so as to be included in selection working circle in the forth coming plan.

7.2.12.4.4.2 Soil and moisture conservation works undertaken for a variety of reasons have been totally inadequate in the hill slopes. Along with that denudation of areas off green cover due to encroachments and other biotic interference have resulted in extensive soil erosion in these eco-fragile areas. These sensitive areas demand special attention and as a result the need to carve out an independent protection working circle is being felt, especially to address the deteriorating condition of these areas. Efforts have been taken to protect the forest growth and resources by including the local communities by forming a number of VSS but lot needs to done in the field of orienting and sensitizing these institutions so as to make them aware of their roles and responsibilities in jointly protecting the forest in their own interest and the larger benefit of humanity. More VSS needs to be formed and they all need to be strengthened legally and resourcefully.

7.2.12.5 BAMBOO (OVERLAPPING) WORKING CIRCLE (REBECCA NAYAR'S PLAN):

7.2.12.5.1 This Working circle overlaps all the areas allotted to Selection Working Circle and portions of Rehabilitation Working Circle and the total area covered is 58,920.177Ha. which is 64% of the total Reserve Forest area of Ghumsur North Division. The total area divided into 17 cutting series with 17 annual coupes in the last plan have been retained as such in this plan. The two most commercially important species of Bamboo available in this area are:

I. SALIA (*Dendrocalamus strictus*)
II. KANTA/DABA (*Bambusa arundinacea*)

7.2.12.5.2 The former is the dominant species that occurs in majority of the areas occupying the hilly slopes showing luxuriant growth in the interior slopes and on the northern aspect in the hilly slopes as compared to outer slopes and southern aspect. The latter is confined to the damp conditions in the valleys, ravines and low lying hill pockets. A felling cycle of 4 years was adopted for both the species.

7.2.12.5.3 The specific objectives of management of this working Circle is as follows:

I. Scientific management of bamboo forests with a view to obtain maximum sustained yield.
II. To improve the quality of Bamboo through suitable silvicultural practices.
III. To meet the commercial and domestic consumption needs.

7.2.12.5.4 Three treatment types were identified/prescribed for Salia Bamboo areas:-

Treatment Type-A- This category included healthy and well stocked bamboo clumps having three clump qualities:

a) Clump Quality-I- Culm Height of bamboo 9mt. and above
b) Clump Quality-II- Culm Height of bamboo 6mt. to 9mt.
c) Clump Quality-III- Culm Height of bamboo below 6mt.

Commercial fellings were prescribed to be done only from these areas with a condition that a minimum of 20, 15 and 10 culms are to be retained in Clumps category I, II and III respectively. If the clumps had equal or less number of clumps in accordance to the minimum number of culms to be retained then felling should not occur in those clumps and only broken, dead, dry, badly damaged and malformed bamboos had to selectively remove.

Treatment Type-B- Included well stocked but degraded, damaged, congested and fire burnt clumps. No commercial feelings were allowed in this area and only cultural operations would be carried out including, high stump cutting, felling of dead, dry, over mature, burnt, broken and grossly damaged bamboo and decongestion of the clumps.

Treatment Type-C- Where bamboo clumps are sparse, sporadic and highly scattered. Cultural operations to enhance the quality of the bamboo clumps were prescribed to be taken and potentiality of such forest would be augmented by raising bamboo plantations of a minimum area of 40 Ha or one third of the area annually and the subsequent tending operations were to be done as per standard practice.

7.2.12.5.5 Prescriptions for simultaneous silvicultural operations and recording and treatment of areas showing sporadic and gregarious flowering were also given. The area statement of the 17 felling series is as follows in **Table 7-7**:

Table 7-7 Area statement showing Bamboo Felling Series of Ghumsur North Division

Sl.No.	Felling Series	Block	Compartment No.	Area of Felling Series (Ha.)
1	Ambazora	Az	7,8,9,10,11a,12,1,3,14,15	5853.296
2	Gundiribadi	Gd	1,2,3,4,5	4826.913

		Az	16,17,18,19	
3	Lembhei	Chg	4,5,6,7,8,10	2956.698
4	Nabagochha	Pl	1,2,3,4,5	3302.064
5	Banta	Jp	1,2,3,4,5	3206.516
6	Tarasing	Bs	1,2,5,6	2376.973
7	Gopadar	AZ	1,2,3a,4,6a	3307.609
8	Khamansahi	Chg	3	1495.832
		Az	5	
9	Kathachira	Chg	1,2	1496.884
10	Dimirijholi	Dj	1,2	1662.93
11	Rambha	Rm	1a,1b,2,3a,3b,4a,4b,5,6,7a,7b	5303.601
12	Baiballi	Bl	1,2,3,5	2730.110
13	Bapangi	Bl	4,6,7,8,9	3561.634
14	Birikot	Dp	4,5,6,7	2878.875
15	Durgaprasad	Dp	1,2,3,11	2852.044
		Od	1	
16	Ragada	Rg	1,2a,3a,6a,7a,8a,9a,10	5105.273
		Va	2	
17	Kaliamba	Km	1,2,3,4	6002.925
		Ti	1b,2b,3b,4,5,6	

7.2.12.5.6 Result

7.2.12.5.6.1 Working of Bamboo coupes from Treatment-A type areas was not done from 1995-96 to 2002-03 as OFDC has not taken delivery of the said coupes. Bamboo coupe working could only commence from 2003-04 onwards. Further out of the 17 coupes, two coupes namely Dimirijholi and Durgaprasad were never worked as the available clumps of bamboo were not commercially viable for working. This gives an impression that during the period of non working of coupes effective protection measures against forest fire, illicit fellings and other biotic pressures on the forest resources could not be contained adequately and cultural operations of tending the bamboo clumps were not taken up adequately. Bamboo plantations taken up very meager area which have not been able to restock the Treatment C type areas as was expected for which the areas are still being categorized in the same treatment types. The reason can be either inadequate plantations taken up or that the post plantation operations have not been adequately and appropriately done to sustain the health and extent of the planting areas.

7.2.12.6 WILDLIFE (OVERLAPPING) WORKING CIRCLE (REBECCA NAYAR'S PLAN):

7.2.12.6.1. Though development and management of Wildlife was proposed to be done in the Miscellaneous Working Circle in Pattnaik's plan, considering the importance of Wildlife as an integral part of forest ecosystem this new working circle was constituted which overlaps over the entire reserve forest area of Ghumsur North Division and covers the entire management area of 92048.74 Ha. The forests of Ghumsur North division are abounding with many wild animals and birds. The special objectives fixed for management are as follows:

I. To improve the cover and food value of the forests for creating favourable conditions for the wildlife.
II. To develop the forest blocks near big villages like Kullada and Gallery through rehabilitation and afforestation measures and to create recreation opportunities for the people of these villages.
III. To develop the ground flora and middle storey even in plantations in order to attract small animals.
IV. To increase the population of Wild animals by creating favourable conditions for them in the forests.

7.2.12.6.2 To afford better shelter and protection to wildlife two game sanctuaries were proposed to be established which are as follows:

Chakraghati Game Sanctuary: This was proposed to be constituted involving forests within 5 Km radius of Russelkonda Reservoir and would comprise of Chandragiri and Gallery forest blocks.

Ghumsur Game Sanctuary This would comprise of Ragada, Tiliki and Kaliamba Reserve forest blocks covering an area of 145.5 sq. Km.
Other miscellaneous recommendations include:

I. Development of Field Research stations and veterinary facilities.
II. Census of important animals and birds to be carried out every 5 years.
III. Establishment of Anti-poaching check gates at Rambha, Lathipada, Kaliamba and Cox-Corner road.

7.2.12.6.3 Result

7.2.12.6.3.1 Almost all recommendations given in this working circle have not been carried out. No Game sanctuaries have been established, baseline census of only water fowls every year and important herbivores and carnivores are being done biannually. Field research stations and development of veterinary facilities have not been taken up. Man animal conflicts are on the rise because forest in its extent and quality are depleting day by day. Adequate requirement of food, water shelter and additional requirements like salt licks are not available inside the forest compelling the wildlife to risk their live and stray outside the forests towards the villages and raid crop fields. The Elephant corridor extending from Daspalla to Gazalwadi which passes through this division is fragmented at many places. Due to the fear of crop loss people of the fringe villages have adopted diverse techniques to deter wild animals to enter their farmland. Hence various forms of deaths due to electrocution and poisoning have been seen. The poachers also take a toll on the numbers of the charismatic species like the Elephants, tigers, bears and wild boars. Retaliation from the wild animals also caused human injuries and casualties. Hence, lot needs to be done in this front.

7.2.12.7 Minor Forest Produces (Overlapping) Working Circle (Rebecca Nayar's Plan)

7.2.12.7.1 This Working Circle overlaps all other working circles and extends over an area of 92,048.74 Ha. This working circle has gained importance off late due to role played by trade of such minor forest produces and the resultant income that sustains the marginalised folk of the fringe villages. The general objectives of management are as follows:

I. To obtain maximum sustained yield of different items of minor forest produce through systematic scientific management.
II. To provide employment to the weaker sections of the society with limited resources and living below the poverty line.
III. For Ex-situ and In-situ preservation and conservation of NTFP items.
IV. To project trade in NTFP as a prospective marketing venture.

7.2.12.7.2 The collection cycle for NTFP items, were fixed at one year except Bamboos which were separately dealt in another Working Circle. Some of the avidly collected NTFP items were Sal seed, tamarind, Siali leaves, Sal leaves, Sabai grass, Hill broom, Mahua seeds, Neem seeds, Karanja seeds, Mango kernel, Chakunda, Gillo, Kusum seeds, Babul seeds, Kamal Gundi, Chara and Kendu leaf. Other items which mostly remain untapped or under tapped include Siali fibre, Chara seeds, Dhatki flower, Mahua flower, Mahua seeds, Arrowroot, Kusum seeds, Genduli gum, Semuli cotton, Honey, Wax, Thatch grass, Sunari fruit, Harida, Bahada, Chireita, marking nut, Soap nut, Jhuna, Tassar, Rauwolfia serpentina and mushrooms. Rules for collection of Genduli gum, Kendu leaf, Sal seeds and Sunari bark were prescribed.

7.2.12.7.3 Result

7.2.12.7.3.1 After the introduction of PESA Act in 1996, 69 NTFP items were made free from the transit permit regime of the forest department and were handed over to Panchayatiraj Department. Hence the forest department lost control over the gatherers and traders. Since then there has been no information about the variety of NTFP products being collected, their exact source of procurement and the markets in which they are sold, the prices of products in various markets and the remaining reserves of these items in the forests. This has led to over exploitation of such products that has brought many of the medicinal plants and other NTFP species to the brink of extinction. So, the objectives and the recommendations in the plan could not be carried out. Lack of awareness and the knowledge of sustainable techniques of harvesting have given into destructive practices of collection and unregulated trade for which the delicate species of NTFP have dwindled in abundance. There is an urgent need to address the situation, take up under planting in the forest areas keeping in view the feasibility of the species to thrive there and to bring in mass awareness campaigns to sensitize and motivate the people about the best practices of collection and to process the crude and raw products for ensuring value addition. This would not only encourage the people in understanding the biology of growth of these species but would also encourage them in protecting them for facilitating maximum sustained yield. Value addition would also give them the actual price for their products. Lot needs to be done to tap the

centralized markets and to do away with the middle men by forming societies that would be self sufficient in procuring, processing and marketing the same to get the desired benefits.

7.2.12.8 M**iscellaneous Regulations (Rebecca Nayar's Plan)**

7.2.12.8.1 The miscellaneous regulations prescribed in the plan are as follows

1) Advance coupe working of the years to come was prohibited.
2) Trees uprooted by natural calamities outside the coupe due for working were to be salvaged departmentally for sale and proper entries should be made in the compartment history.
3) Maximum cattle that could graze in the forest were prescribed to be calculated at 2.5 Ha. for a buffalo and 1.5 ha. for a cow and the grazing of goats and sheep were prohibited.
4) Control burning in Class II areas well in advance, fire line tracing and control burning over the fire lines in Class I areas, strict watch and ward in the fire season, reward system for departmental staff who have contributed exceptionally in checking fire outbreaks in their area, immediate remedial action and reporting of fire hazard areas and creation of awareness among the forest fringe village dwellers were suggested in the plan to check forest fires.
5) Attempting to develop the villages and address the unemployment situation and other problems of the villagers, emphasizing on forestry extension activities through social forestry, farm forestry, silvipastures, mixed cropping pattern and agroforestry to meet the requirements of food and fodder, use of unconventional sources of energy to meet the fuel needs, strengthening the protection and intelligence collection machinery and placing of forest check gates at strategic locations were suggested to check smuggling and poaching activities.
6) Boundary line clearance and inspection and maintenance of boundary pillars of the Reserve forests were emphasized and specified prescriptions were given.
7) The plan stated that all the forest roads and the bridges and culverts are not being maintained due to paucity of funds for which they all are in a very bad shape and would not permit heavy traffic. It on priority basis suggested to maintain, repair the roads and undertake fresh construction of old and dilapidated bridges and culverts. It also suggested exploring the possibility of realigning the roads where the gradient is steeper than 1:25 and if needed new roads may be created.
8) The plan stated that most of the old buildings are uninhabitable and only 11% of the staff have Govt. accommodation. Hence the requirement of new pucca quarters was stressed. It also recommended for creation of check gates at Jagannathprasad and Bodangi.
9) It also suggested that consolidation works over the proposals for notification under sec-4(1) in case of 8 forest blocks should be looked into.
10) Sample plots and preservation plots for timber and Bamboo have not been maintained and is to be done and detailed prescriptions were given.

11) Instructions were also given for maintenance of Compartment history, control forms, all relevant maps and records.

7.2.12.8.2 Result

7.2.12.8.2.1 Advance coupe working has not been done rather due to ban on green felling coupe working could not be done since 1989-90 to 2004-05. Hence due to lack of scientific management of the forest the health of the forests have not picked up and far less number of trees than the expected number of exploitable trees were found. Efforts have been taken in establishing check gates, creation of VSS has happened in jointly sharing the responsibility between the department and the society in protecting the natural reserves. Lot needs to be done further to check illicit felling and smuggling. Instances of poaching have been rare but the need to corrective measures has to be reviewed and implemented strictly.

7.2.12.8.2.3 Sample plots and preservation plots have still not been done. Control forms and compartment history books have not been maintained for which revising the plan becomes cumbersome. Activities like boundary line clearance, fire line tracing and maintenance of boundary pillars are done annually but these activities are confined to allotment received in terms of physical and financial targets according to norms fixed centrally. As a result, many a boundary pillars are missing or in highly damaged condition. Fires ravage the forest every year and the compartment and sub compartment lines have not been maintained. A more realistic bottom up approach while assessing the requirements in the field and the fixation of norms at the circle level would be better suited to cover the whole area in a phase wise manner within a stipulated period. Use of modern day techniques like satellite data etc. would prove handy in tackling such problems.

7.3 Special Works of Improvement Undertaken

7.3.1 Roads: Although a network of roads have been constructed by the Department of Companies/Contractors, their condition has remained far from satisfactory. Some of them still remain inaccessible. A list of forest roads as per Pattnaik's plan is given below in **Table-7-8**. . All the roads need special repairs immediately.

TABLE 7-8 List of existing Forest Roads of Ghumsur North Division

SL. NO.	Name of the road.	Length		Year of Constriction	Cost incurred.	Remarks.
		N	P			
1	2	3	4	5	6	7
1.	Bhanjanagar-Baiballi.	12	4	1909-13	4,303/-	Up to khalagam.
2.	Baiballi-rodama.	4	4	1941-42	1,600/-	Partly hill road
3.	Mujagada-Baiballi via: Lengeikhola, Birikota, Bapangi.	10	3	1965-66	27,700/-	-
4.	Bajrakote-rodama, Link Road.	4	0	1967-69	7,000/-	Links up No. 3 Baiballi to Bajrakote 2'/2 miles

						constructs in 1945-56. Cost not known
5.	Dhoumundia-Langalakhola.	3	0	1963-65	6,000/-	Connects 1 & 3
6.	Rambha-Balinkia.	2	7	1920-21	4,170/-	Connects No.7
7.	Rambha-Brahmanpadar. (Gallery)	5	5	1919-20	3,750/-	Brahmanpadar to Gallery maintained by P.W.D.
8.	Balinkia-Balinkia Rest House.	0	7	1926	4,170/-	-
9.	Balinkia-Kupati.	3	0	1945-46	500/-	-
10.	Durgaprasad-Pongalli.	3	1	1935-36	-	Originally District Board Road. Brought to the Department in 1935.
11.	Pongali-Kandagam(Bosora Road)	4	0	1940-41	2,000/-	Inclusive of repairs from Mandagam
12.	Gallary-Buduli(portion in R.F.)	8	6	1933-34 1920-21	-	Not in use.
13.	Lathipada-Ragada.	4	4	-	-	Cost not known.
14.	Dhobadi-Ragada.	7	3	-	-	Cost not known.
15.	Bankanali-Ragada.	3	3	-	-	Cost not known.
16.	Ragada-Hatiguda via: Tiliki.	9	1	-	-	Tiliki-Ragada constructed in 1898-99 for 0,2,056/-
17.	Tiliki-Kaliamba via: Madhapur.	3	5	-	-	Original constriction not known. Special repairs for 8,997.62 in 1966-69 (connects No.23)
18.	Kaliamba-Saluapalli.	5	0	-	-	Cost not known.
19.	Kaliamba-Bada Borosingi (Portion in RF)	3	1	-	-	Cost not known.
20.	Soroda-Jagannathprasad.	10	0	1945-46 1959-61	10,000/-	-
21.	Tilisingi-Bonta via: Nuasahi.	9	0	1956-57	-	Up to - Nuasahi cost not known.
22.	Gayaganda-Bada Gundiribadi via: Narayanprasad.	9	0	1947-49	8,700/-	-
23.	Rudhapadara-Bada Gunduribadi via: Kathapatini.	7	0	-	-	Original construction not known. Special repairs for Rs. 7,000/- in 1967-68.
24.	Cox-Corner Loop Road.	5	3	1892	2,100/-	-

Source: Pattnaik's Plan

As per the recent Data obtained from the Divisional Forest Officer, Ghumsur North Division, the list of existing forest roads as it exist today is given below in **Table 7-9**.

Table 7-9 R.F wise List of Forest Road of Ghumsur North Division (Bhanjanagar)			
Sl No.	**Name of Forest Block**	**Name of Forest road**	**Distance of Forest road in Km.**
1	2	3	4
1	Gallery RF	Mujagada to Dhaumundia	18
2	Gallery RF	Mujagada to Langalakhola	9
3	Darpangia RF	Langakhola to Birikote	7
4	Baiballi RF	Birikote to Baiballi	7
5	Darpangia RF	Darpangia to Mundagaon	12
6	Baiballi RF	Baiballi to Dhaumundia	5
7	Darpangia Odinabadi	Rambha to Kupati	11
8	Gallery RF	Rambha to Brahmanapadar	8
9	Darpangia RF	Durgaprasad to Darpangia	18
10	Ragada & Tiliki RF	Ragada to Tiliki	9
11	Kaliamba & Ragada RF	Saluapalli to Tinikhandia	8
12	Kaliamba & Tiliki RF	Tiliki to Kaliamba	10
13	Ragada & Kaliamba RF	Ragada to Bankanedi	8
14	Ragada RF	Lathipada to Ragada	8
15	Ragada RF	Tiliki to Dhobadi to Nuagaon	10
16	Kaliamba RF	Kaliamba to Bankanedi	6
17	Brahmanasahi RF	Tarasingi to Banta	14
18	Jagannath Prasad RF	Jagannath Prasad to Gereda	19
19	Tiliki, Dumudumi & Kaliamba RF	Budhakendu to Gudiamba	1.5
20	Brahmanasahi & Paichhelia RF	Tirikumpa to Banta	8
21	Ambajhara & Gunduribadi RF	Gayaganda to Gunduribadi	15
22	Ambajhara & Gunduribadi RF	Rudhapadar to Gunduribadi	12
23	Chandragiri RF	Cox-Corner Road	12
24	Chandragiri & Ambajhara RF	Kathachira to Siuli	13
		Total	**252.5**

Source: D.F.O Ghumsur North Division

7.3.2 Buildings

7.3.2.1 Most of the buildings of this Division have either collapsed or are on the verge of collapsing. The beat guards are almost without quarters. A large number of buildings are to be constructed to house the working staff. Only a few of the existing buildings will stand to special repairs. Some of the Forest Rest Houses have collapsed due to want of repairs and proper supervision. A list of Forest Rest Houses and Buildings, their year of construction and the initial cost of construction as per Pattnaik's plan is given in **Annexure-XIV** and the present information obtained from Divisional Forest Officer, Ghumsur North division is given in **Annexure-XV**.

Source: D.F.O Ghumsur North Division

7.3.3 Wells

7.3.3.1 The list of wells as per Pattnaik's Plan is given in **Table 7-12** and the present list of wells as obtained from the Office of Divisional Forest Officer, Ghumsur North Division is elucidated in **Table 7-13**.

Table 7-12	**List of existing wells of Ghumsur North Division**		
Range	**Name of the building in which the well was constructed**	**Year of Construction**	**Cost of Construction**
1	**2**	**3**	**4**
Mujagada	Divisional Forest Officer's Residence.	1939-40	-
	Working place Officer's No.I's Residence.	1914-15	315.00
	Working place Officer's No.II's Residence.	1933-34	228.00
	Forester's Quarters, Bhanjanagar.	1943	4,000.00
	Clerk's Colony, Martnagar.	1937-38	340.00
	Check Naka Shed, Bhanjanagar.	1955	-
	Forest Rest House, Baiballi.	1899-1900	88.00
	Upendra Bhanja Forest Guard Training School, Daha.	1990-91	13,000.00
	Forest Colony, Mujagada.	-	-
Central	Forest Rest House, Ragada.	1911-12	152.00
	Rest Shed, Gangapur.	-	-
	Forester's Quarters, Lathipada.	1944-45	-
	Central Range Officer's Quarters at Bhanjanagar.	1968-70	2,400.00
Tarsing	Range Officer's Quarters at Tarasing.	1950-51	1,000.00
	Forester's Quarters, Gayaganda.	1964-65	1,500.00
	Forest Rest House, Ghogodo.	1916-17	166.00
	Forest Nest House, Tarsing.	1969-70	2,300.00
	Forest Rest House, Tarasing. (Near Range Compound)	1969-70	160.00
	Forester's Quarters, Jagannathprasad.	1990-91	13,000.00
Gallery	Forest Colony Quarters, Dholapitta.	1942-43	-
	Forest Guard Sheds, Bariguda	1955-56	900.00
	Forest Village, Pudrangi.	1950-51	600.00

Source: Pattnaik's Plan

Table 7-13	List of Wells since inception till date of Ghumsur North Division			
Year of construction	**No. of well in dug**	**Location of building where constructed**	**Present Condition**	**Remarks**
1	**2**	**3**	**4**	**5**
1903-04	1	Central Range Office, Bhejiput, Bhanjanagar	Existing	
1908-10	1	Forest Rest House, Kaliamba	Existing	
	1	Forester quarter, Lathipada	Existing	
1947-48	1	Forester, quarter, Khariguda	Existing	
1930-31	1	Forest Guard quarter, Badaborasingi	Existing	
1911-12	1	Forester quarter, Gangapur	Existing	
1907	1	Forest Rest House, Ragada	Existing	
1919	1	DFO's residence, Bhanjanagar	Existing	
1938	4	Forest Colony, Hart Nagar, Bhanjanagar	Existing	
1925	1	Range Inspection shed, Mujagada	Existing	
1904	1	Forest Rest House, Rambha	Existing	
1904	1	Forester & F.G quarter Rambha	Not Existing	
1927	1	Forest Guard quarter, Biripadar	Existing	
1971-72	1	Forest Guard quarter, Brahamanpadar	Not Existing	
1940	1	New Forest Guard quarter, Durgaprasad	Existing	
1930	1	Forest Guard quarter, Kullada	Not Existing	
1937-38	1	Forest Guard shed, Bhejiput	Not Existing	
1930	1	Forester quarter, Tilisingi	Existing	
1910-11	1	Forest Guard shed at Gallery.	Existing	
1927	1	Forest Guard quarter at Badangi.	Existing	
1930	1	Out house at Banta	Not Existing	
1920	1	Forest Guard quarter at Banta	Not Existing	
1955-56	1	Forest Guard shed at Alasu	Existing	
1930	1	Forest Guard shed at Jagannathprasad	Existing	
1928	1	Forester's quarter at Gereda	Existing	
1913-14	1	Forest Rest House, Gereda near village Lingidibadi	Not Existing	

1920	1	Forest Guard quarter at Gereda	Existing	
1979-80	1	Marking shed, Suramani	Existing	
1979-80	1	Marking shed, Jadadhara	Existing	
1931	1	Range Office Residence, Tarasingi	Existing	
1931	1	Clerk's quarter, Tarasingi	Existing	
1929	1	Forester's quarter at Gayaganda	Existing	
1911	1	Forest Rest House at Ghogoda	Existing	
1928	1	Forest Rest House at Badagunduribadi	Existing	
2009-10	1	Forest Guard quarter at Banta	Existing	
	38	**Total No. of Well = 38**		

Source: D.F.O Ghumsur North Division

7.3.4. Plantation

7.3.4.1 A number of plantations have been raised in the Division with an aim to convert the inferior growing stock into a growing stock of valuable species and to alleviate the soil moisture regime. The plantations raised in the division consist of pure teak plantations, pure old cashew plantations and mixed plantations. Most of the old plantations are not in good shape owing to lack of silvicultural operations and theft. Details of the plantations from the year 1951-52 to 1990-94 & 1995-96 to 2014-15 has given in **Annexure- XVI-A** and **B.**

7.4 Past Outturn of Timber

7.4 Abstract of The past outturn of timber from 1980-01 to 1994-95 from Selection Working Circle, Coppice Working Circle and Sal Improvement Working Circle as per Pattnaik' Plan is given **Table7-14, 7-15, 7-16**. In detail it is given in **Annexure- XVII, Annexure-XVIII** respectively. Abstract of the outturn of Timber from 1995-96 to 2013-14 from Selection Working Circle as per Mrs. Rebecca Nayar's Plan is given in **Table 7-17** From this comparative analysis it is very clear that there is a decrease of forest based timber resources and outturn and more and more forest areas are increasingly becoming unsuitable to be included under Selection Working Circle. This is definitely due to various forms of biotic interference like illicit removals, grazing, forest fire, encroachment etc., insufficient rains, as a result of climate change, reduced rates of regeneration due to large scale weed infestation and loss of soil fertility due to loss of humus and leaf litter on the forest floor owing to enhanced rates of soil erosion. Of late, natural calamities in the form of very severe cyclonic storms have taken a toll on the forest crop resulting in reduced yield.

Table 7-14 Abstract of Outturn of timber from 12 Felling Series in Selection Working Circle			
Year/Coupe No.	**Number of the Felling Series.**	**Total No. of trees.**	**Volume/Unit.**
1	**2**	**3**	**4**
1980-81 C/10	12 Nos.	5827	14053
1981-82 C/11	12 Nos.	6370	15563
1982-83 C/12	12 Nos.	5162	13212
1983-84 C/13	12 Nos.	8587	21462
1984-85 C/14	12 Nos.	5861	14315
1985-86 C/15	12 Nos.	6526	12922
1986-87 C/16	12 Nos.	5920	14246
1987-88 C/17	12 Nos.	5268	14167
1988-89 C/18	12 Nos.	5043	11447
1989-90 C/19	12 Nos.	2598	7280
1990-91		--	--
1991-92		--	--
1993-94		--	--
1993-94 C/4	12 Nos.	1080	1172

Note: 1unit=0.283cum.

Source: Pattnaik's Plan

Table 7-15 Abstract of Outturn of timber from 8 Felling Series in Coppice Working Circle			
Year/Coupe No.	**Number of the Felling Series.**	**Total No. of trees.**	**Volume/Unit.**
1	**2**	**3**	**4**
1980-81 C/10	08 Nos.	5608	3535
1981-82 C/11	08 Nos.	5505	2736
1982-83 C/12	08 Nos.	3607	3046
1983-84 C/13	08 Nos.	4568	4294
1984-85 C/14	08 Nos.	3179	5194
1985-86 C/15	08 Nos.	2219	2243
1986-87 C/16	08 Nos.	845	1047
1987-88 C/17	08 Nos.	376	928
1988-89 C/18	08 Nos.	306	977
1989-90 C/19	08 Nos.	--	--

Source: Pattnaik's Plan

Table 7-16 Abstract of Outturn of timber from 3 Felling Series in Sal Improvement Working Circle						
Year	**Eastern Felling Series.**		**Central Felling Series.**		**Western Felling Series.**	
	No. of trees.	**Volume in Unit.**	**No. of trees.**	**Volume in Unit.**	**No. of trees.**	**Volume in Unit.**
1	**2**	**3**	**4**	**5**	**6**	**7**
1980-81	181	513	782	1246	329	1076
1981-82	122	315	873	2143	247	774
1982-83	125	670	273	395	64	232
1983-84	283	904	74	299	545	1997
1984-85	124	496	496	1923	138	566
1985-86	133	443	88	301	276	1122

1986-87	177	530	256	1088	152	586
1987-88	170	499	252	1230	359	1216
1988-89	135	396	386	1360	425	1309
1989-90	98	190	248	652	519	1988

Source: Pattnaik's Plan

Table 7-17 Abstract of Outturn of timber from 17 Felling Series in Selection Working Circle of Ghumsur North division

Year	Number of the felling series	No. of coupes offered	No. of coupes taken delivery	No. of coupes worked	No. of trees marked	No. of trees felled and converted	Outturn of timber (cum)	Outturn of F/W (stacks)
1	2	3	4	5	6	7	8	9
1995-96	No coupe working							
1996-97	No coupe working							
1997-98	No coupe working							
1998-99	No coupe working							
1999-00	No coupe working							
2000-01	No coupe working							
2001-02	No coupe working							
2002-03	No coupe working							
2003-04	No coupe working							
2004-05	No coupe working							
2005-06	14 Nos.	14	14	14	528	528	328.8864	31
2006-07	11 Nos.	11	11	11	775	775	476.2663	126
2007-08	13 Nos.	13	13	13	1941	1941	1253.8955	238.5
2008-09	14 Nos.	14	14	14	1726	1726	1119.3160	91
2009-10	13 Nos.	13	13	13	2500	2500	1302.3887	170
2010-11	13 Nos.	13	13	13	2214	2214	1618.5408	282
2011-12	12 Nos.	12	12	12	2451	2451	1631.0892	320
2012-13	13 Nos.	13	13	13	1927	1927	1753.3949	276
2013-14	13 Nos.	13	13	13	7345	7345	3488.55	616
2014-15	15 (out of 11 coupes Exempted due to cyclone Phailin)	4	3	3	97	97	28.00	13

Source: Rebecca Nair Plan

7.4.1 Past Outturn of Bamboo

7.4.1.1 The past outturn of timber from 1980-01 to 1994-95 from 17 numbers of Bamboo cutting series from Bamboo Overlapping Working Circle as per Pattnaik' Plan is given **Annexure-XIX. Annexure-XX** has given for outturn of Bamboo from the cutting series 1995-96 to 2013-14 as per Rebecca Nayar's Plan**.** From this comparative analysis it is very clear that there is a decrease of bamboo production from the same Working Circle area. This is due to illicit removals of mostly the 2nd year culms by the local bamboo artisans and other forms of illicit felling by the local people primarily for their domestic consumption and at times to meet their livelihood requirements. Over exploitation in an unscientific manner by the agents nominated for coupe working of Bamboos

also play major role in decreased outturn of Bamboo. The subsidiary silvicultural operations done are from satisfactory and actually do not fulfill the silvicultural requirements of the bamboo clumps in order to positively affect regeneration. The DFO has to pay special attention and take suitable and timely corrective measures for this and impose penalty as per the provisions on the agents nominated, as per the provisions by raising intermediate reports as a matter of compensation settlement towards the damage done. He also should pay strict attention to the subsidiary silvicultural operations and to see to it that they are optimally done to encourage and augment regeneration. Strict enforcements measures should also be kept in place to check illicit removals. The other reasons for decreased production of Bamboo coupes are the same as that mentioned for timber in the foregone para no. 7.2.3 of this chapter.

7.5 Revenue and Expenditure

7.5.1 The revenue and expenditure of Ghumsur North division during Pattnaik's Plan from 1970 to 1994-95 including the extended period and Rebecca Nayar's Plan from 1995-96 to 2013-14 is given in **Table 7.18**. The major difference seen in between the two plans is that there has been drastic reduction in the collection of the revenue than the expenditure. The most important reasons for such drastic reduction is transfer of the 63 nos. of NTFP items as MFP items from the control of forest department to the Panchayatiraj department. Hence the royalty being collected from these items stopped abruptly. That also triggered unscientific and unsustainable methods of collection and very often led to over exploitation leading to fast depletion of the available forest resources. Some resources were exploited to the brink of complete removal. Expenditure in the other fronts increased many fold with new sources of forestry sector dedicated funding like CAMPA coming into existence.

Table 7.18 Revenue and expenditure of Ghumsur North Division

Year	Revenue	Expenditure
1	2	3
1970-71	16,16,712.00	5,30,532.00
1971-72	17,84,077.00	5,57,185.00
1972-73	23,71,864.00	6,47,441.00
1973-74	40,58,038.00	7,86,834.00
1974-75	16,61,038.00	7,77,230.00
1975-76	28,06,909.00	2,13,79,930.00
1976-77	25,73,122.00	9,59,391,00
1977-78	51,69,795.00	9,92,294.00
1978-79	60,32,405.00	11,19,581.00
1979-80	5,17,754.00	13,89,971.00
1980-81	3,91,599.00	51,76,529.00
1981-82	1,25,44,952.00	13,81,625.00
1982-83	85,86,327.00	19,71,413.00
1983-84	1,29,37,075.00	23,78,874.00
1984-85	1,49,53,464.00	24,05,381.00
1985-86	1,45,65,038.00	30,92,398.00
1986-87	1,22,00,089.00	35,99,484.00
1987-88	1,33,07,530.00	46,99,910.00
1988-89	99,80,985.00	50,36,908.00

1989-90	43,54,229.00	43,45,618.00
1990-91	34,74,166.00	41,02,672.00
1991-92	34,74,166.00	41,02,672.00
1993-93	22,21,889.00	56,56,800.00
1993-94	18,15,472.00	56,25,698.00
1996-95	49,15,063.00	54,65,026.00
1970-71	16,16,712.00	5,30,532.00
1971-72	17,84,077.00	5,57,185.00
1972-73	23,71,864.00	6,47,441.00
1973-74	40,58,038.00	7,86,834.00
1974-75	16,61,038.00	7,77,230.00
1975-76	28,06,909.00	2,13,79,930.00
1976-77	25,73,122.00	9,59,391,00
1977-78	51,69,795.00	9,92,294.00
1978-79	60,32,405.00	11,19,581.00
1979-80	5,17,754.00	13,89,971.00
1980-81	3,91,599.00	51,76,529.00
1981-82	1,25,44,952.00	13,81,625.00
1982-83	85,86,327.00	19,71,413.00
1983-84	1,29,37,075.00	23,78,874.00
1984-85	1,49,53,464.00	24,05,381.00
1985-86	1,45,65,038.00	30,92,398.00
1986-87	1,22,00,089.00	35,99,484.00
1987-88	1,33,07,530.00	46,99,910.00
1988-89	99,80,985.00	50,36,908.00
1989-90	43,54,229.00	43,45,818.00
1990-91	34,74,166.00	41,02,872.00
1991-92	34,74,166.00	41,02,872.00
1992-93	22,21,889.00	56,56,800.00
1993-94	18,15,472.00	54,25,698.00
1994-95	49,15,063.00	54,65,026.00
1995-96	14,06,391.00	1,00,94,150.45
1996-97	1,59,35,549.50	85,91,124.27
1997-98	32,57,803.00	66,17,066.22
1998-99	53,81,420.00	88,30,166.00
1999-00	31,78,620.00	1,14,39,386.00
2000-01	20,27,902.00	1,41,24,106.00
2001-02	1,17,75,829.00	2,07,30,124.00
2002-03	75,49,711.00	1,24,15,372.00
2003-04	18,48,246.00	1,33,77,711.00
2004-05	74,44,574.00	1,46,65,534.00
2005-06	7,69,943.00	1,60,49,461.00
2006-07	27,58,433.00	1,12,17,814.00
2007-08	34,47,326.00	2,83,60,000.00
2008-09	6,91,43,259.00	3,36,66,514.00
2009-10	3,93,074.00	5,08,03,705.00
2010-11	50,16,080.00	6,24,81,527.00
2011-12	88,87,194.00	5,75,22,935.00
2012-13	1,00,33,424.00	8,44,53,618.00
2013-14	1,60,23,089.00	8,24,54,544.00
2014-15	15,24,956.00	8,54,60,380.00

CHAPTER – VIII

STATISTICS OF GROWTH AND YIELD

8.1 GENERAL CONSIDERATIONS:

8.1.1 The growth and yield of a particular patch of forest is affected by different parameters like geology, soil, mineral contents, climatic factors etc. Even changing of climatic factors like rainfall, temperature, light, wind etc. put considerable impact upon the growth and there by the yield of the forests under consideration.

8.1.2 The statistics of growth and yield are not only required for assessment of the exploitable quantum of produce in a given area but also to arrive at growing stock of the area. Further, statistics help in analysis of outcome of any prescription. The statistics of growth & yield are vital information, not only to assess the exploitable quantum vis-à-vis potentiality of the forests but such data are otherwise also required to evaluate the growing stock as well as the outcome of the prescriptions. Hence, the current plan aims at providing reliable estimates of number of stems and stand volumes, by species and by girth-class, per hectare in sampled forest blocks besides total stems & stand volume in the tract of the Division. It also aims at creating a benchmark against which the future inventory assessments can be better compared; conditions of future crops can be objectively assessed and reliable estimates of growth potential, MAI and yield can be ascertained.

8.1.3 Sample Plots

8.1.3.1 The following permanent sample plots have been established in this division by the central Siviculturist, The Forest Research Institute, Dehradun 1925. The upkeep and Maintenance of these plots are entrusted to the State siviculturist on behalf of the farmer shown in **Table 8.1**

8.1.3.2 But subsequently, due to non allotment of funds, impact of Natural disaster like Phailin, Hud-Hud, the plots were unable to maintain properly for ascertaining the growth and yield of Sal and other species. Sal is the most important species in the forests of this Division. Other important species include Asan, Kasi, Bija, Dhaura, Sisoo, Moi, Bandhan.

Table 8.1 List of Sample Plots in Ghumsur North Division

S.NO	Year of Formation	Block	Compartment	Area in Acres	Species
1	January -1925	Kaliamba	6	0.423	Sal
2	January -1925	Chandragiri	10	0.524	Sal
3	January -1925	Chandragiri	12	0.753	Sal
4	January -1925	Kullada	1	0.449	Sal

5	January -1925	Kokolaba	1	0.643	Sal
6	January -1925	Gallery	2	0.390	Sal
7	January -1925	Kullada	1	0.519	Sal
8	January -1925	Tiliki	5	0.574	Sal
9	January -1925	Tiliki	5	0.440	Sal
10	January -1925	Malati	1	0.374	Teak
11	January-1925	Chandragiri	12	0.928	Sal

8.2 Methodology Adopted

8.2.1 The method that has been adopted is systematic strip sampling for each compartment. It consists of laying strips of width one chain and length corresponding to 1% area of the compartment to be enumerated. The following data were collected.

I. Number of trees of different species in each girth class.
II. Actual measurement of all trees above 30 cm girth at breast height.
III. The total length of the enumeration in chains.
IV. Data for regeneration survey and biodiversity survey at one plot of area one chain by one chain within the enumeration strip.
V. Any other peculiar characteristics, which may be required for description of compartment, such as evidence of wildlife, fire, uprooted trees, stumps, bamboo etc

Bamboo enumeration has been carried out. Enumeration results are given in **Part II Chapter VI.**

8.3 Analysis of Enumeration Data

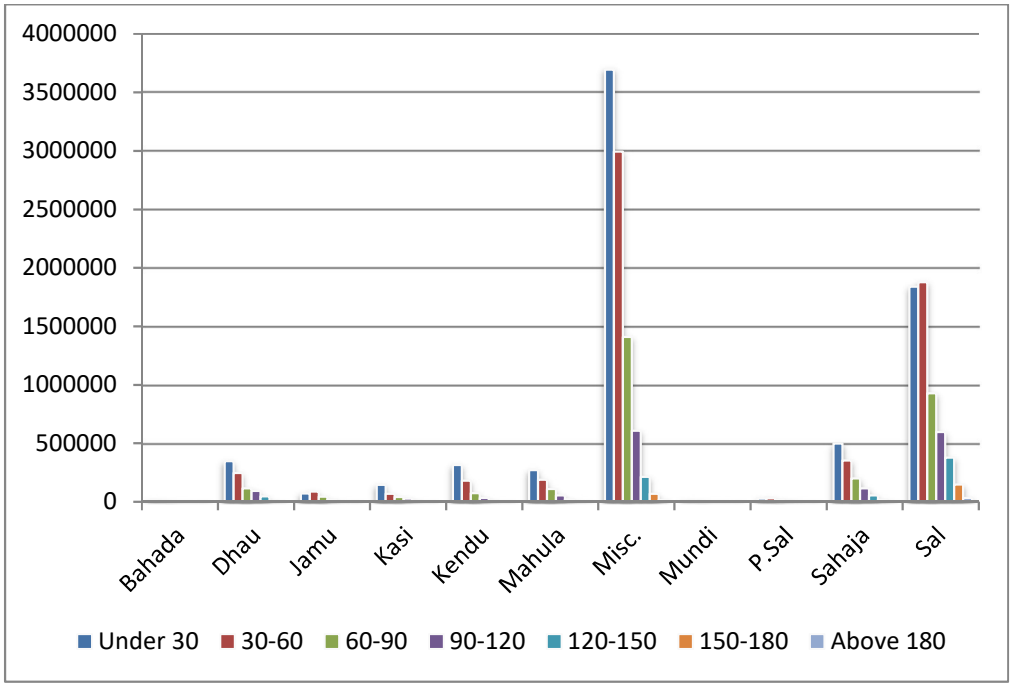
8.3.1 In order to ascertain number of trees, species-wise and girth class wise in a given compartment, each 5% and 1% enumeration strip was taken as a sample point and was multiplied by 20 and 100. This was summed over all the compartments for a forest block so as to obtain the no. of stems species-wise and girth class-wise for the given forest block. The result summed over all the forest blocks of this Division yields the result for the entire Division in **Table 8.2**.Block wise, Range wise and divisions stand table of SWC has given in **Annexure-XXI, XXII & XXIII.** Range wise and divisions stand table of Rehabilitation Working Circle has presented in **Annexure-XXIV & XXV.** Stand table of Protection Working Circle, Compartment, Range and divisions wise has provided in **Annexure-XXVI, XXVII & XXVIII**.

Table No. 8.2 Estimated Number of Stems by Species and by Girth Class-wise in Ghumsur North Division.

Species	Under 30	30-60	60-90	90-120	120-150	150-180	Above 180	Total
Bahada	14340	10020	4760	2134	628	292	26	32200
Dhau	346820	247640	115460	91694	45528	9292	586	857120

Jamu	70720	86660	42780	19108	4416	1304	252	225240
Kasi	145200	69360	41420	28496	10112	2988	2384	299960
Kendu	313380	179380	74940	33640	9740	2220	260	613560
Mahula	271560	188860	108560	55042	22204	6276	1578	654080
Misc.	3694018	2994959	1409697	608441	213516	67328	17184	9003943
Mundi	8420	8460	5740	3776	1492	248	44	28180
P.Sal	26500	30300	17300	11912	4564	1356	388	92320
Sahaja	498280	351700	200440	113690	54740	17760	5710	1242220
Sal	1840360	1878080	928960	595480	377420	148240	31687	5800227
							Total No. of Stems in the Division	***18849050***

Figure 8.1 Distribution of Total Estimated no. of Trees at Division level.



8.3.2 Local Volume Equations

8.3.2.1 The forest survey of India has developed local volume equation for different species both principal and secondary species taking the forest of Phulbani, Sambalpur and Koraput District as per their sampling for Orissa state. The 'Report on Resources of Survey of Phulbani Forest Catchment (Orissa) prepared by Forest Survey of India, Dehradun,1982 has been refereed for relevant local volume equation for determination of volume and yield in this revised plan. The local volume equations for different species used in this working plan are shown in **Table 8.3.** In this equation, "D" denotes for over bark diameter in metre at breast height and "V" denotes volume under bark in m^3 of trees inclusive of all branches up to 5 cms over bark diameter at thin

end. All other species like Teak, Siris, Harada, kusum, Gambhar, Haland, Amla, Achu, Neem, Chara, Moi, Mango, Dumbi, Dhaman, Kataka have been categorized as other miscellaneous species.

Table 8.3 Local Volume Equations of Different Species Used In This Plan

S.No	Species	Scientific Name	Local Volume Equations
1	Sal	*Shorea robusta*	$V=0.109884-1.804754\ D + 10.297714\ D^2$
2	Bahada	*Terminalia bellerica*	$V= 0.103171 – 1.684599\ D + 10.107586\ D^2$
3	Dhau	*Anogeissus Latifolia*	$V = 0.45731 -1.020606\ D + 9.656667\ D^2$
4	Jamun	*Syzygium cumini*	$\text{Log}_e V=2.132776 + 2.479397\ \text{Log}_e D$
5	Kasi	*Bridelia retusa*	$V = 0.035412 – 0.839708\ D + 8.157614\ D^2$
6	kendu	*Diospyros melanoxylon*	$V = - 0.009124 – 0.494103\ D + 7.610416\ D^2$
7	Mahula	*Madhuca indica*	$V = 0.030925 – 0.567067\ D + 5.709471\ D^2$
8	Mundi	*Mitragyna parviflora*	$V = 0.8444 – 1.26801\ D + 8.75274\ D^2$
9	Piasal	*Pterocarpus marsupium*	$V = 0.058424-1.233468\ D + 9.433633\ D^2$
10	Sahaja	*Terminalia tomentosa*	$V = 0.103171 – 1.684599\ D + 10.107586\ D^2$
11	Miscellaneous	Mango, Amla, Chara and others	$V = 0.088074 – 1.449236\ D + 8.760534\ D^2$

Source : FSI report on Forest Resources Survey of "Phulbani Forest Division" by FSI, Central Zone, Nagpur. 1982.

8.3.3 The following quality classes for Sal as given in All India Yield and Volume for Sal have been adopted in this revised plan.

Quality Class I *– Localities where the height of mature crop is over 33 m*

Quality Class II *– Localities where height of mature crop is 27m to 33m*

Quality Class III *– Localities where the height of mature crop is less than 15 m.*

8.3.4 At the next level of analysis, local volume equations have been used to estimate average volume per tree (V_i), species-wise and girth class-wise. Diameters, corresponding to mid-girth class, have been taken as a representative of that girth class. Accordingly, volume calculations (V_{ij}) species wise (i) for different girth classes (j) has been done The volume per tree (V_{ij}) multiplied by the number of trees (X_{ij}) of that species (i) in the specified girth class (j) shall yield volume by species and by girth-class in the tract of the Division. Total Divisions Growing Stock has reflected in

Table No. 8.4. Range and divisions wise stock table of SWC has given in **Annexure-XXIX, XXX.** Range wise and divisions stock table of Rehabilitation Working Circle has presented in **Annexure-XXXI & XXXII.** Stock table of Protection Working Circle, Range and divisions wise has provided in **Annexure-XXXIII, XXXIV**.

8.3.5 The quality classes of Sal, as laid in the 'All India Yield and Stand Tables for Sal' have been

Table 8. 4. Volume of Growing Stock by Species and Girth Classes in Ghumsur North Division

Sl. No.	Species	under 30	30-59 cm	60-89 cm	90-119 cm	120-149 cm	150-179 cm	above180 cm	Total
1	Bahada	624.9537	681.8413	1647.036	1512.361	908.3155	572.3991	88.2492	6035.15558
2	Dhau	149423.1	124735.2	88741.24	107476.5	82131.02	4496.907	2338.23	559342.206
3	Jamu	557.6311	5584.496	10490.38	10319.84	4597.32	2174.653	758.9815	34483.3018
4	Kasi	2090.434	5392.193	12581.77	18427.58	11959.26	5392.093	7234.633	63077.9634
5	Kendu	359.1493	12711.9	23280.2	22087.9	11547.53	3977.794	774.765	74739.2333
6	Mahula	4740.1	11981.51	24284.27	25625.04	18712.81	8032.597	3382.769	96759.0955
7	Misc.	120638.4	170375.5	345184.2	343068.4	231606.2	114681.1	50652.71	1376206.5
8	Mundi	6734.562	7093.137	5993.911	5207.595	2860.966	632.8404	168.0891	28691.1014
9	P.Sal	2330.532	6640.161	9182.036	11333.34	7186.632	3085.915	1408.601	41167.2154
10	Sahaja	19175	23013.78	56336.51	73667.65	68298.34	34814.41	19380.88	294686.556
11	Sal	71167.7	110907.4	250718.3	378568.2	467203.3	289944.7	107876.2	1676385.84
	Total	**377841.5**	**479117.2**	**828439.8**	**997294.4**	**907011.7**	**467805.4**	**194064.1**	**4251574.18**

adopted in this Plan. **The Average quality of Sal is generally moderate ranging from Q.III/IV to Q IV**. Detail analysis data's dealt in various working circle of part II of the working plan.

8.4 Yield Calculation

8.4.1 Since the prime objective of management of forests is not the revenue oriented, yield from the forests is of secondary importance. However some yield is expected from Selection Working Circle area. The yield will be regulated by area with a percentage check on the removable of exploitable trees as calculated by Smithy's Safeguarding Formula. The formula is based on certain assumptions which hold true for the forest blocks allotted to this working circle:-

i) The basic objective of management is to ensure sustained yield of exploitable trees.

ii) The exploitable trees already exist and are being recruited in all most all the area (and not in any particular compartments).

iii) The middle age and younger diameter classes are well represented and the present rate of recruitment to the two highest diameter classes (I and II) is not likely to decrease in near future. The sustained yield of selection trees is adequately safeguarded.

8.4.2 As per the said formula, the yield available during the felling cycle is regulated by the number of trees of the next lower girth class (approach class – Class - II) that may survive and pass onto next higher girth class (exploitable class – Class I) during the felling cycle. This increment is expressed by the following formula:-

$$\mathbf{X = \{F/T\} \times (II - Z\ \%\ of\ II)} \quad \text{---------- (i)}$$

where,

X is the number of approach class trees that pass to exploitable class during the felling cycle.

F is the felling cycle (10 Years).

II is the number of trees in approach class.

Z is the percentage of mortality, i.e. the percentage of approach class trees which will not pass into Class – I in "T" years due to various reasons.

T is the time in years taken by a tree to pass from the approach class to exploitable class.

8.4.3 The value of **T** is 36 Years for average site quality III in respect of irregular Sal forests of Ramnagar Forest Division. This is slightly less than that obtained from the yield table. The value of **T** and **Z** as per yield table are 39 years and 43 %.

For Site Quality III/IV yield table data gives values of **T** and **Z** as 45 years and 37% respectively. For the forests of this Division whose site quality varies from III/IV to IV values of **T** and **Z** can be approximated to 40 years and 50%.

In view of the aforementioned assumptions equation i) can be simplified by substituting **F = 10 years**, **T = 40 years** and mortality **Z = 0.5** so as to yield

$$\mathbf{X = \{10/40\} \times (II - 0.5\ II) = II / 8}$$

8.6.4 The annual yield (percentage of trees available for exploitation) Y, is computed by following formula –

$$\mathbf{Y = [X / (I + X/2)]\ 100 \pm A} \quad \text{----------(ii)}$$

where,

I is the number of trees of and above exploitable size i.e. Class-I trees

A is an arbitrary value used for rounding off % of removal figure (Y)

8.4.5 Putting the value of **X = II / 8** in equation (ii) above the value of Y is simplified as follows-

$$\mathbf{Y = 200II / (16I+II) \pm A} \quad \text{---------- (iii)}$$

The detail calculation of yield, felling series wise will be reflected in Part-II under selection Working Circle as per the Smithy's safeguarding formula using the above equation

8.5 Growth and Yield of Bamboos

8.5.1 In Ghumsur north Forest Division no sample plot or experimental plot has been maintained to ascertain growth and yield of bamboo. Growth of bamboo and new shoots depend upon various factors like age and size of the rhizomes, soil conditions, and extent of rainfall, soil working and extent of biotic interference. In the field while conducting 1% enumeration of growing stock, the number of bamboo clumps, its quality, height, girth and number of culms, both old and new, has been recorded Basing on this information, an estimated out-turn has been calculated.

8.5.2 The following three quality classes have been recognized for Salia bamboos basing on their culm heights.

Quality	I	=	Culm height of 9 meter and above.
Quality	II	=	Culm height of 6 to 9 meter
Quality	III	=	Culm height of below 6 meter

8.6. Statistics of Growing Stock of Bamboo

8.6.1. Bamboo clump enumeration has been carried at the time of tree enumeration. Each enumeration strip was taken as a sample. The number of culms and age were recorded in each clump in the enumeration strip. The approximate blank areas have also been noted. The intensity of enumeration is about 1%. Based on this data the number of bamboo clumps has been determined with average number of culms per clump in different age classes. The bamboo is classified into Quality II & III.

8.6.2. Yield Estimation

8.6.2.1 The number of culms available at the time of enumeration become 4 years and above during the next cutting cycle. Besides that culms between 3-4 years are also available for cutting. Clump and culm analysis were done from the data. The average number of culms, average number clumps per ha was determined. The yield was calculated in the given formula:

Yield = Area of the coupe x No of clumps per ha x No of culms to be removed/per clump x multiplying factor.

8.6.3. Estimation of Sale Units (SU)

8.6.3.1 Efforts have also been made to estimate the entire production of bamboo of the Division in terms of Sale Units (SU). Mean height of Q – II is being taken as the average height of culms i.e. 7.5 m.

8.6.4. Running Meter of Culms and Sale Unit

8.6.4.1 Total numbers of culms of Bamboo in the Division multiplied by mean height of the culm gives the total length of Bamboo. Sale Unit is the total running meter of bamboo culms in the Division divided by 2400. This gives the total sale unit of the bamboo of the Division. The quantity of bamboo involved in 2400 running meter is taken as one standard Sale Unit of Bamboo which is almost equal to 1 MT.

8.6.4.2 Estimates of the total number of culms and clumps in the Division along with the estimate of the production of bamboo in the Division is given in **Table No.8.4.** Detailed cutting series wise estimate of growth and yield of bamboo in the Division has been covered in the Part – II of the Plan in the Chapter **Bamboo (Overlapping) Working Circle.**

Table 8.4 Estimates of the Total Number of Culms and Clumps in the Division.	
Total bamboo bearing area of Ghumsur North Forest Division in Ha.	58,920.177Ha.
Average no. of clumps per Ha.	44
Average no. of culms per clump Ha	533
Total No. of culms in bamboo area of the Division	30960141
Average height of culm in Meters.	7.5
Total Sale Unit of Bamboo in the Division	*48218.9*

Part-II

FUTURE MANAGEMENT DISCUSSED AND PRESCRIBED

CHAPTER-I

BASIS OF PROPOSAL

1.1 GENERAL CONSIDERATIONS

1.1.1 The National Forest policy of 1988 aims at increasing the productivity of forests to meet the growing needs of essential goods and environmental services that the forests provide. Such benefits from the forests have however been subordinated to the basic aim of environmental stability and ecological balance. The emphasis is that forests should be managed primarily to maintain environmental stability through the preservation of the natural vegetation and wherever necessary by restocking of depleted forests. Thus, the forests are to be treated as a renewable resource, which should provide in a sustainable manner to the extent possible the needs of the society without depleting itself and its ability to provide environmental stability and ecological balance. This vital natural resource should be managed with the active involvement of the people living in the vicinity of the forests in a conservation-oriented approach. The policy also expresses the following objectives of managing the State's forests

a) To manage forests as a renewable natural resource and to protect and enhance these national assets for the general well being of the people and of the nation
b) To increase forests and vegetal cover on hill slopes and in catchments of rivers, lakes and reservoirs
c) To enhance forest cover and site productivity through application of scientific and technical inputs.
d) Not to look upon forest as a source of revenue
e) To conserve natural heritage and to maintain biodiversity
f) To meet the requirement of fuel wood, small timber, fodder and other non-timber forest produce of the people
g) To actively involve the people in general, women and weaker sections in particular, in the process of forest management.

1.1.2 Part-I of this revised Plan has elaborated how the increasing population, changing life styles and increasing consumerism of the people have exerted tremendous pressure on forests, resulting in general degradation and denudation of many forest blocks of Ghumsur North Division. In fact, in spite of diversification of the State economy in recent years, the dependence of the people residing in rural

areas on agriculture and forests in Ghumsur North Division for their sustenance continues to be very high.

1.1.3 The guiding principles of National Forest Policy in addition to the general policy of the State Government and the ground realities of the forests in Ghumsur North Division have dictated the general objects of management for the forests under this revised Plan.

1.2 GENERAL OBJECTIVES OF MANAGEMENT

1.2.1 The past management of the forests in the Division and the results of earlier prescriptions have been discussed and analyzed in detail in Part-I of this revised Plan. The analysis indicates that there has been general degradation of the natural forest which has led to the dwindling of the bio-diversity in the Division. The main reasons for such degradation are different forms of biotic interferences and natural disasters during the outgoing plan period. Hence, the thrust of the management strategy has to be on conserving and restoring the forest for maintaining ecological balance with active participation of the people in the process of regeneration and development of the forest.

1.2.2 Keeping in view the above mentioned aspects, the objectives of the Revised Plan are as follows.

I. To maintain permanent closed canopy on hill slopes and in catchments of lakes and reservoirs and rivers for maintaining hydrological balance and to regulate water yield and checking soil erosion.

II. To prevent further degradation of ecosystem by regulating felling of trees and taking adequate steps in conserving flora and fauna of the forests.
III. To restock the barren, degraded and depleted forests by low cost technologies.
IV. To enlist people's participation on a major scale
V. To improve the conditions of forests by increasing investment with appropriate management.
VI. To conserve wild life resources in the Division and enrich biodiversity.
VII. To supplement the needs of local population in keeping with the aforesaid environmental imperative, the local communities depend on forest living in and around.
VIII. To improve condition, composition and productivity of these forests by increasing investment and through appropriate systematic management.
IX. To provide increasing employment opportunities to rural people in general and weaker sections, including scheduled castes, tribals and women in particular.

X. To identify rare and endangered species of fauna and flora and take adequate steps for its conservation.

1.3 METHODS OF TREATMENT

1.3.1 To achieve the aforesaid multiple and multi-dimensional objectives, suitable method of treatment is essential, so as to enable to accomplish the desired goal. The treatment prescribed in the last Plan still holds good for the present. Though the improvement in the crop condition has been noticed to some extent, but a lot is yet to be done. Increase in forest cover is not enough; the enrichment of the crop can provide the sustained yield. Similarly the process of restoration of degraded forests through rehabilitation measures will continue till remarkable improvement is achieved. Forest blocks retrograded from good density class and the degraded forests shown substantial improvement need special treatment particularly protection for smooth and early passing to higher density class.

1.3.2. Forest Blocks namely Gallery, Darpangia, Baiballi, Rambha, Odinabadi of Mujagada Range Ambazora, Dimirijholi, part of Chandragiri forest blocks of Gallery Range and Part of Chandragiri, Ghogada, Gundiribadi and part of Brahmansahi of Tarasingi Ranges of Ghumsur North Forest Division having good natural forests are proposed for silvicultural treatment under selection working system. The production of Timber depends totally on these forests.

1.3.3. Site-specific suitable rehabilitation measures are necessary to gear up the process of restoration and improvement at a faster rate in all the rest of the forest blocks of Ghumsur North division. No specific silvicultural system is prescribed for this category of forests. Regeneration cleaning and Gap planting where ever necessary is the main prescription. This is major chunk of the plan area. The treatment of this category of forests is of vital importance.

1.3.4 The existing good natural forest having higher density and quality of the crop is to be treated with selection system, as done earlier where as the degraded forests will be provided with rehabilitation measure i.e. suitable and site-specific silvicultural treatments. In nutshell silvicultural system for good forest is selection system and for the rest is the improvement measure. Similarly eco-tourism and joint forest management is to be boosted for this purpose.

1.3.5 Bamboo forests occurring in the Divisions are in bare need of subsidiary silvicultural operations for ensuring the crop quality and quantity. Clearance of the clump along with the soil cover and moisture conservation measures are the proposed treatment to induce the production of new culms. Though the control over collection and trade of NTFP has been transferred to Panchayati

Raj Institutions, the source of majority of items is forest. Hence the increase in productivity is essential to provide a good source of earning to the forest fringe villagers. The treatment cannot be generalized. Specific treatment is necessary. So also the treatment for improvement of habitat congenial to Wild Life and its development needs special attention. Treatments narrated above are general in nature.

1.3.6. Protection of forests will only be possible when its boundaries are demarcated and maintained. A special drive will have to be taken up to consolidate the block boundaries to check for encroachment and prevent further encroachment. Along with consolidation, fixing/repairing of boundary pillars, determining the coordinates of pillars and fixing of signboards at prominent locations will have to be taken up.

1.4 CONSTITUTION OF WORKING CIRCLES

1.4.1 In order to achieve the aforesaid general objectives of management, an approach for management of the forests of Ghumsur North Division has been prescribed after considering the ground realities. In this approach emphasis has been laid on a watershed approach and the involvement of local people in management of forests. In consistence with the provisions of the National Working Plan Code, 2004 and the recommendations and approval of the Working Plans' Committee, the following working circles have been constituted for the management of the forest area covered under this revised Plan.

1. The Selection Working Circle.
2. The Rehabilitation Working Circle.
3. The Protection Working Circle.
4. The Plantation Working Circle.
5. The Bamboo (Overlapping) Working Circle.
6. The Wild life (Overlapping) Working Circle. Circle.
7. The NTFP (Overlapping) Working Circle.
8. The JFM (Overlapping) Working

1.4.2 THE SELECTION WORKING CIRCLE

1.4.2.1 This working circle has been formed with an objective to further improve the growing stock. In fact, **11** forest blocks out of a total of 22 RF Blocks area covered under this circle. This working circle covers **100** compartments / sub-compartments from the 11 forest blocks. The forest blocks are namely Gallery RF, Chandragiri RF, Brahmanasahi RF, Ghogodo RF, Rambha RF, Dimirijholi RF, Darpangia RF, Baibali RF, Odinabadi RF, Gunduribadi RF and Ambazora RF. Those forest blocks which have now become degraded and were included in this circle in the outgoing plan have been excluded in this plan and have been placed under Rehabilitation Working circle. These blocks are mostly Sal

forest with good miscellaneous associates which are un-even aged with good tree growth. These forest blocks have forests with good crown density and mature trees. Conservative selection felling for harvest of some mature trees is prescribed. Majority of the blocks included under this circle are in three out of five ranges which are namely Mujagada Range, Gallery Range and Tarasing Range. The total area allotted to this working circle is **51842.906** hectares which is approximately **56.32%** of the total forest area covered in the Plan.

1.4.3 THE REHABILITATION WORKING CIRCLE

1.4.3.1 This Working Circle includes mainly denuded/degraded forest blocks with degraded Sal and other miscellaneous forest in various stages of degradation. This working circle covers **140** compartments / sub-compartments belonging to the **21** forest blocks. These blocks have adequate rooted waste and coppice growth which can be improved by cultural operations supplemented with artificial regeneration along with Soil and Moisture conservation measures. These areas are in need of urgent rehabilitation and restoration measures. All these are found to be in close proximity to human habitation and therefore attempt has to be made to involve the local population in the protection and regeneration of these degraded forests. The degraded forest areas previously placed under selection working circle in the outgoing plan have now been placed under this working circle. The existing plantations raised in different blocks during the previous years are also included in this Working Circle. These however do not include eco-fragile areas including the steep slopes and the catchment areas of nallas/rivers as they have been placed independently under Protection Working Circle and also the blank patches devoid of any vegetation as they have been separately placed under Plantation working Circle. An area allotted to this working circle is **33470.072** hectares which is approximately **36.6 %** of the total forest area covered in the Revised Plan.

1.4.4 THE PROTECTION WORKING CIRCLE

1.4.4.1 This circle includes all the forest blocks, which are ecologically fragile, steep slopes and those forest areas existing in steep precipitous hill slopes of high altitude, catchment area of nallah/reservoir. Special protection measures will be accorded to the forest blocks allotted to this working circle. Site specific protection measures to be provided so as to increase forest and vegetal cover on hill slopes and in catchments of nala, river, and reservoirs to check soil erosion. Measure will also be provided to protect the forests from illicit felling, encroachment, unregulated grazing and protection of wildlife from poaching. Revamping the communication and surveillance network will be prescribed with a suggestion to implement the same on priority basis. **68** compartments/sub-compartments involving **10** reserve forest blocks comprise this working circle with a total area of **5235.495** hectares which is **5.68%** of the total forest area of the division.

1.4.5 THE PLANTATION WORKING CIRCLE

1.4.5.1 This Working Circle includes all the forest blocks, which are having purely large size blank patches devoid of forest growth. These areas have generally no forest growth or root stock due to many factors including illicit felling, grazing and denuded depleted and eroded soil conditions. These areas cannot be easily restocked through natural regeneration methods within a reasonable time frame since these areas require intensive artificial regeneration measures. The total area allotted to this Working Circle is **1500** hectares exclusive of existing plantations raised previously and this is **1.63%** of the total forest area of the division.

1.4.6 THE BAMBOO (OVERLAPPING) WORKING CIRCLE

1.4.6.1 This working circle overlaps the selection and rehabilitation working circle and includes all those forest blocks that were included in the outgoing plan. This covers the potentially rich bamboo areas of the division areas where bamboo occurs either gregariously or in scattered manner. The bamboo forest of this division are suffering from degradation due to frequent fire, heavy grazing, illicit felling, over exploitation and sometimes needless and unscientific method of harvesting. Though gregarious flowering has not been reported sporadic flowering is noticed almost every year in many forest blocks. The total area allotted to this Working Circle is **58920.177** hectares which is **64 %** of the total forest area of the division

1.4.7 THE WILD LIFE (OVERLAPPING) WORKING CIRCLE

1.4.7.1 This is an overlapping circle covering the entire working plan area of the Division excluding i.e. **92048.74** hectares. However, special management prescriptions are provided for some forest blocks, where there is adequate concentration of wild life. During this plan period it is proposed to identify and maintain special wildlife habitats, unique wildlife habitat and also critical wildlife habitats which have been neglected in the past with specific prescriptions for the elephant corridor area. Steps will be taken to prevent wildlife crimes and wildlife depredation. Detail management prescription has been drafted in consultation with the Chief Wild life Warden Orissa. Emphasis will be given poaching, electrocution, habitat destruction and avoiding man-animal conflict. Creation of water bodies, salt licks, meadows and plantation and conservation of fodder species will be given priority. Creation of corpus fund at the division level for early redress of victims of wild life depredation will also be discussed in the plan.

1.4.8 THE NTFP (OVERLAPPING) WORKING CIRCLE

1.4.8.1 This working circle is also an Overlapping circle covering the entire plan area i.e. **92048.74** hectares. The object of this working circle is to give suitable prescription for conservation, regulation, scientific method of collection, value addition and marketing of all NTFPs found in the division so as to

strengthen the economy of the weaker sections, schedule caste/tribe and women of the society. The total area of Working Plan has been allotted to this circle.

1.4.9 THE JOINT FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE

1.4.9.1 This overlapping working circle overlaps with mainly the Rehabilitation Working Circle. Ghumsur North division has **223** numbers of VSS covering an area of **31,457.79** hectares of forest area. All the forest blocks which have been allotted to the Vana Surakhsya Samitis for protection and management has been done from the reserve forest areas and as per the JFM resolution of the State. The forest under this overlapping circle will be managed through micro-plans prepared by the village committees which will be in consonance with the prescriptions of the main Working circle to which the forest block has been allotted. Implementation of such duly approved micro plans shall not be taken as deviation. Creation of additional **330** VSS covering an area of **50,000** hectares for protection and management of this working circle will be discussed in this plan. So, the total area allotted to this overlapping working circle is **81457.79** hectares.

1.5 ALLOCATION OF AREA TO DIFFERENT WORKING CIRCLES

1.5.1. The total working plan area of 92048.74 hectares is spread over 22 RF blocks comprising of 308 compartments/ sub-compartments. Though full details of constitution of above mentioned working circles in terms of blocks, compartments and Ranges are given in the individual chapters devoted to each working circle, However, the summary of the same is reproduced in **Table 5.1** below.

TABLE 5.1 RANGE-WISE AREA ALLOTTED TO DIFFERENT WORKING CIRCLES IN GHUMSUR NORTH DIVISION (IN HA.)

Name of Range	Working Plan Area	SWC	RWC	Protection WC	Plantation WC	Bamboo WC (O)	WL WC (O)	NTFP WC (O)	JFM WC (O)
Central	16731.328	0	16731.309	0	240	10384.442	10384.442	10384.442	9300
Mujagada	33042.055	22642.621	5797.442	3390.409	460	19280.169	19280.169	19280.169	16100
Gallery	10646.406	11703.214	595.297	756.92	270	8370.58	8370.58	8370.58	6600
Tarsing	23993.12	17497.071	4210.189	1088.166	310	16257.305	16257.305	16257.305	15500
Jagannath Prasad	7635.835	0	7635.835	0	220	4627.681	4627.681	4627.681	2500
TOTAL	**92048.74**	**51842.906**	**33470.072**	**5235.495**	**1500**	**58920.177**	**92048.74**	**92048.74**	**50000**

1.5.2 The compartment files of the division have not been maintained up-to date in the past. These compartment histories and files should be meticulously maintained and control forms and deviation statements should be posted regularly in future.

-

1.5.3 Stock mapping has been done for all the compartments/blocks included in the plan and duly incorporated in the respective history files. Even enumeration data has also been reflected for those blocks where such an exercise has been carried out. It is hoped that these files shall be posted in time and maintained properly hereafter so that proper records are available in future.

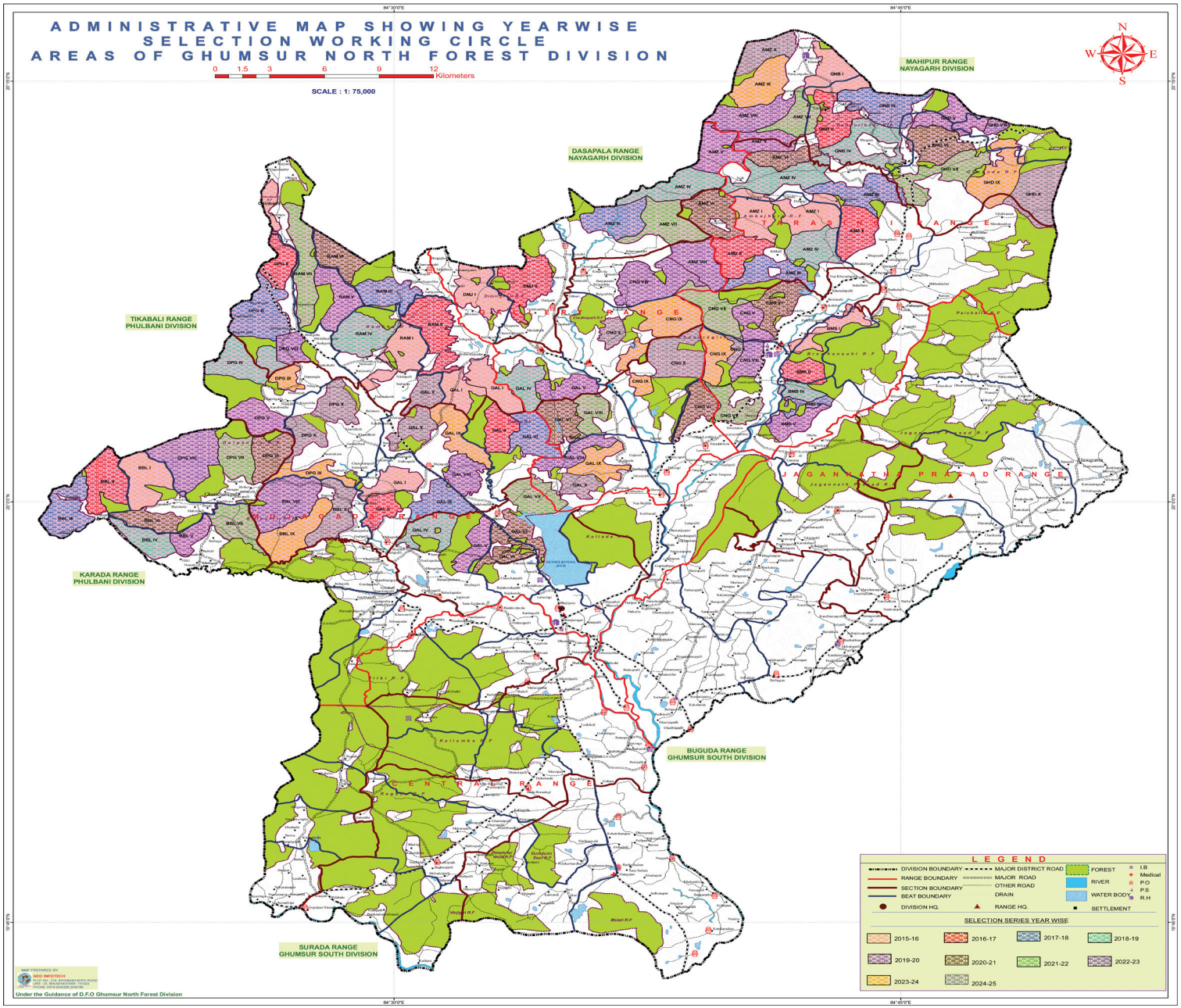
1.6 PERIOD OF THE WORKING PLAN

1.6.1 This Working Plan has been prepared for a period of 10 years i.e. from 2015-16 to 2024-25. It is unlikely that prescriptions made in this Plan will need any major alteration during the Plan period. However, the prescriptions may be reviewed after five years and if so required the Conservator of Forests (Territorial) in consultation with Conservator of Forests, Working Plan, shall submit a proposal to that effect for approval of the competent authority.

ADMINISTRATIVE MAP SHOWING YEARWISE SELECTION WORKING CIRCLE AREAS OF GHUMSUR NORTH FOREST DIVISION

0 1.5 3 6 9 12 Kilometers

SCALE : 1: 75,000



MAP PREPARED BY:
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Under the Guidance of D.F.O Ghumsur North Forest Division

CHAPTER - II

THE SELECTION WORKING CIRCLE

2.1 General Constitution

2.1.1 The forest blocks allotted to this Working Circle, include 11 blocks and all of them are Reserve forests with an area of **51842.906** hectares as compared to 71469.139 hectares in the outgoing plan including 16 reserve forest blocks. These blocks were previously managed under Selection Working. Most of the forest blocks are mixed miscellaneous type and are areas dominated by Sal. Well stocked forest blocks having a crown density more than 0.4, and with matured crop have been included in this Working Circle and the areas have moderate to excellent regeneration having a higher degree of biodiversity. The degraded forest area of the selection working circle area of the outgoing plan which are no more suitable for working under this circle and need rehabilitation have been excluded from this circle and have been placed under rehabilitation working circle. Those forest areas of this working circle which are ecologically fragile, catchment area of the reservoirs and steep precipitous slope with high gradient and altitude which formed a part of this working circle in the outgoing plan have been excluded from this circle in the revised plan and have been separately laced under Protection Working Circle. Due to the occurrence of back to back super cyclonic storms namely “Phailin” in the year 2013 and “Hud-Hud” in the year 2014 hit this division, large number of trees in the exploitable girth class and the approach class have been uprooted and created large blanks in the forest areas. Hence the yield from these coupes is most likely to get reduced.

2.2 General Character of Vegetation

2.2.1 These types of forests have been detailed in **Chapter 2 of Part (I).** Forests allotted to this Working Circle fall in the following two groups.

Group 5: ***Tropical Dry Deciduous Forests***

Sub-Group 5B: North tropical Dry Deciduous Forests

C_{1c} Dry peninsular Sal Forest

C_2 Northern Dry Mixed Deciduous Forest

2.2.2 The forest bears good Sal crop in RF blocks of Gallery, Chandragiri, Brahmanasahi, Rambha, Ghogodo, Dimirijholi, Darpangia, Odinabadi, Baiballi, Gunduribadi and Ambazora with miscellaneous species. The main species are S*al, Asan, Dhaura, Kasi, Bandhan, Dhamana, and Halanda.* Bamboo occurs in all the forest blocks in different densities. The growing stock is affected due to various biotic interferences like fire, illicit felling and grazing. The regeneration of

Sal is adequate throughout these forests. There exists large number of small to large patches of eroded lands with deep ravines and gullies with very little vegetation of dry-mixed deciduous type. The most abundance is Eupatorium and Ban-Tulsi. These problems are to be tackled through suitable measures under different schemes. Small monoculture plantations of teak have been raised lacking any continuity in many areas of this circle. Range wise regeneration and Biodiversity status of SWC has been given in **Annexure – XXXV, XXXVI.**

2.3 Special Objective of Management

2.3.1 The special objective of management of this Working Circle is within the ambit of general objectives of the management of the entire division. The special objective of management of this Working Circle are as follows:

I. To improve the density and composition of the forest crop as well as stand structure by suitable silvicultural operations including soil & moisture conservation measure.

II. To remove matured and silviculturally available trees before they become unsound through conservative marking with prescription for selective removal of dry and fallen trees. Fruit bearing trees to be retained to satisfy the requirement of the wildlife.

III. To carry out subsidiary silvicultural operations so that conducive situation is created for better growth of existing crop and the upcoming natural regeneration.

IV. To build up growing stock and to obtain sustained yield from those forests through proper management practices giving importance to the growth of the crops of lower girth class.

2.4 Allotment of Area and Felling Series

2.4.1 The allotment of this working Circle is based on inventory analysis, which have been dealt under **Chapter 8 of Part I.** Reasonable regeneration is present in many of the forest blocks. Crop composition is generally very good and with high density. And matured trees for conservative felling selectively are available.

2.4.2 The total area allotted to this circle is in (eleven) 11 forest blocks. The Range wise abstract of the total area under this working circle is given in **Table 2-1** and A statement of Range wise allocation of forest blocks and compartments together with the area statement is given in **Table 2-2.** The previous plan had 12 felling series with a total area of 71,469.139 ha. In this plan, the series have been reconstituted and reduced to 10 numbers in this working plan for the intensive management. The name and composition of the felling series has been changed and the total area to be worked under this working circle and under these felling series has been reduced to **51,842.906** hectares. The blocks have been regrouped into Felling Series for the purpose of equal production and keeping in view workable management interventions.

Table 2-1 Range wise Abstract of Selection Working Circle Area in ha. of Ghumsur North Division	
Mujagada	22642.62
Gallery	11703.21
Tarasingi	17497.07
Total	***51842.906***

Table 2-2 Range wise distribution of SWC area of Ghumsur North Division				
Range	**Block**	**Compartment no**	**Area allotted to SWC in Ha**	**Area of the Felling Series in a Range**
		1	379.597	
		2	354.778	
		3a	487.05	
		4a	324.796	
		5a	543.328	
		6a	191.059	
		7a	304.35	
		8a	422.675	
		9a	393.926	
		10	498.853	
		11a	355.704	
	Gallery (P)	12	204.515	4460.631
	Odinabadi	1	233.104	
		1a	689.441	
		2	662.1	
		3	622.315	
		4	444.27	
		5	476.473	
		6	433.931	
		7	862.874	
		8	236.271	
	Darpangia	9	343.524	5004.303
		1a	646.508	
		2	794.154	
		3	467.919	
		4a	577.056	
		5	576.627	
		6a	490.957	
	Rambha	7a	823.678	
		12	306.174	
		11	154.051	
	Darpangia	10	443.336	5280.46
		1	666.689	
		2	698.562	
		3	688.72	
		4(p)	452.136	
		4(b)	341.227	
		5	419.424	
		6	548.118	
Mujagada	Baibali	7	933.468	5999.092

		8	677.944	
		9	572.804	
		13	304.322	
		14	435.183	
		15	644.329	
		17	514.301	
		16a	432.495	
		18a	375.436	
		19a	466.613	
		20a	295.476	
		21	386.064	
		22	388.711	
	Gallery (P)	23a	432.333	4675.263
		1a	644.163	
	Dimirijholi	2a	856.511	
		3a	587.943	
		2	644.881	
		1	559.525	
		6a	694.86	
		4	713.76	
	Ambazora	5	583.691	
		11	780.803	
Gallery	Chandragiri	12	263.873	6330.01
		7a	611.979	
		8	684.257	
		9a	500.054	
	Ambazora	10a	591.817	
		5a	478.777	
		6a	383.732	
Tarasingi		4	527.426	
		3	866.476	
		2	651.831	
Gallery	Chandragiri	1	685.678	5982.027
		3	364.811	
		4	243.343	
		5a(p)	245.05	
		5a(b)	273.65	
	Brahmanasahi	6a	355.292	
		10	392.091	
		9	379.46	
		8	320.238	
		7a	373.088	
	Chandragiri	7b	99.207	3046.23
		1	661.788	
		2a	460.957	
		3	705.099	
	Gunduribadi	4	641.417	
		1	531.994	
		2	521.64	
		3a	634.213	
		4a	72.116	
		5a	666.302	
	Ghogodo	6	719.543	5615.069
		11a	603.804	
Tarasingi	Ambazora	12	607.527	5449.821

		13a	653.618	
		14	692.432	
		15(p)	354.216	
		15(b)	412.149	
		16	440.605	
		17	627.722	
		18	565.748	
		19	492	
Total				**51,842.906**

2.4.3 This working circle constitutes 56% of the total plan area. The forest area that are ecologically fragile, catchment area, of reservoirs and steep precipitation slopes with high altitude have been excluded from this working circle for better treatment under a separate protection working circle. So the area reduced from 57,000 hectares as proposed in the 1st PWPR to 51,842.906 hectares in the final revised plan.

2.4.4 While constituting the 10 felling series, care has been taken to restrict it within a Range jurisdiction as much as possible for the sake of administrative convenience and for better implementation of the prescriptions. **Table 2-3** gives the detailed constitution of the ten felling series in various ranges of the division along with the individual compartment area under this working circle reserve forest block wise and the total area of the felling series.

Table 2-3 Range wise distribution of Felling Series of Ghumsur North Division

Range	Felling Series in a Range	Block	Compartment no	Area allotted to SWC in Ha	Area of the Felling Series in a Range
			1	379.597	
			2	354.778	
			3a	487.05	
			4a	324.796	
			5a	543.328	
			6a	191.059	
			7a	304.35	
			8a	422.675	
			9a	393.926	
			10	498.853	
			11a	355.704	
	Western	Gallery (P)	12	204.515	4460.631
		Odinabadi	1	233.104	
			1a	689.441	
			2	662.1	
			3	622.315	
			4	444.27	
			5	476.473	
			6	433.931	
			7	862.874	
			8	236.271	
Mujagada	Darpangia	Darpangia	9	343.524	5004.303

			1a	646.508	
			2	794.154	
			3	467.919	
			4a	577.056	
			5	576.627	
			6a	490.957	
		Rambha	7a	823.678	
			12	306.174	
			11	154.051	
	Rambha	Darpangia	10	443.336	5280.46
			1	666.689	
			2	698.562	
			3	688.72	
			4(p)	452.136	
			4(b)	341.227	
			5	419.424	
			6	548.118	
			7	933.468	
			8	677.944	
	Baibali	Baibali	9	572.804	5999.092
			13	304.322	
			14	435.183	
			15	644.329	
			17	514.301	
			16a	432.495	
			18a	375.436	
			19a	466.613	
			20a	295.476	
			21	386.064	
			22	388.711	
	Gallery	Gallery (P)	23a	432.333	4675.263
			1a	644.163	
		Dimirijholi	2a	856.511	
			3a	587.943	
			2	644.881	
			1	559.525	
			6a	694.86	
			4	713.76	
		Ambazora	5	583.691	
			11	780.803	
Gallery	Central	Chandragiri	12	263.873	6330.01
			7a	611.979	
			8	684.257	
			9a	500.054	
		Ambazora	10a	591.817	
			5a	478.777	
			6a	383.732	
Tarasingi			4	527.426	
			3	866.476	
			2	651.831	
Gallery	Tarasingi	Chandragiri	1	685.678	5982.027

			3	364.811	
			4	243.343	
			5a(p)	245.05	
			5a(b)	273.65	
		Brahmanasahi	6a	355.292	
			10	392.091	
			9	379.46	
			8	320.238	
			7a	373.088	
	Eastern	Chandragiri	7b	99.207	3046.23
			1	661.788	
			2a	460.957	
			3	705.099	
		Gunduribadi	4	641.417	
			1	531.994	
			2	521.64	
			3a	634.213	
			4a	72.116	
			5a	666.302	
	Ghogodo	Ghogodo	6	719.543	5615.069
			11a	603.804	
			12	607.527	
			13a	653.618	
			14	692.432	
			15(p)	354.216	
			15(b)	412.149	
			16	440.605	
			17	627.722	
			18	565.748	
Tarasingi	Ambazora	Ambazora	19	492	5449.821
Total					**51842.906**

2.5 Analysis and Valuation of the Crop

2.5.1 Enumeration result reveals that Sal emerges as the main species with good growth of miscellaneous. The entire Working Circle has been stock mapped and the stock maps have been attached to respective Compartment Histories. Major canopy density of these blocks is classified under > 40%. Sampling has been carried out by using systematic strip enumeration method. The sampling intensity of the coupes has been kept at 5% of the compartment area as instructed in the approved 2nd PWPR. All the compartments included in this working circle have been sampled with 5% sampling intensity. There is a large representation of lower girth classes and low representation of higher girth classes. The number of Sal representation is good. *Dalbergia sissoo* is rarely observed. Bamboo occurs gregariously in many of the blocks allotted to this Working Circle.

2.5.2 Analysis of biodiversity surveys conducted in sampled forest blocks have discussed in **Chapter 2 of Part I.**

2.5.3 Regeneration survey has been carried out in all forest blocks allotted to this Working Circle. Analysis of data on regeneration survey indicates that there is moderate to established regeneration. Regeneration status of Sal is good, Piasal is poor and that of Bandhan, Kasi and dhaura are good.

2.6 Silvicultural System

2.6.1 Prior to the outgoing plan, over exploitation and unscientific exploitation was noticed. This resulted in lot of blank patches in the forest areas and the growth of unwanted species. Bamboos came up almost everywhere.

2.6.2 Then there was a green felling ban for 10 years i.e. from 1995-96 to 2004-05. Hence many trees were found over the exploitable girth class. Lot of congested, diseased and malformed trees were also seen due to lack of scientific management of forests for such a long period and hence silviculturally undesirable species and trees were rampantly found.

2.6.3 Then the division experienced two very severe super cyclonic storms namely “Phailin” in the year 2013 which ravaged the forest crop of this division. Huge number of trees got uprooted creating blank and gap areas and wide spread opening in the forest canopy.

2.6.4 Hence, in view of the situation The Selection system is prescribed for managing the forests assigned under this Working Circle with special emphasis on improvement of crop condition as well as regeneration. Only those silviculturally available trees in the exploitable girth class shall be removed as would be admissible according to Smithies’ Safeguarding Formula with a further reduction of 50% to offset biotic and other factors like site quality, crop density etc. The tending and cultural operations shall be taken up to improve the growing stock and to induce sustainable regeneration. In essence the objective laid down visualize a selective removal of trees ensuring the maintenance of forest cover, and execution of tending operations to improve the growing stock and induce and sustain regeneration. .

2.7 Choice of Species

2.7.1 As this working plan has laid emphasis on bio-diversity conservation, in view of growing concern for loss of the same, the old classification of principal species, secondary species and inferior species has been done away with. All species have been given equal importance for conservation of biodiversity and development of balanced forest, where natural selection of the species shall be encouraged. Fruit bearing trees such as Mahua, Mango, Tamarind, Amla, Chara, Bahada, Harida, Kendu, Bel, Jamun etc. shall not be felled.

2.8 Felling Cycle

2.8.1 The felling cycle is the time that elapses between successive main felling’s on the same area. It is also synonymous with cutting cycle. Till the last working plan 1995-96 to 2014-15, felling cycle of 20 years has been adopted for the Ghumsur north forest since inception of management

through working plan. Earlier the duration of the working plan period was 20 years being coterminous with that of the felling cycle. It is necessary to ensure the working of entire area allotted to the working circle during the plan period. So deviating from the earlier practice of 20 years felling cycle in vogue, the duration of the felling cycle has been fixed as 10 years coinciding with that of the plan period to provide the management work for the allotted area in entirety

2.9 Rotation Period

2.9.1 Rotation is the planned number of years between the formation or regeneration of a crop and its final felling. In case of a selection forest, the average age at which a tree is considered mature for felling. A tree becomes mature when it is capable of reproducing itself by seed and has attained its full height. Such stage of a tree or crop is treated as the exploitable age. Silviculturally rotation is the stage at which a species retains satisfactory vigour of the growth and reproduction on a given site. Such rotation age of crop is crucial to ensure the proper condition of the forests. Though there are different aspects to determine the rotation, the practice in vogue is the age at which maximum volume production is obtained. That means, it yields the greatest annual quantity of materials.

2. 9.2 As per Letter No. 13-FCWP/BH/KOLHAN, Dated 13.01.1997 of the Chief Conservator of Forests (Central), Ministry of Environment & Forests, Govt. of India, Regional Office, Bhubaneswar, the silvicultural rotation period of 120 years is fixed for all the species

2.10 Exploitable Girth

2.10.1 Sal forests in Ghumsur North division are of quality III and VI. Blocks of Brahmanasahi, Ambazora found with quality III. Most of the other blocks varied from quality III/IV to IV.

2.10.2 The following parameters have been taken into consideration for fixing the exploitable size for Sal and other species in different forest blocks.

- ✓ The size beyond which the unsoundness develops.
- ✓ Growth and market demand.
- ✓ Data available in the yield stand table for different species.
- ✓ Enumeration figures available for different RF and PRF blocks
- ✓ Growth and market demand.

2.10.3 Thus considering the silviculture and market demand, the following exploitable girth at breast height is fixed:

Table No. 2.4 Exploitable Girth at Brest Height	
Species	**Exploitable girth at breast height**
Sal	120 cm
Other Miscellaneous	120 cm

2.11 Calculation of Yield and its Regulation

2.11.1 The yield shall be regulated by area with a percentage check on the removal of exploitable trees as per **"Smythy's Safe-guarding formula".** As Yield Table of Odisha is not available, All India Yield Table has been referred for regulation of the yield.

2.11.2 As per the said formula, the yield available during the felling cycle is regulated by the number of trees of the next lower girth class (approach class – Class - II) that may survive and pass onto next higher girth class (exploitable class – Class I) during the felling cycle. This increment is expressed by the following formula:-

$$X = \{F/T\} \times (II - Z\ \%\ of\ II) \qquad \text{---------- (i)}$$

Where,

X Is the number of approach class trees that pass to exploitable class during the felling cycle.

F Is the felling cycle (10 Years).

II Is the number of trees in approach class.

Z Is the percentage of mortality, i.e. the percentage of approach class Trees which will not pass into Class – I in "T" years due to various reasons.

T Is the time in years taken by a tree to pass from the approach class to Exploitable class.

2.11.3 The value of **T** is 36 Years for average site quality III in respect of irregular Sal forests of Ramnagar Forest Division. This is slightly less than that obtained from the yield table. The value of **T** and **Z** as per yield table are 39 years and 43 %.

2.11.4 For Site Quality III/IV yield table data gives values of **T** and **Z** as 45 years and 37% respectively. For the forests of this Division whose site quality varies from III/IV to IV values of **T** and **Z** can be approximated to 40 years and 50%.

In view of the aforementioned assumptions equation I) can be simplified by substituting **F = 10 years**, **T = 40 years** and mortality **Z = 0.5** so as to yield

$$X = \{10/40\} \times (II - 0.5\ II) = II / 8$$

2.11.5 The annual yield (percentage of trees available for exploitation) Y, is computed by following formula –

$$Y = [X / (I + X/2)]\ 100 \pm A \qquad \text{----------(ii)}$$

Where,

I is the number of trees of and above exploitable size i.e Class-I trees
A is an arbitrary value used for rounding off % of removal figure (Y)

2.11.6 Putting the value of **X = II / 8** in equation (ii) above the value of Y is simplified as follows-

$$Y = 200II / (16I+II) \pm A \qquad \text{---------- (iii)}$$

2.11.7 On the basis of the above formula, enumeration figures and allowing for biotic and other factors, the yield for Sal and other species in different enumerated blocks as percentage of trees allowed to be removed and no of trees allowed to be felled per hectare has been given in **Table No.2.5.**

Table No 2.5: Yield Calculation of Various Felling Series

Name of the Felling Series	Forest Block	Compartment	No. of Trees per Ha.			
			Sal-I	Sal-II	Non Sal-I	Non Sal-II
Western	Gallery (P)	1	21.76	17.44	2.79	9.43
		2	12.37	9.15	7.34	14.12
		3a	8.21	11.13	5.67	12.48

		4a	0.74	1.79	2.65	3.33
		5a	0.33	0.15	0.22	0.55
		6a	11.93	9.53	1.88	4.50
		7a	14.65	7.56	5.13	6.64
		8a	3.93	3.83	2.74	4.07
		9a	13.56	16.30	10.66	13.40
		10	12.03	15.15	10.82	12.03
		11a	12.71	14.84	8.43	9.95
		12	13.89	7.92	7.14	15.16
		Mean	**10.51**	**9.57**	**5.46**	**8.81**
		Y	**11.80 %= 1.14 Tree/Ha**		**24.7 %= 1 Tree/Ha**	

Darpangia	Odinabadi	1	13.3	14.16	8.15	26.95
	Darpangia	1a	2.15	4.12	6.56	16.65
		2	6.22	3.78	8.58	11.99
		3	14.88	10.22	14.72	19.99
		4	14.09	8.10	14.68	21.52
		5	4.49	2.18	21.16	30.85
		6	7.01	9.31	13.97	25.26
		7	7.86	6.47	9.32	13.12
		8	9.31	19.89	4.99	3.13
		9	7.98	7.22	2.04	2.50
		Mean	**8.73**	**8.54**	**10.42**	**17.20**
		Y	**11.53 % = 1.01 Tree/Ha**		**18.70 % = 1.94 Tree/Ha**	

Ramba	Ramba	1a	4.89	5.78	9.10	14.82
		2	5.09	5.77	1.08	5.24
		3	5.04	6.15	5.60	13.98
		4a	13.90	14.18	9.08	27.83
		5	0.97	0.73	7.04	13.21
		6a	12.22	5.58	5.58	14.30
		7a	3.35	5.39	12.82	23.26
	Darpangia	12	22.34	18.68	6.99	8.95
		11	29.99	35.57	4.93	15.84
		10	7.22	12.95	2.53	8.62
		Mean	**10.50**	**11.08**	**6.47**	**14.60**
		Y	**11.80 % = 1.24 Tree/Ha**		**24.71 %= 1.6 Tree/Ha**	

Baibali	Baibali	1	1.41	1.95	7.05	10.23
		2	4.29	3.29	10.05	18.95
		3	7.90	4.99	10.69	12.84
		4a	3.91	2.37	10.59	15.53
		4b	2.9	2.7	8.67	9.38
		5	1.29	2.72	6.63	18.45
		6	10.95	11.28	6.09	9.56
		7	5.10	5.91	8.85	7.33
		8	6.82	8.68	10.73	12.92
		9	17.88	15.47	18.42	19.10
		Mean	**6.24**	**5.94**	**9.78**	**13.43**
		Y	**11.21 % = 1 Tree/Ha**		**15.81 % = 1.1 Tree/Ha**	

Gallery	Gallery	13	6.11	16.96	2.30	3.81
		14	8.69	10.85	1.93	3.40
		15	2.64	3.63	0.65	3.20
		17	2.49	6.03	1.32	4.36
	Gallery (P)	16a	2.96	2.03	4.35	12.87
		18a	3.51	5.38	3.93	6.29
		19a	5.89	10.37	0.5	1.84
		20a	6.28	8.82	9.27	19.39
		21	1.95	3.68	2.22	5.6
		22	19.89	18.51	9.94	19.74
		23a	9	12.22	5.69	9.53
		Mean	**6.31**	**8.95**	**3.83**	**8.18**
		Y	**16.3 %= 1.03 Tree/Ha**		**23.58 % = 0.9 or 1 Tree/Ha**	

Central	Dimirijholi	1a	9.65	8.44	2.17	5.4
		2a	7.8	3.79	1.07	2.28
	Ambazora	3a	6.42	2.78	5.3	4.11
		2	9.58	10.57	4.55	13.8
		1	13.82	10.33	9	12.79
		6a	8.49	5.52	15.94	21.87
		4	1.87	1.28	9.35	9.64
		5	3.04	2.67	5.27	6.95
	Chandragiri (P)	11	25.76	32.99	1.67	3.24

		12	13.4	11.13	1.96	6.59
		Mean	**9.983**	**8.95**	**5.628**	**8.667**
		Y	**10.6 % = 1.06 Tree/Ha**		**17.55 % = 0.98 or 1 Tree/Ha**	

Eastern	Bramanshahi	3	41.7	79.4	2.6	3.7
		4	27.6	34.29	1.85	4.28
		5a	41.6	44.2	5.93	20.13
		5b	39.1	43.2	4.78	19.12
		6a	14.4	16.11	3.01	9.04
	Chandragiri	10	18.06	23.21	2.5	7.28
		9	27.4	17.5	4.1	4.6
		8	15.88	18	8.82	9.05
		7a	14.37	16.51	4	13.4
		7b	4.3	5.2	1.3	5.4
		Mean	**24.4**	**29.76**	**3.89**	**9.6**
		Y	**14.14 % = 3.45 Tree/Ha**		**26.73 % = 1.04 Tree/Ha**	

Tarasingi	Ambazora	7a	1.2	1.07	6.3	6.14
		8	0.87	2.54	2.51	6.41
		9a	22.72	11.2	7.08	8.32
		10a	8.58	7.09	0.94	5.2
	Chandragiri (P)	5a	33.4	38	8.74	19.63
		6a	22.4	16.3	12	28.09
		4	6.74	4.66	35.96	44.07
		3	0.02	0.08	8.56	7.75
		2	0.52	0.7	4.23	6.65
		1	0.63	0.01	2.4	10.25
		Mean	**9.708**	**8.165**	**8.872**	**14.251**
		Y	**9.98 % =0.97 or 1 Tree/Ha**		**18.25 % = 1.62 Tree/Ha**	

Ambazora	Ambazora(P)	11a	**0.09**	0.72	9.34	5.3
		12	7.14	5.82	1.97	5.23
		13a	4.04	8.99	2.72	5.84
		14	4.07	4.47	5.08	12.33
		15(P)	1.38	0.67	19.73	29.47
		15(b)	1.5	0.9	20.1	24.45

		16	8.44	14.66	14.21	25.46
		17	11.25	8.82	3.72	11.72
		18	21.15	18.38	10.64	28.24
		19	18.33	29.95	6.86	3.86
		Mean	**7.739**	**9.338**	**9.437**	**15.19**
		Y	**14.03 % = 1.08 Tree/Ha**		**18.3 % = 1.73 Tree/Ha**	

Ghogodo	Gundribadi	1	10.3	12.78	8.4	14.87
		2a	12.6	13.26	8.57	16.33
		3	6.41	7.09	2.41	6.01
		4	14.43	14.06	5.61	15.15
	Ghogodo	1	39	32.14	15.71	39.07
		2	65.71	46.71	21.57	34
		3a	14.51	14.22	14.85	32.62
		4a	3.89	10	4.72	12.8
		5a	21.7	17.88	7.94	20.76
		6	13.26	11.84	7.61	11.6
		Mean	**20.181**	**17.998**	**9.739**	**20.321**
		Y	**10. 56 % = 2.13 Tree/Ha**		**23.07 % = 2.25 Tree/Ha**	

2.11.8 To compensate for illicit fellings and other biotic factors, reduction in percentage of removal has been done by another 50%. Thus, the yield for Sal and other species in the Selection felling Series for different enumerated forest blocks that is arrived at by the above mentioned formula, has been reduced further by 50% and the limit on number of trees allowed to be felled per hectare has been accordingly given in **Table No. 2.6.**

Table No. 2.6 Yield Regulation Felling Series Wise including limit on per Hectare tree removal

Name of the Felling series	Area of the Felling Series in Hectare	From Smythy's Safe-guarding Formula				After Reduction by 50% for Biotic factors etc.			
		Allowed % Removal		Tree limit Per Ha.		Allowed % Removal		Tree limit Per Ha.	
		Sal	Non-Sal	Sal	Non-Sal	Sal	Non-Sal	Sal	Non-Sal
Western	4460.63	11.80	24.70	1.14	1.00	5.90	12.35	0.57	0.50

Darpangia	5004.3	11.53	18.70	1.01	1.94	5.77	9.35	0.51	0.97
Ramba	5280.46	11.80	24.71	1.24	1.60	5.90	12.36	0.62	0.80
Baibali	5999.09	11.21	15.81	1.00	1.10	5.61	7.91	0.50	0.55
Gallery	4675.26	16.30	23.58	1.03	0.90	8.15	11.79	0.52	0.45
Central	6330.01	10.60	17.55	1.06	0.98	5.30	8.78	0.53	0.49
Eastern	3046.23	14.14	26.73	3.45	1.04	7.07	13.37	1.73	0.52
Tarasingi	5982.027	9.98	18.25	1.00	1.62	4.99	9.13	0.50	0.81
Ambazora	5449.821	14.03	18.30	1.08	1.73	7.02	9.15	0.54	0.87
Ghogodo	5615.069	10.56	23.71	2.13	2.25	5.28	11.86	1.07	1.13
Average Removal	**51842.905**	50% reduction has been done as abundant caution to compensate for biotic and unaccounted factors. Considering the fact that some of the compartments have Sal forests and some of the compartments are miscellaneous forests therefore the nearest number of trees available for marking is 0.7 TREE (SAL/NON SAL) PER HA for whole selection working circle.							

2.12 Sequence of Felling: The coupes have been made by taking the natural features compartment boundaries, administrative boundaries of different ranges and the crop condition, each felling series is divided into 10 annual coupes so that the entire area of Felling Series is covered in the plan period. The coupe working will commence from 2015-16 subject to moratorium on green felling from time to time. The sequence of felling is given in **Table 2-7**.

Table 2-7 Felling Series wise Sequence of Felling and Annual Coupe Programme

1.Western Felling Series

Mujagada Range

Forest Block	***Year***	***Coupe***	***Compartment***	***Area of the***	***Area of the***
Gallery (P)	2015-16	GAL I	1	379.597	379.597
	2016-17	GAL II	2	354.778	354.778
	2017-18	GAL III	3a	487.05	487.05
	2018-19	GAL IV	4a	324.796	324.796
	2019-20	GAL V	5a	543.328	543.328
	2020-21	GAL VI	6a	191.059	495.409
			7a	304.35	
	2021-22	GAL VII	8a	422.675	422.675
	2022-23	GAL VIII	9a	393.926	393.926
	2023-24	GAL IX	10	498.853	498.853
	2024-25	GAL X	11a	355.704	560.219
			12	204.515	

2. Darpangia Felling Series					
Mujagada Range					
Odinabadi	2015-16	Odinabadi I	1	233.104	233.104
Darpargia (P)	2016-17	DPG II	1	689.441	689.441
	2017-18	DPG III	2	662.1	662.1
	2018-19	DPG IV	3	622.315	622.315
	2019-20	DPG V	4	444.27	444.27
	2020-21	DPG VI	5	476.473	476.473
	2021-22	DPG VII	6	433.931	433.931
	2022-23	DPG VIII	7	862.874	862.874
	2023-24	DPG IX	8	236.271	236.271
	2024-25	DPG X	9	343.524	343.524

3. Rambha Felling Series					
Mujagada Range					
Rambha	2015-16	RAM I	1a	646.508	646.508
	2016-17	RAM II	2	794.154	794.154
	2017-18	RAM III	3	467.919	467.919
	2018-19	RAM IV	4a	577.056	577.056
	2019-20	RAM V	5	576.627	576.627
	2020-21	RAM VI	6a	490.957	490.957
	2021-22	RAM VII	7a	823.678	823.678
Darpangia (P)	2022-23	DPG VIII	12	306.174	306.174
	2023-24	DPG IX	11	154.051	154.051
	2024-25	DPG X	10	443.336	443.336

4. Baiballi Felling Series					
Mujagada Range					
Baibali	2015-16	BBL I	1	666.689	666.689
	2016-17	BBL II	2	698.562	698.562
	2017-18	BBL III	3	688.720	688.720
	2018-19	BBL IV	4(p)	452.136	793.363
	2019-20	BBL V	4(b)	341.227	
	2020-21	BBL VI	5	419.424	419.424
	2021-22	BBL VII	6	548.118	548.118
	2022-23	BBL VIII	7	933.468	933.468
	2023-24	BBL IX	8	677.944	677.944
	2024-25	BBL X	9	572.804	572.804

5. Gallery Felling Series					
Mujagada Range					
Gallery (P)	2015-16	GAL I	13	304.322	739.505
			14	435.183	
	2016-17	GAL II	15	644.329	644.329
	2017-18	GAL III	17	514.301	514.301
***Gallery* Range**					
	2018-19	GAL IV	16a	432.495	432.495
	2019-20	GAL V	18a	375.436	375.436
	2020-21	GAL VI	19a	466.613	466.613
	2021-22	GAL VIII	20a	295.476	295.476
	2022-23	GAL VIII	21	386.064	386.064
	2023-24	GAL IX	22	388.711	388.711
	2024-25	GAL X	23a	432.333	432.333

6. Central Felling Series					
Gallery Range					
Dimirijholi	2015-16	DMJ I	1a	644.163	644.163
	2016-17	DMJ II	2a	856.511	432.425
Ambazora	2017-18	AMZ III	3a	587.943	587.943
	2018-19	AMZ IV	2	644.881	644.881
	2019-20	AMZ V	1	559.525	559.525
	2020-21	AMZ VI	6a	694.86	694.86
	2021-22	AMZ VII	4	713.76	713.76
	2022-23	AMZ VIII	5	583.691	583.691
Chandragiri	2023-24	CNG IX	11	780.803	780.803
	2024-25	CNG X	12	263.873	263.873

7. Eastern Felling Series					
Tarasingi Range					
Brahamansahi	2015-16	BMS I	3	364.811	364.811
	2016-17	BMS II	4	243.343	243.343
	2017-18	BMS III	5a(p)	245.05	518.700
	2018-19	BMS IV	5a(b)	273.65	
	2019-20	BMS V	6a	355.292	355.292
Chandragiri	2020-21	CNG VI	10	392.091	392.091
	2021-22	CNG VII	9	379.46	379.46
	2022-23	CNG VIII	8	320.238	320.238
	2023-24	CNG IX	7a	373.088	472.295
	2024-25	CNG X	7b	99.207	

8.Tarasingi Felling Series					
Tarasingi Range					
Ambazora	2015-16	AMZ I	7a	611.979	611.97
	2016-17	AMZ II	8	684.257	684.25
	2017-18	AMZ III	9a	500.054	500.05
	2018-19	AMZ IV	10a	591.817	591.81
Chandragiri	2019-20	CNG V	6a	383.732	383.73
	2020-21	CNG VI	5a	478.777	478.77
	2021-22	CNG VII	4	527.426	320.23
Gallery Range					
	2022-23	CNG VIII	3	866.476	866.47
	2023-24	CNG IX	2	651.831	651.83
	2024-25	CNG X	1	685.678	685.67

9. Ambazora Feling Series					
Tarasingi Range					
Ambazora	2015-16	AMZ I	11a	603.804	603.804
	2016-17	AMZ II	12	607.527	607.527
	2017-18	AMZ III	13a	653.618	653.618
	2018-19	AMZ IV	14	692.432	692.432
	2019-20	AMZ V	15(p)	354.216	766.365
	2020-21	AMZ VI	15(b)	412.149	
	2021-22	AMZ VII	16	440.605	440.605
	2022-23	AMZ VIII	17	627.722	627.722
	2023-24	AMZ IX	18	565.748	565.748
	2024-25	AMZ X	19	492.000	492.000

10. Ghogada Felling Series					
Tarasingi Range					
Gundribadi	2015-16	GNB I	1	661.788	661.788
	2016-17	GNB II	2a	460.957	460.957
	2017-18	GNB III	3	705.099	705.099
	2018-19	GNB IV	4	641.417	641.417
Ghogada	2019-20	GHD V	1	531.994	531.994
	2020-21	GHD VI	2	521.640	521.640
	2021-22	GHD VII	3a	634.213	634.213
	2022-23	GHD VIII	4a	72.116	72.116
	2023-24	GHD IX	5a	666.302	666.302
	2024-25	GHD X	6	719.543	719.543

2.13 Method of Execution of Felling

2.13.1 Demarcation of Annual Coupes

i) The annual coupes shall be demarcated in the winter season (October to December) preceding to the year of working.

ii) If any portion of the coupe line coincides with compartment or sub-compartment line, it need not be laid on the ground. The compartment and sub-compartment line shall be maintained by putting double white paint rings on the trees standing on the boundary at visible distance.

iii) The rest of the coupe lines shall be laid by clearing 1.5m wide strip along the coupe boundary and putting stone cairns (white painted) at visible distance. Clearance shall be restricted for the purpose of identification and visibility only. This clearing will mean forming a clear cutline of not less than 1.5 meter wide and would include removal of brush wood cut flush to the ground that hinder visibility by coming in the line of sight. No felling of any kind shall be done along the strip. Double coal tar rings shall be given on the trees standing on the strips.

iv) In case a coupe overlaps two or more compartments each compartment shall be treated as a lot. This will ensure proper maintenance of compartment histories. In all these cases, the lot line should be demarcated with single coal tar ring on the trees standing along the compartment and/or sub-compartment line.

v) Coupes shall be indicated by single boards at corners or at points of intersection of road, inspection paths, boundary lines of reserved forests etc. The signboard should contain the name of the felling series, the number of the coupe, its area, year of working and number of the compartment.

vi) Annual coupes shall be demarcated by a forest officer not below the rank of Forest Ranger and shall be checked by a forest officer not below the rank of Asst. Conservator of Forests before the marking is taken up. Demarcation should be carried out by using GPS.

vii) Coupes shall be indicated by signboards at corners or at points of intersection with roads, inspection paths and boundary lines of reserved forests. The signboards should contain the name of the felling series, the serial number of the coupe, its area, year of working and number of the compartment.

2.13.2 Marking Rules

1. The Marking Officer shall assess the illicit felling and the wind fallen trees uprooted due to the cyclonic storms inside the annual coupes prior to marking. The quantum of marking shall be reduced by the extent of such trees found inside the coupe. Thus the net trees to be marked should be difference between the permissible number of trees due to marking

and the number of wind fallen trees and the trees illicitly felled during the period between last felling and the subsequent felling. In case the difference is nil or negative, then no marking shall be done in that coupe.

2. All dead, dying, seriously diseased, uprooted and fallen trees shall be marked for felling. A tree whose top one third is already dead shall be treated as a dying tree. However, 2-3 such trees per hectare shall be retained for shelter to the wildlife like birds, Lizards etc. Careful and selective marking of the trees is warranted here and all those dead or dying trees being used by wild life or have the potentiality of being used due to the presence of certain type of wild life in that area or in the vicinity should not be removed and be left alone.
3. Out of the trees above exploitable girth class available, the trees limit of Sal per 1 ha and 1 Non-Sal/ha **(as per Table 2-6)** shall be marked for felling. During marking the map shall be consulted for better guidance where marking can be planned.
4. The trees retained (reserved trees) should be well grown and vigorous. They shall be painted with single white paint ring at breast height and at the base, and shall be serially numbered in each coupe. The list of such trees shall be maintained in the compartment history and coupe register.
5. If a tree is forked below the breast height, it shall be taken as two trees; if it is forked above the breast height it shall be taken as one tree.
6. All trees to be marked for felling shall be given two blazes of size 15 cm x 15 cm, one at breast height and the other at a place as close to the ground as possible and marked with a marking hammer and numbered serially.
7. Marking shall not be done within 50 meters of roadside and either side of nallah banks. Similarly, marking shall not be done within 50-meter radius of the key habitat of wild animals such as den, salt lick, wallows, game tank and water holes.
8. **I**f a tree is marked for felling, no other tree shall be marked within 15 meter radius of that tree.
9. Marking should not be done in areas where the slope of terrain is more than 30°except for dead and uprooted trees.
10. Only those trees shall be marked whose removal will not create a permanent gap in the canopy and will not affect regeneration of the flora.
11. Fruit bearing trees such as mahua, mango, tamarind, amla, char, kendu, harida, bahada, bela, kusum etc shall not be marked for felling.
12. All climbers shall be cut prior to marking.
13. No trees in the approach class shall be marked except for the removal of the dead trees and definitely defective trees (trees infected by *Polyporus shoreae* i.e. Sambara akhia and *Fomes caryophylli* i.e heart wood rot) only.

2.13.3 Marking of Trees

I. Before marking the trees for felling, the Marking Officer shall do the following exercise to assess the number of trees to be marked.
II. To determine the maximum number of trees that can be marked for felling in the coupe as per the yield calculation and say the figure is 'A'
III. To assess the irregular removal of trees after the last felling through illicit felling, salvage of dead / uprooted trees and fire burnt etc. and say the figure is 'B'.
IV. To enumerate the existing dead and uprooted tree in the coupe after allowing the retention for wildlife habitat and say the figure is 'C' which is to be removed definitely.

V. To enumerate the available standing live trees of exploitable / harvestable girth as per Marking Rule and say the figure is 'D'

VI. To add 'B' (already removed) and 'C' (to be removed definitely) and obtain the quantum of total removal and say the figure is 'E'.

VII. To compare between 'A' and 'E' and if 'E' is more than 'A' then no further marking of Standing live tree is necessary since it is exceeding the prescribed limit of removal. Only the dead and uprooted trees shall be marked for removal.
VIII. To determine the number of standing live tree to be marked say 'F' = 'A' – 'E' in the event of 'E' is less than 'A'.

2.13.4 Execution of Felling

I. The Marking Officer shall exercise utmost care to properly select the required number Of standing live tree i.e. 'F' in the coupe following the marking rules scrupulously and the marking on the trees shall be done in the following manner.
II. All trees to be marked for felling shall be given two blazes approximately of size 15 cm. x 15 cm., one at breast height and other at the base as close as to the ground facing the lower slope in opposite direction to the upper blaze.
III. The marking hammer issued to the Marking Officer shall be branded along with numbering the trees serially with mechanical digit on these two blazes.
IV. If a tree is forked below breast height, it shall be taken as two trees and if it's forked above the breast height then it will taken as one tree.
V. Sound, dominant and vigorously growing trees of exploitable girth retained in the coupe shall be painted with single white paint ring at the breast height and at base and serially numbered in each coupe. The list of such trees shall be maintained in the compartment history and coupe register.

2.13.5 Working Agency

2.13.5.1 Though Orissa Forest Development Corporation Limited (OFDC) is entrusted with the working of timber coupes of this Division at present, but the discretion lies with the Government / Higher Authorities of Forest Department whose decision shall be followed for assigning the task to any working agency

2.14. Subsidiary Silvicultural Operation:

2.14.1 In general it denotes all operations carried out immediately after the main felling to induce the growth and development of the crop. This is most vital operation for the forests allotted to Selection Working Circle and usually carried out in the year following the main felling. Removal and disposal of slash and debris of main felling coupled with some hygienic operations like climber cutting, soil conservation measures etc. are the major components of this operation. However the details are furnished below.

- A systematic approach shall be adopted through preparation of treatment plan and treatment map of the coupe well in advance.
- All fallen pieces of branches, lops and tops, small woods left during the main felling which would cause fire hazard shall be removed.
- All marked trees left standing shall be felled and removed.
- All the trees damaged in the main felling and having no scope for survival shall be felled and removed.
- All high stumps shall be cut flush to the ground
- The left over climbers creating hindrance to the growth of the crop shall be cut.
- Soil and moisture conservation measure shall be taken up after assessing the requirement for individual nalla / stream basis. Loose boulder check dams / dry stone packing / gully plugging etc. shall be taken up starting from the upper end of the nalla towards down side
- Blank area of more than half hectare created by Phailin and Hud Hud cyclone shall be tackled through gap planting of indigenous species as desired by Divisional Forest Officer.
- Wildlife habitat if disturbed during the main felling shall be restored as per the prescription of Wildlife Overlapping Working Circle with special emphasis on water holes, salt licks, meadows and special and unique habitats

2.15 Control

2.15.1 Maintenance of Compartment Histories and other records for each selection coupe or compartment, and felling series shall be done in accordance with the Working Plan Code. Annual return of Coupe Mark and work shall also be send to Working Plans wing for record.

2.16 Miscellaneous Regulations

2.16.1 Fire Protection: During summer season, the forest crops are susceptible to fire hazard. So

it is essential to protect the crop from fire by maintaining the fire lines on the boundaries of each coupe during the month of January since the incident of fire is usually started during February in Ghumsur North. The Orissa Forest Fire Protection Rules, 1979 and provisions of Chapter-XVII of Orissa Forest Department Code shall be followed. Further firewatchers should be engaged from month of February till June. VSS wherever existing shall also be motivated to prevent fire as well as to take instant steps to extinguish the same if occurs. The engagement of watcher shall form an integral component of subsidiary silvicultural operation.

2.16.2 Grazing: The coupes shall be closed for grazing for five years including the year of working. The remaining areas shall be open to grazing subject to the Orissa Forest (Grazing of Cattle) Rules, 1980. However, lopping is strictly prohibited.

2.16.3 Rights and Concession: Rights and concessions shall be regulated as per **Chapter-I of Part I**. Rights and concessions for this Working Circle shall be regulated in accordance with the provisions of the relevant gazette notification of the respective forest blocks.

2.16.4 Sample Plots: The sample plots inventory enumerated during field work with the help of GPS shall be maintained and reviewed for future studies this working circle. A minimum of three inventory points from each forest blocks shall be studied.

2.16.5 Intermediate Revision: Intermediate revision is not anticipated during the Plan period. However, if necessary, prescriptions may be revised after five years jointly by the Regional Chief Conservator of Forests (territorial) and the Conservator of Forests (Working Plans). Any deviation shall be subject to sanction of competent authority.

2.16.6 Cost Norm: The cost norm for implementation of this Selection Working Circle is discussed in **Chapter-10 of Part-II.**

ADMINISTRATIVE MAP SHOWING YEARWISE REHABILITATION WORKING CIRCLE AREAS OF GHUMSUR NORTH FOREST DIVISION

0 1.5 3 6 9 12 Kilometers

SCALE : 1: 75,000

MAHIPUR RANGE
NAYAGARH DIVISION

DASAPALA RANGE
NAYAGARH DIVISION

TIKABALI RANGE
PHULBANI DIVISION

KARADA RANGE
PHULBANI DIVISION

BUGUDA RANGE
GHUMSUR SOUTH DIVISION

SURADA RANGE
GHUMSUR SOUTH DIVISION

T A R A S I N G A N G E

S U R A D A R A N G E

M U J A G U N A R A N G E

J A G A D A L A R A N G E

B U G U D A R A N G E

LEGEND

- DIVISION BOUNDARY
- RANGE BOUNDARY
- SECTION BOUNDARY
- BEAT BOUNDARY
- DIVISION HQ.
- MAJOR DISTRICT ROAD
- MAJOR ROAD
- OTHER ROAD
- DRAIN
- RANGE HQ.
- FOREST
- RIVER
- WATER BODY
- SETTLEMENT
- I.B
- Medical
- P.O
- P.S
- R.H

REHABILITATION SERIES YEAR WISE

- 2015-16
- 2016-17
- 2017-18
- 2018-19
- 2019-20
- 2020-21
- 2021-22
- 2022-23
- 2023-24
- 2024-25

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Under the Guidance of D.F.O Ghumsur North Forest Division

CHAPTER - III

REHABILITATION WORKING CIRCLE

3.1 General Constitution

3.1.1 In this working circle, broadly two types of areas have included in this working circle. They are-

i) **Degraded forest blocks-** The forest blocks which are badly degraded due to severe biotic interference such as illicit felling, repeated fires, uncontrolled grazing and encroachment are allotted to this working circle. These adverse factors have even led to poor crop and soil quality. Most of the blocks allotted to the rehabilitation working circle in the outgoing plan have again been included here. In addition, such blocks that were previously been worked under Selection working Circle of the outgoing plan have also been added where in degradation has occurred over the years. The forest blocks allotted to this working circle have similar conditions as stated above. A few of the forest blocks have wild life. Some of the blocks are rich in bamboo crop. Regeneration status of this working circle has given in **Annexure-XXXVII.**

ii) **Existing Old and new plantation areas-** Under this circle the old existing plantations raised during the outgoing plan period and/or prior to the outgoing plan period have been included. These areas are mostly old teak and miscellaneous plantation with inclusion of exotic species like Acacia species and Eucalyptus species in abundance. These plantations after the fourth year maintenance works have never been cared for and majority of the plantations do not show the desired rate of survival or growth. As per the 1st PWPR discussion , These areas need intensive, need based and site specific silvicultural interventions including tending operations like pruning, singling, high stump cutting along with cultural operations. The old plantations survivable Percentage has given in **Annexure-XXXVIII.**

3.1.2 Forest blocks like Paichalia RF, Jaganathprasad RF, Ragada RF, Tilik RF and Kaliamba RF which were earlier included either in part or full under Selection Working Circle have now been included in this working circle. Degradation observed over the years in those forest tracts rendered them unsuitable to be kept under selection working circle. These forest areas have been overall reduced to open forest and scrub type vegetation in different patches of the forest blocks and more specifically near the fringe areas of the forest, bordering and near the habitations. These degraded forest areas and the old plantations need to be gap filled only after removal of growth of unwanted species and weed infestations and need to be supplemented with soil and moisture conservation measures to

check soil erosion and also to rejuvenate the depleting ground water table. These areas also need rigid protection and intensive nursing to revive their productivity during this Plan period.

3.1.3 The total area allotted to this working circle in the outgoing plan period was 20,579.337 hectares which in this revised plan now stands at **33470.072** hectares which includes plantations previously raised prior to outgoing plan period, **3888** hectares of block plantations raised from 1995-96 to 2012-13, **850** hectares of bamboo plantation and **13,384** hectares of gap plantation totally amounting to **18,122** hectares. Allotment to this working circle has been made based on the detailed analysis of crop conditions.

3.2 General Observation and Vegetation

3.2.1 Since the forests included in this working circle are widely scattered and spread over all the ranges, almost all the forest types occurring in the Division are well represented. However, the vegetation of these forests can be classified as 5B/C_1C and 5B/C_2 in degradation stage. The detailed description of these forest types and their vegetation has already been dealt in **Chapter-2A of Part I.** The forest mostly is a scrub forest with scattered trees. General condition of the crop is very open and consists mostly of inferior hardy species or Coppice growth of Sal. Soil is generally disturbed due to heavy biotic interference. The soil is highly erodible and susceptible to sheet and gully erosion. The water retaining capacity of these soils is generally low and they are highly prone to erosion due to steep slopes forming large number of gullies and ravines. The top soil has been lost in most of the forest blocks leaving behind hard, exposed, rocky surface or calcareous clayey soil. There are however scattered patches of better soil containing poor and degraded coppice growth of Sal and its associates. In certain sheltered pocket where protection has been provided, Sal has come up to pole stage. All the Sal rooted waste, degraded miscellaneous scrub, degraded and eroded lands of these forests previously incorporated under this working circle in the outgoing plan and degraded coppice forests forms this working circle.

3.2.2 These forests can be improved by cultural operations supplemented by artificial regeneration have been included here. Thus, the forests under this working circle are mostly open, sal and mixed miscellaneous forests with poor natural regeneration, (though sufficient root stock is also available at places). In fact, all such areas are found in the close proximity to the human habitation. Hence, involvement of the locals through JFM is of paramount importance under this working circle.

3.2.3 This Working Circle is the second largest independent working circle after Selection working circle and covers major area of the Division. These areas continue to be under regular biotic interference. In fact, the stems are being removed at every stage of their growth for use as fencing materials and firewood. Although most of these forests have been adversely affected and many have

even reduced to scrubs, they still have sufficient root stock and can be successfully regenerated through appropriate silvicultural operations coupled with protection measures.

3.2.4 The forest crop is mostly open with poor to deficient regeneration and consists of species *like Shorea robusta, Cleistanthus collinus, Madhuca indica, Anogeissus latifolia, Boswellia serrata, Dalbergia paniculata, Buchanaania lanzan, Acacia catechu* occurs in number of blocks included here. They are generally of coppice origin in sapling to pole stage. Though Sabai grass occurs in eroded patches, the surface generally remains exposed. These exposed surfaces look green during the rainy and winter seasons due to growth of weeds and grasses. However during the summer season from February to June these surfaces look exposed.

3.2.5 All the old plantations existing in the RF blocks prior to the outgoing plan period are also included here in addition to those plantations that have been created during the outgoing plan period. In fact, planted areas included here are mostly of Teak and miscellaneous species. However, in most of such plantations, there is no authenticated record of either the year in which these plantations were raised or the operations like thinning were not carried out. In absence of any such records, it was difficult to identify the exact year of their formation or the exact extent of many such existing plantation areas. However, said information on the year of formation and extent of their areas has been assessed approximately basing on the field observations only and few were verified in Range records and reflected in the respective compartment history files.

3.2.6 Even the plantations have been subjected to grazing; illicit felling and removal. Thus, not only proper planning must be adhered to, the schedule of various operations is essential to achieve the objectives of management. With the introduction of fast growing species including genetically improved clone planting stock, management of plantations has become increasingly more intensive. Sal regeneration is very poor in most of these blocks.

3.3 Special Objectives of Management

3.3.1 The special objectives set for this working Circle are within the ambit of management objectives of management and to regenerate the degraded forest as well as tending of the existing plantations are enumerated as follows:

I. To enhance soil productivity by checking soil erosion and replenishing the ground water through moisture and soil conservation measures.

II. To boost up the existing natural growth by appropriate cultural operations.

III. To re-stock barren areas (of course, invariably small in extent) through artificial regeneration of most desirable species.

IV. To meet the bona-fide requirements of local inhabitants from re-stocked areas and ensuring active participation of such communities in the entire process of management through the concept of JFM.

V. To provide effective protection against illicit removal, grazing and fire so as to check further retrogression of site and destruction of left over forest growth.

VI. To increase the biodiversity, heterogeneity and productivity of the forests making them fit enough for inclusion in selection working circle.

VII. To nurse the existing old plantations by appropriate tending operations followed by plantations.

3.4 Area and Allotment

3.4.1 Names of the blocks vis-à-vis their corresponding areas included here are reflected Range wise in the tabular statement showing blocks, compartment and area details at **Table 3-1**. Out of 22 forest blocks, 21 forest blocks have been included in this working circle either in part or full except for Odianbadi RF which has totally been allotted to selection working circle. The total area allotted to this Working Circle is **33470.072** hectares.

3.5 Analysis and Valuation of Crop

3.5.1 The areas covered under this working circle are in various stages of degradation with majority of the blocks being highly degraded. These areas have even become ecologically fragile. Heavy biotic interference, due to illicit felling, fire, grazing and other factors has contributed to this situation. Though regeneration is generally poor, few patches of coppice growth and scattered mature (of course, malformed) trees are also present in the allotted area, particularly in forest blocks like Kaliamba RF, Tiliki RF, Jaganathprasad RF, Kullada RF, Paichallia RF, Ragada RF, Malati RF, Vinjigiri RF, Chadiapalli RF, Dumdumi (East) RF and Dumdumi (West) RF.

3.5.2 The entire working circle has been stock mapped and the stock maps have been attached to the respective Compartment History files. The average density of the crop included here from 0.10 to over 0.40.

3.5.3 The existing miscellaneous plantations have inadequate stocking needing only protection and tending operations and hence no enumeration has been carried out (some natural growth has come up in between over the failure areas). Most of these plantations are found to be in the age group of 3 years to over 20(twenty) years. Though the species planted and existing *are Cassia siamea, Dalbergia*

sissoo, Acacia catechu, Gmelina arborea, Dendrocalamus strictus, Emblica officinalis etc, the miscellaneous plantations are thinly populated and the main cause for it is the continued biotic interference coupled with neglect in general after the maintenance work of these plantations is over. Hence, all these plantations require complete protection measures coupled with tending operations only to boost their growth.

3.5.4 Teak plantation exists over large area and is in need of protection measures coupled with thinning operations. Though no systematic records are available for all these plantations, the age is found to be varying from about 7 years to over 15 years. For want of thinning operations, the crop condition is not having uniform age. In fact, selective illicit felling of large size trees has further led to degradation in the quality class of old teak plantations which are now mostly of Q.III/Q.IV

3.7 Constitution of Rehabilitation Series and Cycle

3.7.1 Rehabilitation Series have been constituted after detailed field verification, and each series is further divided into annual rehabilitation coupes. While constituting such series, care has been taken to restrict the series as far as possible within the Range jurisdiction to which the particular forest block belongs; this has been done mainly for administrative convenience and better implementation of the prescriptions. In all, 6 (Six) number of rehabilitation series have been constituted. However, a statement of allocation of blocks and compartments Range wise and the different rehabilitation series along with corresponding area is given below in **Table 3-1.**

Table 3-1	**Range wise allocation of Forest Block of Rehabilitation Working Circle**				
MUJAGADA RANGE					
Range	**Rehabilitation**	**Block**	**Compt.**	**Compt.**	**Range**
MUJAGADA	Kullada	Tiliki	1a	529.939	
		Tiliki	1b	174.464	
		Tiliki	1c	20	
		Tiliki	2a	280.291	
		Tiliki	2b	549.292	
		Kullada	1a	425.838	
		Kullada	1b	105	
		Kullada	2a	167.376	
		Kullada	2b	65	
		Kullada	3a	348.414	
		Kullada	3b	68	
		Kullada	4	350.789	
		Rambha	1b	21.223	
		Rambha	4b	5.261	
		Rambha	6b	43.75	

		Rambha	7b	24.282	
		Darpangia	1b	12.91	
		Baiballi	10	324.322	
		Baiballi	11	475.84	
		Baiballi	12	449.535	
		Jaganathprasad	11a	474.788	
		Jaganathprasad	11b	2.428	
		Gallery	3b	4.047	
		Gallery	4b	10	
		Gallery	4c	26.249	
		Gallery	5b	7	
		Gallery	5c	40.2	
		Gallery	6b	39.255	
		Gallery	6c	129.521	
		Gallery	6d	6	
		Gallery	7b	10.094	
		Gallery	7c	16.228	
		Gallery	7d	6.07	
		Gallery	7e	14.771	
		Gallery	8b	11.4	
		Gallery	9b	10	
		Gallery	11b	69.047	***5318.624***
GALLERY RANGE					
GALLERY		Dimirijholli	1b	5	
		Dimirijholli	1c	4.002	
		Dimirijholli	2b	10.198	
		Dimirijholli	2c	1.736	
		Gallery	16b	10.724	
		Gallery	18b	8	
		Gallery	19b	6.475	
		Gallery	20b	5	
		Gallery	23b	2	
		Gallery	23c	9.6	
		Chadiapalli	1a	191.386	
		Chadiapalli	1b	55	
		Chadiapalli	1c	1.781	
		Ambajhara	3b	2.428	
		Ambajhara	6b	11.967	***325.297***
CENTRAL RANGE					
	Tiliki	Tiliki	3a	338.729	
		Tiliki	3b	338.163	
		Tiliki	4	567.491	
		Tiliki	5a	659.385	

		Tiliki	5b	60	
		Tiliki	6a	438.86	
		Tiliki	6b	125	
		Vinjigiri	1a	301.804	
		Vinjigiri	1b	93.637	
		Vinjigiri	2a	732.297	
		Vinjigiri	2b	15	
		Vinjigiri	3a	395.39	
		Vinjigiri	3b	94.334	
		Vinjigiri	4a	281.928	
		Vinjigiri	4b	75	
	Ragada	Ragada	1	567.584	
		Ragada	2a	505.383	
		Ragada	2b	7.77	
		Ragada	3a	367.867	
		Ragada	3b	439.296	
		Ragada	4a	819.339	
		Ragada	4b	139.941	
		Ragada	5a	258.171	
		Ragada	5b	284.962	
		Ragada	6a	452.796	
		Ragada	6b	40	
CENTRAL		Ragada	7a	787.495	
		Ragada	7b	32.335	
		Ragada	8	408.64	
		Ragada	9	760.967	
		Ragada	10a	469.474	
		Ragada	10b	30	
	Kaliamba	Kaliamba	1	905.14	
		Kaliamba	2	898.745	
		Kaliamba	3	611.25	
		Kaliamba	4a	527.135	
		Kaliamba	4b	58	
		Kaliamba	5a	217.968	
		Kaliamba	5b	199.952	
		Kaliamba	6a	280.295	
		Kaliamba	6b	125	
		Malati	1a	197.132	
		Malati	1b	569.278	
		Dumdumi(East)	1a	374.038	
		Dumdumi(East)	1b	214.914	
		Dumdumi(West)	1a	283.424	
		Dumdumi(West)	1b	140	***16491.31***

Tarasing					
TARASING	Paichalia	Ambazora	7b	15.985	
		Ambazora	9b	15	
		Ambazora	11b	18.818	
		Ambazora	13b	20	
		Brahmansahi	1	534.318	
		Brahmansahi	2	785.852	
		Brahmansahi	5b	40	
		Brahmansahi	6b	25	
		Chandragiri	5b	20	
		Chandragiri	6b	12.141	
		Gundribadi	2b	10	
		Ghogado	3b	16.416	
		Ghogado	3c	17.393	
		Ghogado	4b	209.25	
		Ghogado	4c	295.407	
		Ghogado	4d	21.76	
		Ghogado	5b	8.865	
		Ghogado	5c	6.893	
		Ghogado	5d	25.01	
		Paichalia	1	556.609	
		Paichalia	2	554.666	
		Paichalia	3	709.624	***3919.007***
Jagannathprasad Range					
JAGANATHPRASAD		Paichalia	4	679.522	
		Paichalia	5a	693.643	
		Paichalia	5b	8	
	Jagannathprasad	Jaganathprasad	1	925.01	
		Jaganathprasad	2a	600.86	
		Jaganathprasad	2b	25	
		Jaganathprasad	3a	575.648	
		Jaganathprasad	3b	28.804	
		Jaganathprasad	4	428.976	
		Jaganathprasad	5a	479.995	
		Jaganathprasad	5b	142.223	
		Jaganathprasad	6a	423.518	
		Jaganathprasad	6b	110.476	
		Jaganathprasad	7	544.096	
		Jaganathprasad	8	482.541	
		Jaganathprasad	9a	817.885	
		Jaganathprasad	9b	45	
		Jaganathprasad	10a	393.792	
		Jaganathprasad	10b	10.846	***7415.835***

3.7.2 The existing teak and miscellaneous plantations have not been divided into series. The entire existing teak plantation and miscellaneous plantation constitute **18,122** hectares.

3.7.3 The tending areas have been considered taking the entire Division as a single unit. However, the DFO after detail survey should take up the activities and form annual targets.

3.7.4 Since the areas allotted to this circle are to be treated with in the plan period, the plantation cycle of 10 years is fixed to coincide with the plan period.

3.8 Rotation, Yield and Regulation

3.8.1 As timber production is not the objective here, no rotation period is prescribed and hence no yield regulation is required. However, removal of illicitly felled and fallen trees and thinning in congested crop areas is prescribed here.

3.9 Division into Annual Coupes

3.9.1 In order to execute the rehabilitation measures, each rehabilitation series has been divided into 10 annual coupes to facilitate systematic operations. Care has been taken to delineate the annual coupes in such a manner that continuity of the rehabilitation measures is ensured to have sustained efforts.

3.9.2 The annual coupe shall be attended to as per the sequence prescribed in the revised plan. **Table 3.2** gives the annual coupes (rehabilitation series wise) with its number and the year of treatment along with the name of the forest block, its compartment number and area included in the coupe. The annual coupes of all the series have also been depicted in the GIS Management Map Layer (scale 1:25,000). The coupe layer has been developed under the assistance of Mapping farm, Bhubaneswar.

Table 3-2 Rehabilitation Series wise Annual Coupe Programme

1. Tiliki Treatment Series

Central Range

Tiliki	2015-16	TL I	3a	338.729	338.729
	2016-17	TL II	3b	338.163	338.163
	2017-18	TL III	4	567.491	567.491
	2018-19	TL IV	5a	659.385	659.385
	2019-20	TL V	5b	60	498.86
			6a	438.86	

	2020-21	TL VI	6b	125	520.441
Vinjigiri			1a	301.804	
			1b	93.637	
	2021-22	TL VII	2a(p)	732.297	367.485
	2022-23	TL VIII	2a(b)		364.812
	2023-24	TL IX	2b	15	410.39
			3a	395.39	
	2024-25	TL X	3b	94.334	451.262
			4a	281.928	
			4b	75	
Series Total					**4517.018**

2. Ragada Treatment Series					
Central Range					
Ragada	2015-16	RD I	1	567.584	567.584
	2016-17	RD II	2a	505.383	505.383
	2017-18	RD III	2b	7.77	814.933
			3a	367.867	
			3b	439.296	
	2018-19	RD IV	4a	819.339	819.339
	2019-20	RD V	4b	139.941	398.112
			5a	258.171	
	2020-21	RD VI	5b	284.962	737.758
			6a	452.796	
	2021-22	RD VII	6b	40	827.495
			7a	787.495	
	2022-23	RD VIII	7b	32.335	440.975
			8	408.64	
	2023-24	RD IX	9	760.967	760.967
	2024-25	RD X	10a	469.474	499.474
			10b	30	
Series Total					**6372.02**

3. Jagannathprasad Treatment Series					
Jagannathprasad Range					
Jaganathprasad	2015-16	JP I	1(p)	925.01	475.21
	2016-17	JP II	1(b)		449.8
	2017-18	JP III	2a	600.86	625.86
			2b	25	

	2018-19	JP IV	3a	575.648	575.648
	2019-20	JP V	3b	28.804	457.78
			4	428.976	
	2020-21	JP VI	5a	479.995	622.218
			5b	142.223	
	2021-22	JP VII	6a	423.518	817.31
			10a	393.792	
	2022-23	JP VIII	6b	110.476	593.017
			8	482.541	
	2023-24	JP IX	9a	817.885	817.885
	2024-25	JP X	7	544.096	599.942
			9b	45	
			10b	10.846	
Series Total					**6034.67**

4. Paichalia Treatment Series					
Tarasingi Range					
Ghogado	2015-16	PH I	3b	16.416	243.059
			3c	17.393	
			4b	209.25	
	2016-17	PH II	4c	295.407	534.879
			4d	21.76	
			5b	8.865	
			5c	6.893	
			5d	25.01	
Ambazora			7b	15.985	
			9b	15	
			11b	18.818	
			13b	20	
Brahmansahi			5b	40	
			6b	25	
Chandragiri			5b	20	
			6b	12.141	
Gundribadi			2b	10	
Brahmansahi	2017-18	PH III	1	534.318	534.318
	2018-19	PH IV	2(p)	785.852	392.456
	2019-20	PH V	2(b)		393.396
Paichalia	2020-21	PH VI	1	556.609	556.609
	2021-22	PH VII	2	554.666	554.666
	2022-23	PH VII	3	709.624	709.624

	Jagannathprasad Range				
	2023-24	PH IX	4	679.522	679.522
	2024-25	PH X	5a	693.643	701.643
			5b	8	
Series Total					**5057.113**

5. Kullada Treatment Series					
Mujagada Range					
Tiliki	2015-16	KD I	1a	529.939	529.939
	2016-17	KD II	1b	174.464	474.755
			1c	20	
			2a	280.291	
	2017-18	KD III	2b	549.292	549.292
Jaganathprasad	2018-19	KD IV	11a	474.788	477.216
			11b	2.428	
Kullada	2019-20	KD V	1a	425.838	763.214
			1b	105	
			2a	167.376	
			2b	65	
	2020-21	KD VI	3a	348.414	767.203
			3b	68	
			4	350.789	
Rambha	2021-22	KD VII	1b	21.223	431.748
			4b	5.261	
			6b	43.75	
			7b	24.282	
Darpangia			1b	12.91	
Baiballi			10	324.322	
	2022-23	KD VIII	11	475.84	475.84
	2023-24	KD IX	12	449.535	449.535
Gallery	2024-25	KD X	3b	4.047	
			4b	10	
			4c	26.249	
			5b	7	
			5c	40.2	
			6b	39.255	
			6c	129.521	
			6d	6	
			7b	10.094	
			7c	16.228	

			7d	6.07	
			7e	14.771	
			8b	11.4	
			9b	10	725.179
			11b	69.047	
Gallery Range					
Gallery	2024-25	KD X	16b	10.724	
			18b	8	
			19b	6.475	
			20b	5	
			23b	2	
			23c	9.6	
Chadiapalli			1a	191.386	
			1b	55	
			1c	1.781	
Dimirijholli			1b	5	
			1c	4.002	
			2b	10.198	
			2c	1.736	
Ambazora			3b	2.428	
			6b	11.967	
Series Total					**5113.982**

6. Kaliamba Treatment Series					
Central Range					
Kaliamba	2015-16	KB I	1(p)	445.12	905.14
	2016-17	KB II	1(b)	460.02	
	2017-18	KB III	2(p)	478.25	898.745
	2018-19	KB IV	2(b)	420.495	
	2019-20	KB V	3	611.25	611.25
	2020-21	KB VI	4a	527.135	803.103
			4b	58	
			5a	217.968	
	2021-22	KB VII	5b	199.952	605.247
			6a	280.295	
			6b	125	
Malati	2022-23	KB VIII	1a	197.132	766.41
			1b	569.278	
Dumdumi (East)	2023-24	KB IX	1a	374.038	588.952
			1b	214.914	

Dumdumi (West)	2024-25	KB X	1a	283.424	423.424
			1b	140	
Series Total					**5602.27**

3.10 Methods of Execution

3.10.1 There is a need for preparation of the site specific treatment plan which in the instant case is an area oriented, site-specific watershed based eco-system approach for restoration of forest cover with local community at the center of consideration. Accordingly following steps will be taken.

3.10.2 Demarcation of Annual Coupes

I. Annual coupes shall be demarcated in the preceding season of treatment on the ground with small stone cairns erected at visible distances preferably at the corners and bend points so as to facilitate easy identification of the coupes. However, care should to be taken to ensure that such cairns are not confused with forest block boundary pillars.

II. If any portion of the coupe line coincides with compartment line, the said compartment line shall be maintained by putting double white paint rings on the trees standing on the said line at visible distance and/or clearance of the line over a width of 1(one) meter; during such clearance, no established seedlings shall be felled nor damaged.

III. In case a coupe overlaps two or more compartments, each compartment shall be treated as a separate treatment area; this will even ensure proper maintenance of compartment histories.

IV. Coupes shall be indicated by small signboards at corners or at points of intersection with roads, inspection paths or boundary lines of forest blocks. The signboard should contain the name of the rehabilitation series, the number of the coupe, its area, year of treatment and number of the compartment.

3.10.3 Preparation of Treatment Plan

I. After demarcation of annual rehabilitation coupe, the Range Officer shall examine the area carefully, prepare the trace map of the area in 1:25,000 scale showing details of area, direction of slope, nature of erosion, biotic interference and other relevant factors and prepare a treatment map. In case, the annual area of treatment is part of the already approved microplan, the corresponding operations shall be executed in those coupes.

II. As discussed in the foregoing paragraphs, the forests allotted to this working circle are in two broad categories and thus require different interventions. Accordingly, the specific treatment type is taken into consideration for preparation of the treatment plan.

III. Depending on the treatment type (annual rehabilitation coupe may have either one or both the categories), the annual rehabilitation coupe treatment plan shall be prepared by the

Range officer and shall include, amongst other things, site details (Forest block/ Compartment/ Rehabilitation Series/ Rehabilitation Coupe/Area); site category (Category-one or Category-two or both); site characteristics (terrain, slope, drainage, soil type and depth, vegetation and extent of regeneration, degradation etc); year-wise activities (including maintenance); major operations to be undertaken; cost norms and a calendar of operations. The revised Plan shall also include provisions for monitoring evaluation.

IV. The area allotted to this Working Circle is under various stages of degradation and hence have been classified into the following four categories.

1. **Category I** includes those forest areas, where good regeneration (including advanced regeneration) or good root stock (say 300 or more stumps/ha) are already present. The objectives of management for these areas shall be to encourage establishment of regeneration, promotion of forest growth and closure of canopies. These areas will generally require some soil and moisture conservation measures and strict protection against illicit felling and forest fires.

2. **Category II** shall include those areas where forest growth exists but density and regeneration are poor. They may have less than 300 stumps/ha. These areas often have gaps. Site degradation is more than that in Category I. These areas shall require elaborate soil and moisture conservation measures.

3. **Category III** includes those areas where large gaps are available. These sites are generally badly eroded or degraded. These areas shall require intensive soil and moisture conservation measures. The soil nutrients are generally poor in these areas.

4. **Category IV** is the most degraded site. They are very badly eroded sites, generally moderate to steep slopes. They are very poor in nutrients. Carbon content in these soils is generally very low.

V. It shall be checked by the ACF/DFO who shall be responsible for the implementation of the approved Plan. The revised Plan shall also be supported by a treatment map on a scale of 1:25,000.

3.10.4 Rehabilitation Operations for Execution The annual action plan shall be for 4(four) years period of treatment that is Advance Work (0^{th} year); Creation (1^{st} year) and Maintenance (2^{nd} and 3^{rd} years).

3.10.5 Execution of Rehabilitation operation methods

I. Once the treatment plan has been prepared and finalized, the works shall be carried out as per the requirements vis-à-vis time schedule without any major deviation. All the operations shall be undertaken through JFM mode as far as possible.

II. The mechanical measures of soil and conservation shall also be carried out in the 0^{th} year itself besides raising of nursery and site preparation for gap plantation.

III. The cultural operations shall be carried out in the year of creation and preferably before the onset of monsoon. These operations will include singling out of the coppice shoots retaining only the most promising ones; climber cutting and rectification of high stumps to encourage better coppice shoots. Wherever congestion occurs, cleaning operations shall be carried and in case of established regeneration, some light thinning may also be done. Besides, dead, dry and fallen trees shall not be removed from the annual coupes as such trees are required for wildlife purpose.

IV. The gap plantation shall be done with quality seedlings followed by other operations in accordance with the prescription of the Orissa Plantation Manual and additional stipulations in above paragraphs.

V. Remaining rehabilitation operations shall also be carried out as prescribed in the treatment plan and paragraphs above.

3.11 Treatments prescribed

3.11.1 Treatments for degraded Forest areas

3.11.2 Specific Treatment prescriptions With due consideration to the major objectives of management of this Working Circle, appropriate soil and moisture conservation measures shall form an integral part of all annual site-specific treatment plans. In addition, the following prescriptions shall also be undertaken.

i. High stumps shall be rectified to encourage young coppice shoots and shall be cut flush to the ground.

ii. Singling out of the multiple coppice shoots shall be taken up to retain only the most promising ones.

iii. Wherever there is congestion in the crop, cleaning and thinning operation shall be undertaken to encourage regeneration and growth of locally desirable species.

iv. Removal of invasive weeds

v. Intensive and site specific soil and moisture conservation measures shall form the main component of rehabilitation measures.

vi. These forests shall be strictly protected against uncontrolled grazing, forest fires and unauthorized removals. Dead, dry and fallen trees shall not be removed except illicitly felled materials. Dead trees shall be retained for interest of wild animals and enhancement of soil biomass.

3.11.3 Gap plantations: The gap plantation shall be done with quality seedlings followed by other operations in accordance with the prescription of the Orissa Plantation Manual, 1977 and instructions from the higher authority as per scheme provision. Remaining rehabilitation operations shall also be carried out as prescribed in the treatment plan. The area should be closed strictly to grazing. Trench fencing followed by agave planting of two rows should protect the area. Gap plantations will be taken up in depends upon the availability of space.

3.11.4 Choice of Species Planting of locally desirable species shall be encouraged and taken up in prominent blank patches. The local indigenous species shall be preferred for plantation. At the same time due consideration shall be given for plantation of bamboo, NTFP species including fruit bearing species. Some indigenous species, which have faster rate of growth and may be suitable for these sites, are *Shorea robusta*, *Tectona grandis*, *Dalbergia sissoo*, *Adina cordifolia*, *Bridelia retusa*, *Gmelina arborea*, *Alstonia scholaris*, *Terminalia tomentosa*, *Trewia nudiflora*, *Anogeissus latifolia*, *Emblica officinalis*. Other species include *Melia azadirachta*, *Albizzia lebbek, Pterocarpus marsupium, Dendrocalamus strictus, Pongamia pinnata, Cassia fistula* and other species. Important species like *Simaruba glauca*, *Meila azadirachta*, *Ficus* species and fruit bearing species like *Mangifera indica*, *Atocarpus indica*, *Tamarindus indica*, *Madhuca indica*, *Pongamia pinnata*, *Schleichera oleosa* and others shall be tried in the areas close to villages. On much eroded sites and degraded gullies and along bunds, species like *Acacia leucophloea*, *Aegle marmelos*, *Azadirachta indica*, *Acacia nilotica*, Acacia catechu, *Agave* species etc. will be planted. Apart from that indigenous medicinal plants will be raised in nursery for planting in the field based on the site quality.

3.11.5 The planting of grasses shall be taken up in eroded areas. The efficacy of grasses in checking soil erosion is well researched and well known. However, list of some species of grasses suitable for planting is given in **Table 3-3**.

Table 3-3 Characteristics of Grasses vis-à-vis their suitability

Species	Fodder/ Non-fodder	Habitat Factors
Arundinella bengalensis	Fodder	Soil yellowish brown, sandy loam and slightly acidic
Arundinella nepalensis	Fodder	Slopes with good drainage and permeability;

		soil sandy loam and neutral acidic reaction
Chrysopogon fulvus	Fodder	Hilly gravely soils, black cotton soils, red soils (best growth) low level of moisture.
Chrysopogon gryllus	Fodder	Strong acidic soil on high hills, pH 4.2.
Cymbopogon jwarancusa	Non-fodder	Level to hilly topography, sandy and rocky soil, pH 6.5 to 7.5.
Cynodon dactylon	Fodder	All type of soil on level land; prefers moist area and stands moderate grazing and trampling.
Eragrostis coarctata	Fodder	A xerophytic grass.
Eulaliopsis binata	Non-fodder	Can grow in slopes up to 50%, hot dry localities withstand forest fire.
Heteropogon contortus	Non-fodder	Shallow eroded, black or red soil, pH 6.8 to 7.0.
Themeda triendra	Fodder	Gravelly soil on hills, pH acidic to neutral, Rainfall 1000 mm and above.
Vetiveria zizaniodes	Non-fodder	Low lying ill drained land where water table is high. Soil sandy loam to clay, pH 4.0 to 7.5, prefers neutral soil.

(Source: The grass cover of India' by P.N.Dabadghao and R.A. Shankar Narayan, ICAR)

3.11.6 Species to be planted in eroded areas A general checklist with suggestive measures proposed and species suitable for plantations vis-à-vis treatments on different sites in this Working Circle is provided in **Table 3-4**. This is in addition to the above prescriptions and only indicative. Hence, many more rehabilitation activities and species can also be added by the DFO depending on the field requirements.

Table 3-4 Measures Vis-à-vis Species Suitable for different Sites

Site	Measures to be taken	Species to be planted
Ravine	Soil and water conservation measures	*Dalbergia sisoo, Albizzia lebbek, Acacia catechu, Acacia nilotica, Azadirachta indica, Agave sisalana and Eulaliopsis binata besides soil binding grasses*.
	Full protection from grazing and fire	
	Safe disposal of run-off	
	Grassland development	
	Afforestation	
Laterite Soil	Soil and water conservation measures	*Eucalyptus hybrid, Dendrocalamus strictus, Acacia auriculiformis, Madhuca indica, Bombax ceiba, Soymida febrifuga, Cleistanthus collinus, Albizzia*
	Full protection from grazing and fire	

	Application of fertilizer	*lebbek, Anacardium occidentale, Agave species and soil binding grasses.*
	Afforestation	
Skeletal Soil	Contour bunding, trenching	*Albizzia lebbek, Cassia siamea, Hardwickia binata, Azadirachta indica, Acacia nilotica, Acacia leucophloea, Derris indica, Eucalyptus hybrid, Dalbergia Sisoo, Teak, Tamarindus indica, Agave species, Eulaliopsis binata, Ailanthus excelsa, Acacia catechu.*
	Afforestation	
	Other Soil and water conservation measures	
	Protection from grazing and fire	
	Sowing grasses	
	Seed dibbling	
Water logged areas	Preparation of mounds	*Eucalyptus robusta, Anthocephalus chinensis, Syzigium cumini, Terminalia arjuna, Bombax ceiba, Lagerstroemia speciosa, Dalbergia sisoo, Derris indica, Acacia nilotica.*
	Planting of tall plants	
	Application of anti termite chemicals	
	Early planting	
	Drainage system treatment and other such measures	

(Source: Hand book of Afforestation techniques by Sri R.F. Ghosh)

3.11.7 Methodology of thinning in old plantation In the congested crop with regeneration fully established and growth encouraging, thinning operations shall be undertaken to encourage further growth. In fact, these operations are necessary to afford better opportunity of growth to the crop so retained after thinning. It shall be executed only if the conditions warrant. However, thinning in general would include the following conditional operations:

i. It should be restricted to the congested pole crop only that is younger age classes and limited to the species with girth at breast height less than or equal to 75 cms.

ii. Marking shall be done on the lines of "C" grade thinning which is restricted to removal of only 'dominated' and 'suppressed' stems besides removal of some 'co-dominant' stems as well.

iii. No thinning shall be carried out in open areas nor any fruit bearing species such as Mahua, Mango, Tamarind, Amla, Char, Harida, Bahada, Bela, Kusum etc. shall be thinned out whatever be the extent of congestion.

iv. Limit on removal of stems vis-à-vis retention per hectare shall be governed by the formula D=0.5[(G/10)+1] where 'D' is the distance between two stems in meters after thinning and 'G' is the average girth of stems in cms.

v. As thinning markings are to be done very sparingly with meticulous reflection of mind and extreme silvicultural restraints, this will therefore need prior approval of the DFO.

3.12 Soil and moisture conservation measures Since most of the areas have been badly affected by soil erosion, appropriate soil and moisture conservation measures shall be taken up. Measures like gully plugging check dams, contour bunds, nallah bunding, and vegetative bunds are prescribed.

i. **Gully Plugging**: Check dams are required to be erected across gullies. These may be either of brush-wood or of dry rubble or stones depending on the availability of material, requirements of sites and cost norms. The run-off in the gully shall be obstructed and diverted. A series of check-dams are required at intervals which are to be decided by the gradient factor. In steeper slopes more check dams are required.

ii. **Contour Trenches and Contour Bunds**: Staggered or continuous contour trenches and contour bunds shall be prepared along contour in order to arrest water speed, to divert direction of flow and to harvest water.

iii. **Vegetative Barriers on Contour Based Structures**: A number of species which act as soil binders have been suggested. *Cenchrus sp. Dicanthium sp*. *babul, ber, Agave* and other species are very promising for this purpose. These or some other species may be planted on the ridges of contour bunds, contour trenches, contour V-ditch and other structures. Seeds may also be sown on the ridges.

iv. **Percolation Tanks**: - These tanks are to be constructed at different suitable sites mainly to recharge ground water. Generally each tank is to be dug out with dimensions of 5 mt. x 5 mt. x 0.5 mt. The width and the depth can vary depending on the availability of the flat surface. The earth dugout from the tanks should be placed in the inverted trapezium and the soil should be compacted. No inlet and outlet to be provided from the percolation tank. The bunds should be treated with seeds Dhanicha (*Sesbania aculeata*), Stylo, or even Horse gram.

v. **Percolation pit**: - The percolation pit of size (1mtr x 1mtr x 0.5mtr) will be dug in the plantation area to recharge ground. The earth dug out from the pit should be placed in the inverted trapezium & the soil should be compacted.

3.13. Fencing:

I. **Trench fencing:** The entire boundary of the block, in which the area to be tackled lies, shall be provided with cattle proof trenches as specified in Forest Plantation Manual 1997. Trenches shall be 120cms deep, 120cms wide at the top and 60cms wide at the bottom in the shape of a trapezium. The earth dug out from the trench shall be heaped in the shape of continuous ridge along the inner side of the trench. In order to drain out the water, drains with stone packing shall be provided at appropriate points across the ridge. Catch-water-drains or reinforcement of the inner side of this ridge with stone packing, wherever necessary, shall be provided to prevent erosion of the ridge.

II. **Barbed wire fencing:** Wherever the soil is hard enough for excavation of trench or the soil is sandy or a gully crosses the boundary line barbed wire fencing shall be provided. The barbed wire of two-ply shall be posted 4(four) meters apart. The fence posts shall be of durable timber 2.5 meters long and not less than 45 cms in girth. The height of the posts/fence above the ground level shall be 1.75 meters while 0.75 meter of the post shall be driven below the ground. The strands shall be fixed at 15 Cms., 45 Cms., 90 Cms., and 1.5 meters from ground along the posts. The bottom 0.75 meter of the fence-posts, which will remain under ground, shall be charred and the rest of the post shall be painted with creosote or coaltar. Live hedge shall be grown simultaneously along the fencing after soil working.

III. **Stone wall fencing:** Where trenches are not possible as stated in the preceding Para, but stones and boulders are available in large quantities near the site, dry rubble wall 100 cms high and 100 cms thick at the base and 60 cms at the top may be erected with a live-hedge along the inner side of the wall instead of barbed fencing as the latter is more expensive.

IV. **Vegetative fencing:** Thorny species like Babul, *Erythrina indica,* Agave and Ziziphus shall be raised densely on the ridges by direct broadcasting of seeds in the following monsoon. In case of Agave, bulbils may be planted at 3 meters intervals. Babul and Ziziphus shall be sown where soil is having more clay content. The whole idea is to raise an impenetrable thick live-hedge as the second line of defense, which will remain as a permanent barrier and also serve as distinct boundary line. Causalities will be replaced at the appropriate time.

3.14. Treatments of Existing Plantations

3.14.1 The old existing plantations shall be tended. No series have been made as growth in these plantations is not uniform. In some cases, plantations have been adversely affected by biotic interference where as in a few cases; the plantations are protected by the VSS members. Moreover,

the exact age of these plantations is also not made available nor any authenticated records to this effect are provided. Further, these plantations have yet not reached the harvesting stage. Hence uniform treatment for all the plantations is not possible.

3.14.2. No systematic survey of these plantations have been carried out due to above reasons besides resource constraints. For these reasons, none of these plantations were divided into coupes. The Divisional Forest Officer shall be at liberty to demarcate annual coupes in a given list of old existing plantations according to administrative convenience and requirements of the plantations. However, on an average, about 350 hectares can be tended annually for the treatments so as to cover the entire area within the plan period. These annual areas of treatment shall be demarcated in the manner as prescribed above for the planting coupes. The Range Officer shall prepare the site-specific treatment plan of the said plantation sites, supervised by ACF and shall be duly approved by the Conservator of Forests. This shall be done in the year proceeding the year of tending operations.

3.14.3 Operations in Teak Tending

3.14.4 Since the teak plantations are varying in age from 3 years to about 20 years, they are in need of appropriate silvicultural operations to further enhance the growth. These plantations require operations like pruning, thinning and climber cutting. In addition, the following treatment shall be carried out in the annual coupes

i. All dead trees shall be removed departmentally
ii. All climbers shall be cut
iii. Pruning shall be done in the plantations that are bushy and branchy
iv. Loranthus attacked branches shall be lopped
v. Thinning or coppice shoots shall be done in the congested crop
vi. Gap plantation shall be done where ever required

3.14.5. Since the exact age of these teak plantations could not be ascertained, the detail thinning regime has not been prescribed here. The DFO shall verify the old records to confirm the age of all such plantations and follow the below mentioned stipulations while carrying out the thinning in teak plantations

i. The first thinning shall be the mechanical thinning carried out in the 8th year of formation of the plantation and includes removal of alternate plants in each row. During this thinning operation, all the growths including climbers interfering with teak shall be cut back.
ii. The second and subsequent thinning to be done will be silvicultural thinning. It should be restricted to the congested crop only. There shall be four such thinning to be carried out in 16th; 25th; 41st and 65th year respectively.

iii. These silvicultural thinning to be executed shall be on the lines of 'C' grade thinning. The removal through such thinning shall be restricted to only 'dominated' and 'suppressed' stems besides removal of some 'co-dominant' stems as well with distance of growing space after thinning to be determined by the formula R=0.75(D+4) where 'R' is the radius of the growing space in feet and 'D' is the average diameter in inches.

iv. All the trees coming within this circle of growing space shall be felled besides those crops which are found to be interfering with the crown of the 'predominant' and 'co-dominant' trees

v. Thinning shall not be carried out in already open areas. Further, it shall be ensured that these operations do not create a permanent gap in the canopy.

vi. As thinning are to be done very sparingly with meticulous reflection of mind and extreme silvicultural restraints, this will therefore need prior approval of the DFO

3.14.6 Where ever prominent gaps of at least half an acre are existing, those areas shall be planted with teak intermixed with others species Gambhar, Sisoo. The methodology has already been explained above. Scattered planting in very small patches shall be avoided.

3.15 Operations in Miscellaneous Tending

3.15.1 Growth of the miscellaneous plantations tends to become bushy and branchy for want of pruning and thinning. This is more prevalent in case of miscellaneous plantations with species like Acacia, Chakunda, Siris, Gambhar, Amla etc which are in regular need of weeding, pruning and climber cutting. These operations are beneficial in the early years of the formation of the plantations followed with thinning in the later years.

3.15.2 The tending operations which shall be carried out in the miscellaneous plantation tending series are listed out below:

I. Weeding and regular pruning shall be done till the 8th year of plantation
II. All climbers shall be cut
III. All dead trees shall be removed departmentally
IV. Thinning shall be done in the congested crop on the lines of 'A' grade and 'B' grade thinning only
V. Gap plantation shall be done where ever required

3.16. MISCELLANEOUS REGULATION

3.16.1 Maintenance of Records: Plantations journals, compartment histories and other records shall be maintained for each rehabilitation coupe/ series separately in accordance with the provisions of Odisha Forest Plantation Manual or as per the directions given by the Regional Chief Conservator of Forests, Berhampur and /or the Conservator of Forests, Working Plans Circle, Bhanjanagar.

3.16.2 The annual treatment areas shall be rigidly protected and closed to grazing for 5 years. The provisions of Rule 283 of the Orissa Forest Department Code and the Orissa Forest Fire (Protection) Rules 1979 will be followed strictly.

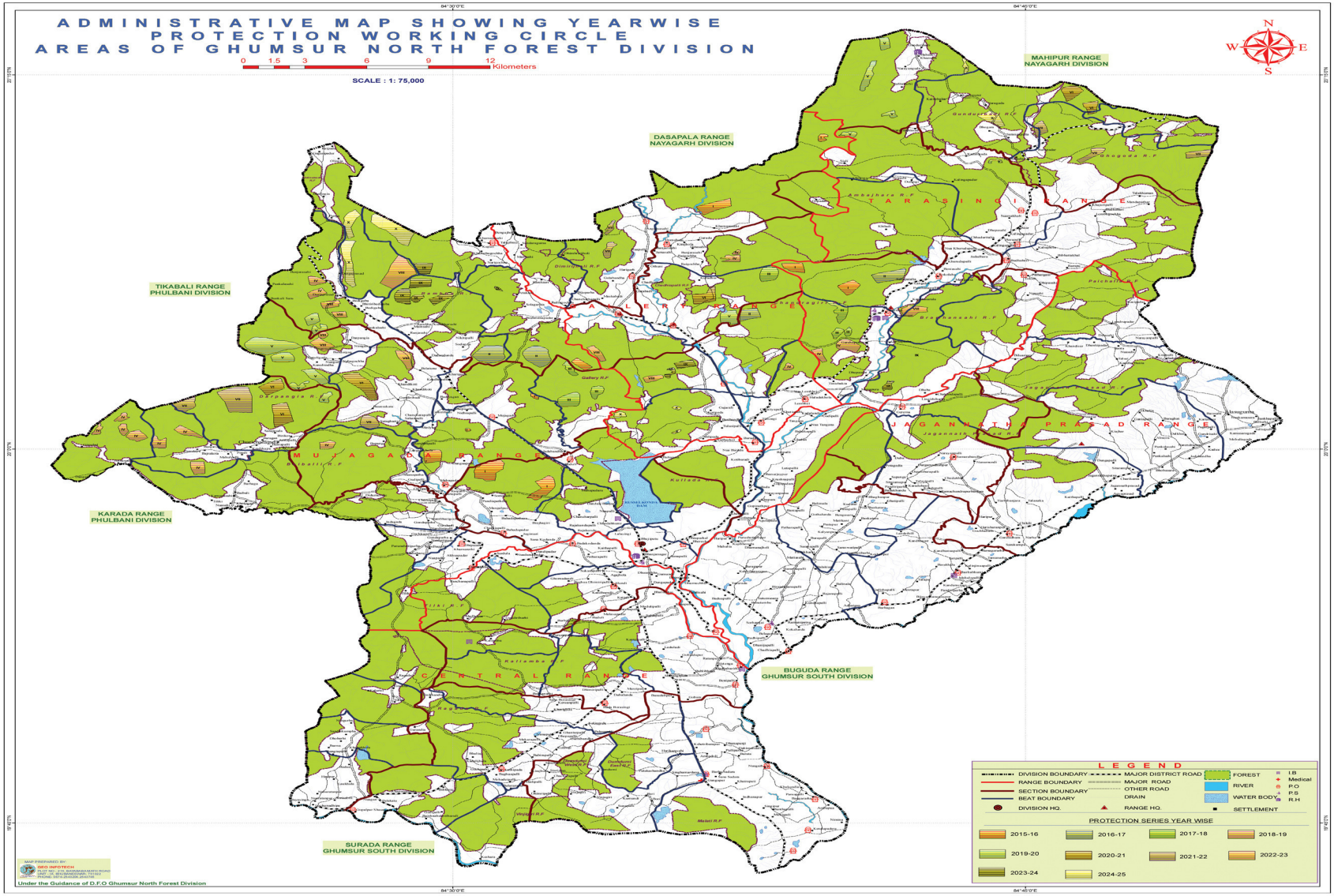
3.16.3 Local people shall be increasingly involved in protection and management of these forests in accordance with the current policy of Government of Odisha on Joint Forest Management.

3.16.4 Rights & Concessions: These will be regulated in accordance with the provisions of the relevant gazette notifications of the respective forest blocks and the Government of Odisha policy with regard to JFM.

3.17 COST NORM: The cost norm for implementation of prescription and the total estimated cost of working under this Working Circle is discussed in **Chapter - 11 (Financial Forecast and Cost of the Plan).**

3.18 INTERMEDIATE REVISION:

3.18.1 Though the prescriptions of this working circle are not likely in need of any drastic changes during the plan period and hence, no such revision is anticipated, yet an intermediate review of the prescriptions may be made after 5 years, jointly by the Regional Chief Conservator of Forests (Territorial) and Conservator of Forests (Working Plans), taking into account the crop condition and necessity of revision. Any deviation suggested, however, shall be subject to the approval of competent authority.


ADMINISTRATIVE MAP SHOWING YEARWISE PROTECTION WORKING CIRCLE AREAS OF GHUMSUR NORTH FOREST DIVISION
0 1.5 3 6 9 12 Kilometers
SCALE : 1: 75,000
MAHIPUR RANGE NAYAGARH DIVISION
DASAPALA RANGE NAYAGARH DIVISION
TIKABALI RANGE PHULBANI DIVISION
KARADA RANGE PHULBANI DIVISION
BUGUDA RANGE GHUMSUR SOUTH DIVISION
SURADA RANGE GHUMSUR SOUTH DIVISION
TARASINGI RANGE
MUTAGADA RANGE
CENTRAL RANGE
JAGANNATHPRASAD RANGE
LEGEND
DIVISION BOUNDARY
RANGE BOUNDARY
SECTION BOUNDARY
BEAT BOUNDARY
DIVISION HQ.
MAJOR DISTRICT ROAD
MAJOR ROAD
OTHER ROAD
DRAIN
RANGE HQ.
FOREST
RIVER
WATER BODY
SETTLEMENT
I.B
Medical
P.O
P.S
R.H
PROTECTION SERIES YEAR WISE
2015-16
2016-17
2017-18
2018-19
2019-20
2020-21
2021-22
2022-23
2023-24
2024-25
MAP PREPARED BY:
GEO INFOTECH
Under the Guidance of D.F.O Ghumsur North Forest Division

CHAPTER - IV

THE PROTECTION WORKING CIRCLE

4.1 General Constitution

4.1.1 This working circle comprises all those blocks which need special protection measures from biotic interferences, besides the blocks and compartments existing in ecologically fragile areas and those which form part of major rivers. It would also include catchment area of nallah/reservoir and steep precipitous slope with high altitude which are potentially vulnerable to scouring activities by rain, wind and surface run-offs. Due to intense biotic pressure from human and cattle, large number of forest blocks of the division is under various stages of degradation. Further there is need to see that forest on steep slopes and ecologically fragile areas are not disturbed and are completely protected. The areas under this circle are mostly having steep gradient requiring protection and crop improvement measures without much intervention.

4.2 General Observation and Vegetation

4.2.1 Regular biotic interference has led to decrease in vegetative cover leading to high run-off, rapid soil erosion and even flash floods in low lying areas yielding in very low soil depth and generally devoid of the fertile top soil. Majority of the forest blocks included here are ones which have been badly affected due to regular removal of biomass and the crop is prone to windfall activity. This was demonstrated in the recent cyclonic storm “phailin” which brought havoc among the crop stands devastating both flora and fauna. Huge blank patches have been created in forest blocks like Ambazora RF, Chandragiri RF, Dimirijholi RF, Darpangia RF, Baiballi RF, Rambha RF, Ghogoda RF, Gundribadi RF and Brahmansahi RF.

4.2.2 These types of blocks need intensive protection measures so that pressure of biomass removal is reduced substantially so that other silvicultural operation prescribed in the main working circle will yield the desired results. There is the first and foremost need to increase soil depth and return back the vitality and fertility to it through natural addition of biomass through extensive soil and moisture conservation measures that would subsequently encourage development of soil binding annual species.The brief description of the vegetation has been delineated in Chapter-II (Part-I) of revised working plan. Regeneration status of this Working Circle is presented in **Annexure-XXXIX**.

4.3 Special Objectives of Management

4.3.1 Since the area is allotted in separate working circle, it will require complete protection measures coupled with improvement of the vegetative cover. The special objectives are as follows:

I. To keep delicate and eco-fragile areas ecologically intact by maintaining adequate vegetative cover.
II. To arrest further degradation and enhance the natural regeneration adopting strong protection measures to minimize biotic interference.
III. To protect these forests from fire and grazing and also to provide strict vigil against illicit felling, encroachment, poaching and shifting cultivation
IV. No felling is recommended. Uprooted, wind fallen trees are not recommended to remove from the field by keeping in the view of wildlife.
V. Suitable gaps of more than 0.4 ha. Will be planted with preferably indigenous species.
VI. Strengthening of Forest Protection measures through deployment of squad, para staff, effective mobility, communication network, infra structure development and capacity building of front line staff.

4.4 Area and Allotment and Protection Series

4.4.1 The area allotted to this overlapping Working Circle is **5235.495 hectares**. It is 5.68% of the total forest area of the division. However, a statement of allocation of blocks and compartments together with the individual patch areas within the compartment and the reference Toposheet number allotted to this working circle is given below in **Table 4-1.** Detail statement showing annual coupes under Protection working circle is given in **Table.4.2**

Table 4-1 Details of Area statement of different Protection Series & their Constitution

Name of Protection Series	Name of Forest Block	Compartment No.	Total Compartment Area (in ha.)	Compartment Area under P.W.C (in ha.)	No. of patches in compartment	Individual patch area	Ref. Topo No. in scale 1:25000
1	2	3	4	5	6	7	8
Mujagada Range							
Gallery	Gallery (P)	1	385.472	5.875	1	5.875	73D/12SW
		2	418.778	64	1	64.000	74A/5NE
		4a	473.233	148.437	1	148.437	74A/9NW
		5a	652.703	109.375	1	109.375	74A/9NW
		10	525.415	26.562	1	26.562	73D/12SW
		12	346.702	142.187	1	142.187	73D/12SW
		13	435.572	131.25	1	131.250	73D/12SW

		14	472.683	37.5	1	37.500	73D/12SE
					4	84.375	73D/12SW
						9.375	
						34.375	
		15	799.797	155.468		27.343	73D/12SE
		17	551.801	37.5	1	37.500	73D/12SE
				858.154			
	Baibali (P)	1	771.064	104.375	2	45.000	73D/8SW
						59.375	
					3	16.015	73D/8SW
						40.625	
		2	783.327	84.765		28.125	
		3	704.735	16.015	1	16.015	73D/8SW
		5	470.984	51.56	1	51.56	74A/5NE
		7	969.405	35.937	1	35.937	73D/8SE
				292.652			
Darpangia	Darpangia (P)	1a	773.186	84.375	2	46.875	73D/8NE
						37.500	
					3	60.937	73D/8SE
						36.718	
		2	783.974	121.874		24.219	
		3	823.877	201.562	1	201.562	73D/8SE
					3	23.437	73D/8SE
						65.625	
		4	595.832	151.562		62.500	
		5	503.035	26.562	2	26.562	73D/8SE
						56.250	
					2	121.875	73D/8SE
		6	627.681	193.75		71.875	
					2	67.578	73D/8SE
		7	1152.327	289.453		221.875	
		8	302.833	10.312	1	10.312	73D/8SE
		9	465.399	121.875	1	121.875	73D/8SE
		10	502.711	59.375	1	59.375	73D/8SE
					2	15.625	73D/8SE
		11	224.363	70.312		54.687	
					2	36.718	73D/8SE
		12	366.329	60.155		23.437	
				1447.417			
	Rambha	2	800.404	6.25	1	6.250	73D/12SW
		3	521.044	53.125	1	53.125	73D/8SE
					4	15.625	73D/8SE
		4a	769.243	192.187		62.500	

						54.687	
						59.375	
					3	14.062	73D/8NE
						90.625	
		5	734.439	157.812		53.125	73D/8SE
					2	34.375	73D/8NE
		6a	653.457	162.5		128.125	
					2	35.937	73D/8NE
		7a	1043.99	220.312		184.375	
				792.186			
			Range Total	***3390.409***			
Gallery Range							
Ambozora	Ambazora	1	573.978	14.453	1	14.453	73D/12NE
		3a	680.13	92.187	1	92.187	73D/12NW
				106.64			
					2	56.250	73D/12SE
	Chandragiri (P)	1	770.053	84.375		28.125	
		2	726.831	75	1	75.000	73D/12SE
					3	6.640	73D/12NW
						23.400	
		3	912.141	45.665		15.625	73D/12SW
		10	407.325	15.234	1	15.234	73D/12SE
		11	842.803	62	1	62.000	73D/12SW
		12	345.123	81.25	1	81.250	73D/12SW
				363.524			
					2	37.890	73D/12NW
	Dimirijholi	2a	917.831	61.32		23.430	
				61.32			
	Gallery	16a	473.12	40.625	1	40.625	73D/12SW
					2	10.312	73D/12SW
		19a	508.175	41.562		31.250	
					2	14.843	73D/12SW
		20a	347.319	51.843		37.000	
					2	16.406	73D/12SW
		21	430.595	44.531		28.125	
		22		28.125	1	28.125	73D/12SW
		23a		18.75	1	18.75	73D/12SW
				225.436			
			Range Total	***756.92***			
Tarasing Range							
Chandrigiri	Chandragiri	4	582.113	54.687	1	54.687	73D/12SE
		5a	581.902	103.125	1	103.125	73D/12SE
		6a	447.794	64.062	1	64.062	73D/12SE

		7b	164.832	65.625	1	65.625	73D/12SE
		8	367.503	47.265	2	12.890 34.375	73D/12SE
		9	501.335	121.875	2	42.187 79.688	73D/12SE
				456.639			
	Ambazora	13a	661.821	8.203	1	8.203	73D/12NE
		15	789.802	23.437	1	23.437	73D/12NE
		16	458.964	18.359	1	18.359	73D/12NE
		18	628.248	62.5	2	62.5	73D/11SE
		19	531	39	1	39.00	73D/8SE
				151.499			
Ghogoda	Ghogada	1	638.244	106.25	2	62.500 43.750	73D/16NW
		2	568.515	46.875	1	46.875	73D/16NW
		3a	682.65	48.437	1	48.437	73D/16NW
		6	767.543	48	1	48.000	73D/16NW
				249.562			
	Brahamansa	3	450.748	85.937	1	85.937	73D/12SE
		5a	522.606	3.906	1	3.906	73D/12SE
		6a	409.197	53.905	3	7.812 27.343 18.750	73D/12SE
				143.748			
	Gundribadi	1	682.881	21.093	1	21.093	73D/11SE
		4	707.042	65.625	1	65.625	73D/8SE
				86.718			
				Range Total	***1088.166***		
				Divisional Total	***5235.495***		

Table 4.2 Statement showing annual coupes under Protection Working Circle

Protection Unit	R.F	Year	Coupe No.	Compartment No.	Area In ha.	Total Area
Mujagada Range						
Gallery	Gallery	2015-16	I	1	5.875	354.249
				2	64.000	
				4a	148.437	
				5a	109.375	
				10	26.562	
	Gallery	2016-17	II	12	142.187	310.937
				13	131.250	
				14	37.500	

	Gallery	2017-18	III	15	155.468	297.343
				17	37.500	
	Baibali			1	104.375	
Gallery, Darpangia	Baibali	2018-19	IV	2	84.765	394.526
				3	16.015	
				5	51.560	
				7	35.937	
	Darpangia			1a	84.375	
				2	121.874	
	Darpangia	2019-20	V	3	201.562	379.686
				4	151.562	
				5	26.562	
	Darpangia	2020-21	VI	6	193.750	315.625
				9	121.875	
	Darpangia	2021-22	VII	7	289.453	356.015
				8	66.562	
	Darpangia	2022-23	VIII	10	59.375	347.654
				11	70.312	
				12	60.155	
	Rambha			5	157.812	
	Rambha	2023-24	IX	2	6.250	251.562
				3	53.125	
				4a	192.187	
	Rambha	2024-25	X	6a	162.500	382.812
				7a	220.312	
					Total	**3390.409**
Gallery Range						
Ambazora	Ambazora	2015-16	I	1	14.453	106.640
				3a	92.187	
	Chandrigiri	2016-17	II	1	84.375	84.375
	Chandrigiri	2017-18	III	2	75.000	75.000
	Chandrigiri	2018-19	IV	3	45.665	60.899
				10	15.234	
	Chandrigiri	2019-20	V	11	62.000	62.000
	Chandrigiri	2020-21	VI	12	81.250	81.250
	Dimirijholi	2021-22	VII	2a	61.320	61.320
	Gallery	2022-23	VIII	16a	40.625	82.187
				19a	41.562	
	Gallery	2023-24	IX	20a	51.843	51.843
	Gallery	2024-25	X	21	44.531	91.406
				22	28.125	
				23a	18.750	
					Total	**756.92**

Tarasingi Range						
Chandragiri	Chandrigiri	2015-16	I	4	54.687	118.749
				6a	64.062	
	Chandrigiri	2016-17	II	5a	103.125	103.125
	Chandrigiri	2017-18	III	7b	65.625	112.890
				8	47.265	
	Chandrigiri	2018-19	IV	9	121.875	121.875
	Ambazora	2019-20	V	13a	8.203	151.499
				15	23.437	
				16	18.359	
				18	62.500	
				19	39.000	
Ghogada	Ghogada	2020-21	VI	1	106.250	106.250
	Ghogada	2021-22	VII	2	46.875	143.312
				3a	48.437	
				6	48.000	
	Bramhansahi	2022-23	VIII	3	85.937	85.937
	Bramhansahi	2023-24	IX	5a	3.906	57.811
				6a	53.905	
	Gundiribadi	2024-25	X	1	21.093	86.718
				4	65.625	
					Total	**1088.166**

4.5 ANALYSIS AND VALUATION OF CROP

4.5.1 As stated above, the blocks included in this circle have either degraded forest or high forest which needs intensive protection along with soil and moisture conservation measures. It is expected that with proper protection and stoppage of illegal removal of biomass from these degraded blocks, the area will quickly rejuvenate and regain its original status. Protection to high forest blocks will ensure check on depletion in forest cover and environmental degradation. Protection from grazing and fire will ensure improvement in the regeneration status of these blocks. All these observations advocate strongly in favour of protection of these forests

4.6. SILVICULTURAL SYSTEM

4.6.1 No felling is proposed. The protection working circle will cover the areas of the different forest blocks considered as ecologically fragile catchment area and steep precipitated slopes with high attitude. Adequate SMC measures shall be adopted like check dams, loose bolder check dams, dry stone check dams, vegetative check dams, staggered trenches, gully plugging, and percolation tanks, in these areas depending upon in the site condition. No felling is proposed in this Working Circle,

dead, dying and wind falling are not to be removed for fauna point of view. Hence no specific silvicultural system is prescribed.

4.7 MEASURES TAKEN TO IMPROVE PROTECTION OF FORESTS

4.7.1 The following measures have been taken up to step up forest protection in the Division.

- ✓ Joint Forest Management has been strengthened. 223 numbers of VSS have been formed so far in the Division adjoining different Forest Blocks and revenue forest area who have been assigned an area of 31597.79 Ha forest land for forest protection.
- ✓ Forest Protection Squads comprising 10 local youths in each squad supplemented by vehicle are engaged in the protection activity in different vulnerable pockets of the division
- ✓ GPS survey has been covered in maximum Forest Blocks of the division and maps have been prepared for all such blocks.
- ✓ 61 nos. of Eco Clubs are functioning in the division creating awareness and motivation of the forest fringe dwellers in the field of Forest & Environment protection.
- ✓ In each Range infra structure developments, under the assistance of CAMPA APO, have been created which mainly includes construction of Range Office along with seizure yard, hazrat, malkhana, construction of Foresters Quarters & Forest Guard Quarters, Compund wall for the quarters. The Forest Protection is further strengthened by provision of squad, vehicle, arms & ammunitions.
- ✓ Information on various Forest Protection activities of the Division is presented in **Table-4.3**

- ✓ The fire incidences, expenditure incurred, the Forest offence cases booked & the no of vehicle seized already presented in ***Chapter-II A of Part-I.***

TABLE – 4.3		YEAR WISE PHYSICAL & FINANCIAL ACHIEVEMENT OF FOREST PROTECTION ACTIVITIES									
Sl. No.	Activities	2010-11		2011-12		2012-13		2013-14		2014-15	
		Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial
1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***
1	**Under State Plan Scheme**										
2	13th FCG - Building Community Youth / ASS	Wages of 10 squad personnel Hire Charges of Vehicle and cost of POL	598000	Wages of 10 squad personnel Hire Charges of Vehicle and cost of POL	513000	Wages of 20 squad personnel Hire Charges of Vehicle and cost of POL	1351351	Wages of 20 squad personnel Hire Charges of Vehicle and cost of POL	1351351	Wages of 20 squad personnel Hire Charges of Vehicle and cost of POL	1350000
3	13th FCG - Incentive to Grazers for stall feeding & collection of grass, control grazing, formation of milk co-operative promotion of bio-gas	Incentive paid to VSS	135000	Incentive paid to VSS	135000	Incentive paid to 50 VSS	375000	Incentive paid to VSS	375000	Incentive paid to 45 VSS	250000
4	13th FCG - Incentive based prevention and control of Forest Fire	--	0	--	0	Wages of 40 squad personnel Hire Charges of Vehicle and cost of POL Conducted training for Fire Squad	946000	Wages of 40 squad personnel Hire Charges of Vehicle and cost of POL Incentive paid to 50 VSS	1250000	Wages of 40 squad personnel Hire Charges of Vehicle and cost of POL Incentive paid to 45 VSS	1245000
5	IFM-Forest Fire Control & Management	--	0	--	0	--	0	--	0	Wages of 10 squad personnel Incentive paid to 10 VSS Fire line	432353

										maintenance – 50 Km. Monitoring and fire mapping	
6	IPCEA Squad	Wages of 10 squad personnel Hire charges of vehicles and uniform articles etc.	378000	Wages of 10 squad personnel Hire charges of vehicles and uniform articles etc.	378000	Wages of 10 squad personnel Hire charges of vehicles and uniform articles etc.	378375	Wages of 20 squad personnel Hire charges of vehicles	608000	Wages of 20 squad personnel Hire charges of vehicles	1250000
7	Wild life Protection Squad	Elephant Squad persons, Hire vehicle with POL, Uniform, Hooter, Search Light	200000	Elephant Squad persons, Hire vehicle with POL, Uniform, Hooter, Search Light	200000	Elephant Squad 8 persons, Hire vehicle with POL, Uniform, Hooter, Search Light	400000	Wages of 10 squad personnel Hire Charges of Vehicle and cost of POL	566000	Wages of 05 squad personnel Hire Charges of Vehicle and cost of POL	283000
8	Wild life Trackers	Wages of tracker - 2 Nos.	54000	Wages of tracker - 1 No.	27000	Wages of tracker - 1 No.	32400	--	0	--	0
9	Elephant proof solar power electic fans barrier with community participation	--	0	--	0	Elephant proof solar power electic fans barrier with community participation	500000	--	0	--	0
10	Monitoring for Protection of Elephant against accidental electrocution	--	0	--	0	Conveyance of staff and contingency expenses for post mortem, rescue of elephant calf and one dead elephant was buried.	10000	Treatment of Sri Jogi Gouda Temporary Status Watcher of J.N.Prasad Range who has been suffered against accidental Electrocution	10000	--	0
11	Development	--	0	--	0	Incentive given	10000	Incentive given to	10000	--	0

	of intelligence network, incentive to informers etc.					to informers regarding movement of elephant		informers regarding movement of elephant			
Sl. No.	Activities	2010-11		2011-12		2012-13		2013-14		2014-15	
		Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial
1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***
12	CSP - IFM - Squad and others	Wages of 10 squad personnel Cost of camp equipment and others	1545500	Cost of camp equipment	12500	Wages of 10 squad personnel Cost of camp equipment	270625	Wages of 10 squad personnel Cost of camp equipment	598000	--	0
13	CSP - IFM - Tiger Estimation	--	0	--	0	--	0	Elephant Census done in 75 beats	104375	--	0
14	**Under CAMPA Scheme**										
15	Intensive Control and Prevention of Forest Fire under Forestry Sector	--	0	--	0	--	0	Fire Line Maintenance - 500 Km. Wages of Squad personnel - 20 Nos. Hire Vehicle for fire protection - 2 Nos. Fire Fighting Equipment Publicity & Motivation Incentive paid to 80 V.S.Ss	2093000	Fire line Maintenance - 500 Km. Wages of Fire Fighting Squad - 40 Nos. Hiring of Vehicle - 4 Nos. Procurement of Fire Fighting Equipment - 2 Sets Training - 1 No.	2480000
16	Control Room	--	0	6 Persons engaged mobile phone for	243930	--	0	Wages paid to 3 Nos. of attenders Cost of Land Line	465500	Wages paid to 3 Nos. of attenders	249000

				communication of message & vehicle maintenance.				Charges Constructed Control at Divisional Office Cost of one new computer for use in Control Room Cost of Computer Table & Chair Wages of DEO		Wages paid to DEO Internet Charges	
17	Travel expenses and feeding of the accused persons in forest offence	--	0	Travel expenses, Legal charges, Law book	50000	--	0	Traveling Expenses & Feeding charges of accused persons	25000	--	0
18	Legal cell, Legal charges and charges to legal consultants	--	0	--	0	--	0	Cost of Law books & Legal Charges	50000	Cost of Law books & Legal Charges	50000
19	Supporting Activity - Para Forest Staff and others	--	0	Wages of 30 squad personnel, uniform and equipments.	871465	Wage of PFS 30 nos. VHF operator 3 nos. Cost of Walky-talky Wi-Max Set for Jprasad Range	1120800	Wages of 30 Nos. of squad personnel	162000	Wages of 60 Nos. of squad personnel	3105000
20	Recurring expenses on Forest Checking Station	--	0	--	0	--	0	--	0	Wages of 3 Nos. of attenders	174000
21	Maintenance of forest boundary line clearance	--	0	--	0	--	0	--	0	Maintenance of forest boundary line done over 100 Km	165000
22	Posting of	--	0	--	0	--	0	--	0	Posting of	80000

	pillars									pillars done over 100 Nos.	
23	Singages	--	0	--	0	--	0	--	0	Singages fixed 20 Nos.	6000
24	Wildlife Protection Squad	Wages of 05 squad personnel Hire Charges of Vehicle and cost of POL	88395	Wages of 06 squad personnel Hire Charges of Vehicle and cost of POL	300000	Engaged squad personnel 12 nos., hire vehicle, POL & maintenance of existing vehicles.	600000	--	0	Wages of 20 squad personnel Hire Charges of Vehicle and cost of POL	1661000
Sl. No.	Activities	2010-11		2011-12		2012-13		2013-14		2014-15	
		Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial	Physical	Financial
1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***
25	Anti-Depredation squads	Wages of 05 squad personnel Hire Charges of Vehicle and cost of POL	71940	--	0	--	0	Wages of 10 squad personnel Hire Charges of Vehicle and cost of POL	900000	Wages of 10 squad personnel Hire Charges of Vehicle and cost of POL	891000
26	Elephant Tracker	--	0	--	0	--	0	Wages of 04 Trackers	220000	Wages of 04 Trackers	191000
27	Hazat	--	0	--	0	--	0	--	0	--	0
28	Seizure Yard	--	0	--	0	1 No.	500000	--	0	--	0
29	Malkhana	--	0	--	0	--	0	Construction of Malkhana - 1 No.	575000	--	0
30	Staff Barrack	--	0	--	0	--	0	Construction of Barrack - 2 Nos.	217400	--	0
31	Anti Poaching Shed	--	0	--	0	--	0	--	0	--	0
32	Evaluation (Plantation)	--	0	--	0	--	0	--	0	--	0
33	Fire control and preventive measures including incentives to	Fire Line Maintenance - 20 Km.	30000	Engagement of Fire Watcher and incentive to local communities	75000	Incentive provided to VSS & squad personnel engaged in 5 ranges.	75000	--	0	--	0

	local communities under Wildlife Sector										
34	Arms and Ammunition	--	0	--	0	Cost of 10 nos. of 0.22' Revolver & 10 nos. 0.22' sporting Rifles for 3 Ranges	832380	--	0	--	0
35	Elephant Protection Squad	--	0	--	0	--	0	--	0	--	0
36	Capacity Building of Front Line Staff	--	0	--	0	10 Nos.	58000	15 Nos.	249800	20 Nos.	373000

Source: Divisional Forest Officer (Ghumsur North Division)

4.8 Protection

4.8 Protection Unit and Cycle

4.8.1 A 10 (ten) years Protection Cycle is adopted synchronising the plan period. It is suggested to create different protection units to achieve the special objectives. The routine forestry operations like maintenance of block boundaries to prevent encroachment, annual repair of forest roads to ensure un-interrupted patrolling are being followed. At present in Ghumsur North Division 119 no's of anti smuggling squad persons including Para staff are engaged in Division office and different Ranges to check the illegal activities of the timber smugglers, wildlife hunters etc.,

4.9 Method of Execution of Operation

4.9.1 As per provisions of Orissa Forest Department Code the field staff starting from the Forest Guard is responsible for protection of forests within the area of his jurisdiction. Due to galloping rise in both human and cattle population the pressure on the forest has increased manifold. The effort made by the staff and the cooperation rendered by the VSS are sometimes insufficient particularly for the vulnerable areas to ensure satisfactory protection. So some additional efforts are necessary to accomplish the special objectives of this working circle. These are prescribed in the following paragraphs.

4.9.2 Improvement in Performance of the Field Staff

4.9.2.1 The Forest Guard, Forester and the Range Officer are the cutting edge of Forest Administration. Their performance shall be monitored regularly to induce a healthy competition among themselves. A monthly performance report just in the pattern of self-assessment duly filled in by the concerned staff and countersigned by his next superior authority shall be obtained. In this connection, the author has adopted a monthly review through a format as under and observed appreciable enhancement in the performance. So the same format is prescribed for the plan period.

Name of the Fr/FG Section/Beat	**No. of cases booked**					**Quantity of forest produce seized**		**Amount C fees collected through cases booked by him**	**No. of VSS meeting attended**
	UD case	OR case (comp)	U/S-56	PR case	Total	Timber in cft.	Firewood in qntl.		
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

4.9.3 ENGAGEMENT OF ANTI SMUGGLING SQUAD

4.9.3.1 In view of multifarious assignment of the forest officials as well as tremendous pressure on the forests, it is not humanly possible on the part of the forest officials to control the crime alone. Supporting hands like Anti Smuggling Squad consisting of daily wage watchers can yield good results as evident from such deployment during last four years of the previous plan. These squads shall be

constituted by engaging the local youths who are well acquainted with the topography of the forests as well as physically and mentally sound to resist the smugglers and face any untoward situation. Such squad shall consist of 10 (ten) local youth under the control of the concerned Forester. One such squad is prescribed for each protection unit. Headquarter of Protection Unit is to be finalized by the Divisional Forest Officer depending upon the locations/ Forest Blocks where there is biotic interference/illicit felling. Protection Unit stations to be kept either inside the Forest Block or at the vulnerable location of transportation. The deployment of the squad shall be subject to rotational change in different localities and the same shall be decided by the Range Officer with periodical check and review by Assistant Conservator of Forests.

4.9.4 Strengthening Of Infrastructure

4.9.4.1 A functional Divisional Mobile Squad with vehicle, required staff and arms will be constituted. The Divisional Mobile will be deployed by the Divisional Forest Officer for regular patrolling and supporting field staff in emergencies.

4.9.4.2 All forest check gates shall be strengthened with the staff along with the provisions of 3 (three) daily wage watchers per each gate to assist the forest officials in discharging the duty round the clock.

4.9.4.3 It is high time to provide a jeep/bolero to each range for effective control of the forest crime. This will definitely enhance the functioning of the staff at range level.

4.9.4.4 A prosecution cell with a Range Officer in charge shall be constituted at the Division Office to ensure proper liaison between the prosecuting officials and the public prosecutors. This will remarkably help in proper submission of prosecution report and other documents to the courts and also to keep a track on the trial of the case.

4.9.4.5 Trainings should be imparted to the field staff particularly Forest Guard, Forester and Range Officer to handle the arms and ammunition, collection of intelligence and modern fire fighting method.

4.9.4.6 Using advance GIS and information technology, foot patrolling, other protection activities may be introduced to increase the efficiency and transparency in the system

4.9.5 Fire Protection Measures

1. The extent and causes of the fire along with the damage done to the forests has been narrated in **Part-I.** Protection against fire requires concerted effort of field staff and the forest fringe dwellers during the period from February to June

2. Though Anti Smuggling Squad has been proposed for each protection unit but during fire season some additional hand i.e. firewatchers are necessary for effective control of this menace. Depending on the vulnerability of the area, the Range Officer shall be entrusted for such engagement of fire watchers & fire protection vehicles to be provided to each fire protection units.
3. The VSS should be involved in containing forest fires. Incidence of annual fire should be entered in the compartment history. Fire prone areas should be identified and precautionary measures should be taken in time.
4. Annual fire line clearance of 1 to 2 chain width in fire sensitive areas coupled with controlled burning shall be done under the personal supervision of the Forester / Range Officer. Moreover, old fire lines, forest roads, boundary lines shall be kept clean by taking up control burning in 1 chain strip on both sides of it.
5. Modern fire fighting methods should be adopted.
6. Awareness on the damage caused by fire to be created amongst the local people.
7. Information assimilation of Forest fire through satellites & SMS received from FSI.

4.9.6 Communication System

4.9.6.1 Maximum areas of the Range Headquarters are covered by the network of different mobile phone operating companies with Divisional Headquarters. Even though, The Range head quarters as well as other important section Headquarters and places shall be provided with VHF system to cover whole Range. In rest areas prepaid mobile phone shall be provided to the staff for effective communication in transmitting information. The VHF system shall be updated as and when required. It is observed that communication through mobile phone both oral and written is very fruitful nowadays. This is not only cost effective but also functions nicely. In the past it is experienced that VHF system remains out of order or in need of frequent repair particularly due to cyclone / strong wind etc. Even though, the VHF Communication should be given in the interior forest pockets to transmit information.

4.9.7 Intelligence Network

4.9.7.1 Collection of information secretly through an intelligence network is of paramount importance to combat the forest crime successfully. Very often it is observed that enormous physical efforts are ended in no result without obtaining proper information which is vital to strike. The Range Officer shall be entrusted to build up such a system in his range for which some secret fund shall be placed with him. Similarly at the division level, some secret fund shall be placed with the Assistant Conservator of Forests (Enforcement) who will utilise the same under guidance of Divisional Forest Officer for collection of information regarding the forest offence. A list of hardcore smugglers shall be

prepared for each range and compiled at the division level by the Assistant Conservator of Forests (Enforcement).

4.9.8 Reward

4.9.8.1 There shall be provision for reward to the staff for their outstanding performance in protection matter. This is ascertained from the review of all the monthly performance reports during the year.

4.9.9 Incentive

4.9.9.1 Incentives shall be paid to the VSS for their exemplary action in protection matter. This will encourage the participation of local people in protection of forests. Individuals shall also be considered for it.

4.10 Miscellaneous Regulations

4.10.1 Besides the prescriptions provided in the foregoing paras, some other regulations are necessary to augment the former for effective results. These are the following.

4.10.2 Evaluation

4.10.2.1 Periodical assessment is necessary to improve the implementation by removing the bottlenecks noticed. Normally the monitoring is done regularly through departmental staff but the evaluation should be done by an independent agency for providing the correct position. The evaluation shall be made in an objective manner for which the Divisional Forest Officer should prescribe a suitable format containing point wise scoring system. Reputed local NGO can be entrusted for such evaluation. Each year in the month of April, such evaluation shall be done for the performance of preceding financial year. The shortcomings noticed shall be taken care of in future to ensure the effective implementation.

4.10.3 Peoples' Participation

4.10.3.1 It is doubtless to say that at present the protection of forests is incomplete without the participation of the local people for which Joint Forest Management is being encouraged to ensure the involvement of the forest fringe villagers. So while making efforts to fortify the infrastructure to combat the menace, simultaneous steps shall be taken to motivate the local people for participating in the process through constitution of VSS and assigning the area to them.

4.10.4 Maintenance of Records

4.10.4.1 All the works undertaken in the protection unit shall be entered in the respective compartment history files along with the results obtained. This will be a data base for further analysis and reference. In addition to protection measures stated in foregoing paras, the different forest

blocks coming under this Working Circle to check soil erosion to avoid siltation of different reservoirs by adopting the following methods of Soil Conservation measures in different forest blocks which will improve the water table of the forest blocks to eliminate weed growth and improve crop condition.

4.11 Soil & Moisture Conservation Measures

4.11.1 Soil and moisture conservation measures should form one of the components of protection operations. Appropriate soil and water conservation measures shall be taken up to reduce the velocity of the water flow and to retain the topsoil. Measures like gully plugging, loose boulder check dams, contour bunds, nalla bunding and vegetative bunds are prescribed. It should be implemented on watershed basis so as to ensure maximum conservation of moisture and soil, which will act as drought proofing measures.

(a)Watershed Co-relation: - The annual coupe map shall be co-related with the watershed map of that area for emphasizing the treatment of nallas, streams etc. to maximize the conservation of both moisture and soil.

(b) Gully Plugging: - (1) Check dams are required to be erected across gullies. Loose boulder check dams are medium sized mechanical structures, provided in the middle reaches of the gullies having a width of 1.0 mt. to 3.0 mt. Rough stones of size of 0.15 to 0.3 cum are required for the construction of these structures. Earthen bunds should be provided in both sides of the structure. Height of the check dam should be regulated 1/3rd to ½ of the gully depth. These check dams should be constructed at regular intervals depending on the gradient, steeper the slope, more check dams are required. More number of check dams are required in Category-II areas since the slopes are steep and the velocity of runoff is high. (2) Gully plugging can also be done with brushwood depending on the availability of material, requirements of sites and cost norms. The gully beds should be planted with soil binders like Sabai grass, Vetiver grass and Agave. Generally for brushwood check dams, the height of the fall taken into consideration is 1 meter, the maximum width of the gully is 3 meter and depth is 0.6 meter.

(c) Palisading, Agave Planting & Vegetative Building: - With the available materials palisading has to be prepared along the contours to counteract the force of water movement. 10 to 20 meters apart depending on the slope, plantation of grass like Khus Khus, Napier grass, Sachrum etc. should be done. 10 to 20 meters from the second line Agave should be planted.

(d) Contour Bunds: - Contour bunds are constructed along the contour to arrest the water velocity. Grass turfing is given on the side slope and top of the bund. The soil binding species like Vetiver grass are to be planted on the upper slope of the bund with spacing of 0.23 meter.

(e) Staggered Trenches: - These trenches would be constructed along the contours. The trench should be correct size (2 mt. x 0.5 mt. x 0.5 mt.), if it is undersize for any reason, equal tranches of more number to be dugout. The soil dug from the trenches should be kept at least one foot away from the trench in an inverted trapezium manner. This soil should be compacted and dribbled with the seeds. These trenches should not be resorted to when the slope is more than 30%. In these areas the trenches half the original size (2 mt. x 0.5 mt. x 0.5 mt.) can be taken up along the contour line. Generally the distance between the two trenches can be 3 meters along the contour and also 3 meters along the slope.

(f) Percolation Tanks: - These tanks are to be constructed on the flat areas of the highest points. Generally each tank is to be dug out with dimensions of 5 mt. x 5 mt. x 0.5 mt. The width and the depth can vary depending on the availability of the flat surface. The earth dugout from the tanks should be placed in the inverted trapezium and the soil should be compacted. No inlet and outlet to be provided from the percolation tank. The bunds should be treated with seeds Dhanicha (*Sesbania aculeala*), Sun hemp or even Horse gram.

4.12. Controlled grazing

4.12.1 The annual protection areas shall remain closed for grazing. Practice of stall feeding to cattle, collection of grasses and fodders will be induced to the local people. The stipulations laid down in the Odisha Forests (Grazing of Cattle) Rules. 1980 shall be followed meticulously.

4.13 People's Participation

4.13.1 The JFM mode for participation of local people is suggested for Forest Protection and Management in accordance with the Govt. policy in vogue.

4.14 Control

4.14.1 The stipulation laid down in the Forest Rights Act, 2006 and Rules 2008 thereof need to be followed.

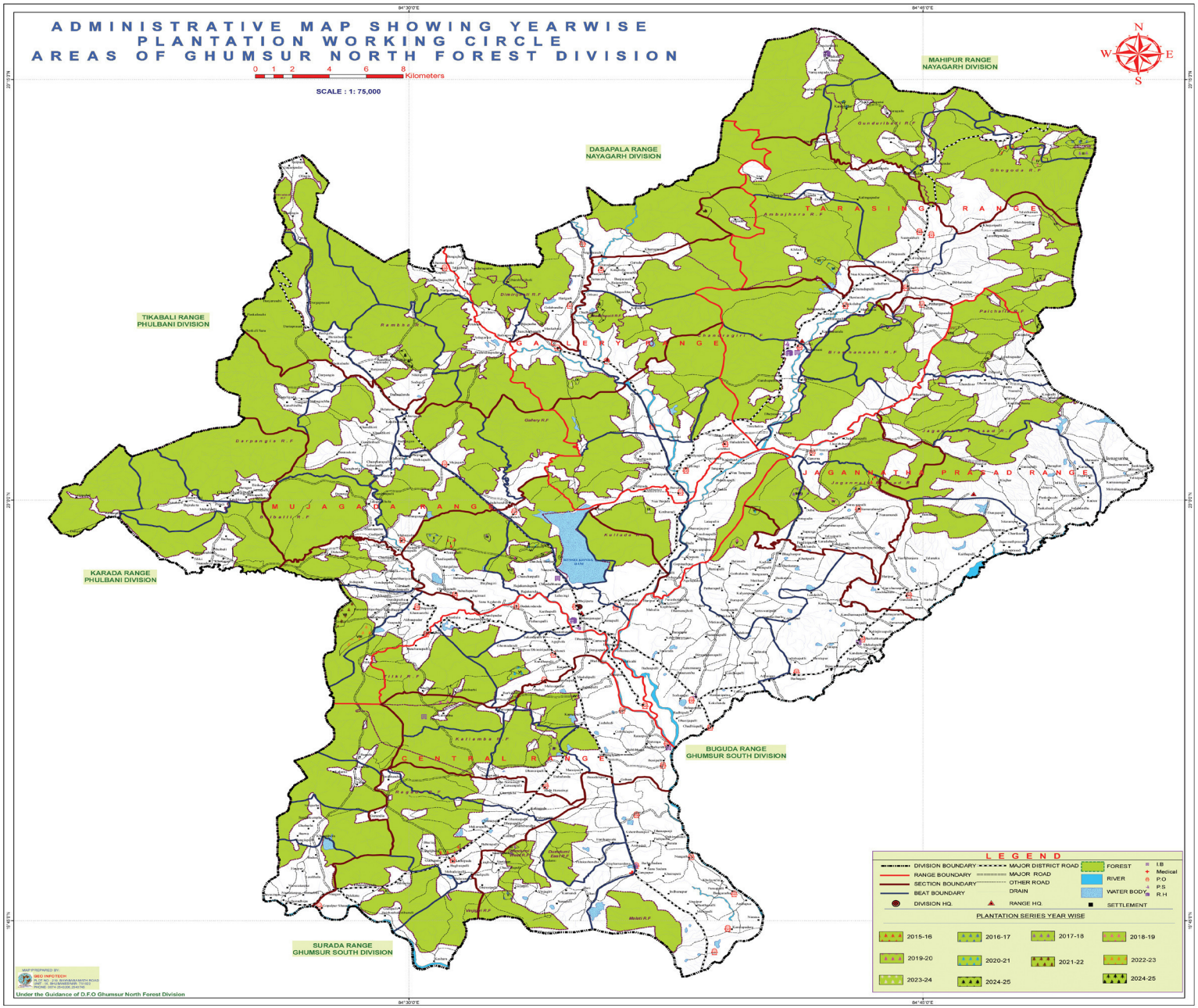
4.15. Cost Norm

4.15.1 Cost norm for implementation of the prescription of this working Circle will be used for various prescribed works in the circle,. The cost norm of this Working Circle has been given in **Chapter –X of Part-II.**

ADMINISTRATIVE MAP SHOWING YEARWISE PLANTATION WORKING CIRCLE AREAS OF GHUMSUR NORTH FOREST DIVISION

0 1 2 4 6 8 Kilometers

SCALE : 1: 75,000



MAP PREPARED BY:
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Under the Guidance of D.F.O Ghumsur North Forest Division

CHAPTER-V

PLANTATION WORKING CIRCLE

5.1 General Constitution

5.1.1 All those blocks which have permanent blanks and barren lands subjected to continuous biotic interference are included under this overlapping working circle. Such areas are devoid of any root stock worthy of establishing natural regeneration within a reasonable time frame and therefore artificial regeneration through planting of the blank forest areas is indispensible for these areas to be re-vegetated. Under this circle the old existing plantations raised during the outgoing plan period and/or prior to the outgoing plan period have not been included and they have been intentionally kept under rehabilitation working circle so that the tending operations being done in those areas will extend to the existing old plantations. Total forest area covered by this working circle is **1500 hectares.**

5.2 General Observation and Vegetation

5.2.1 With the introduction of fast growing species including genetically improved clone planting stock, management of plantations has become increasingly more intensive. The plantation programmes, as of now not only aim at improving the forest cover but also seek to extend such resource for meeting the basic requirement of local people as well as the forest based industries. Bamboo plantations will also be taken up in those areas where the neighboring areas show signs of bamboo availability. Prescriptions for pre planting and post planting operations will be made in this chapter of the revised working plan.

5.2.2 Prescriptions of the outgoing plan on plantations have not been carried out in total. Even the plantations have been subjected to grazing and illicit felling. Thus, not only proper planning must be adhered to, the schedule of various operations is essential to achieve the objectives of management.

5.2.3 The areas included in this Working Circle have scanty forest growth except those blocks where plantations have been undertaken and have survived. The forest types that existed in these areas have already been described in **Chapter-2A of Part I** and therefore repetition is avoided. However, the major area under this working circle is of following category

I. Northern Dry Mixed Deciduous Forests ($5B/C_2$)
II. Tropical Moist Deciduous Forest
III. Moist Mixed Deciduous Forest

These are the most common types encountered in the forest blocks. These forests are tending to scrubby condition having mixed miscellaneous species composition. Natural forest has been destroyed by various factors like Natural disasters, biotic interferences which give place to scrub forest. . The common species of these forests are: *Annogeissus latifolia, Terminalia tomentosa, Diospyros melanoxylon, Xylia xylocarpa, Emblica officinalis, Bridelia retusa, Cleistanthus collinus, Woodfordia fruticosa, Ziziphus numularis*, etc. The regeneration of different common tree species is deficient because of continuous hackling of trees and saplings, encroachment, shifting cultivation, grazing, forest fires and natural disasters. The site quality is IV. The area included in this Circle is the plain forest, hilly eroded areas.

5.2.4 Site specific indigenous species will be raised for taking up plantation in the identified area. Soil and moisture conservation measure needs to be taken for recharge of ground water and control of soil erosion. Necessary provision for eradication of weeds where ever encountered in these areas will be made in this plan so as to avoid unnecessary root competition for vital nutrients and moisture and thus provide the right impetus for a faster growth by ensuring optimum nutrient allocation to the desirable planted species. No naturally occurring trees will be removed to create space for plantation except eradication of weeds.

5.2.5 Most of the forest blocks included in this circle have soil which is slightly acidic to neutral in nature and having gap area consisting of calcareous contents of the soil. The depth of soil is generally moderate to good. However, any plantation raised will require application of fertilizers for better growth as gradually biotic factors have led to loss of nutrients.

5.3 Special Objectives of Management

5.3.1 The special objectives of management under this working circle are within the ambit of the general objectives of management outlined for the revised Working Plan:

- ✓ To restock the barren and permanent blanks besides encroached areas by raising plantations of suitable species through artificial regeneration.
- ✓ To replenish the biodiversity in the degraded areas and clearing the area affected by unwanted weed infestation.
- ✓ To match the supply of fodder, fuel wood and small timber to that of the demand of these amongst the local people.
- ✓ To take effective measures to conserve soil and moisture thereby enhancing the land productivity.

5.4 Area and Allotment

5.4.1 Total area allotted to this Working Circle is 1500.00 ha. Range wise compartments of forest blocks allotted to this working circle are summarized in **Table 5-1**.

Table 5-1 Range wise allotment of Block Plantation area of Plantation Working Circle of Ghumsur North Division					
Sl.No.	**Name of the Range**	**Name of the Reserve Forest**	**Compt. No.**	**Area to be taken up for Plantation (in ha.)**	**Range Total**
1	Gallery	Gallery	16	20	
2		Gallery	18	30	
3		Gallery	20	20	
4		Gallery	23	10	
5		Chadhiapalli	1	80	
7		Dimirijholi	1	30	
9		Dimirijholi	2	50	
11		Ambazora	6	30	**270**
12	Tarasingi	Paichalia	1	20	
13		Paichalia	2	20	
14		Paichalia	3	20	
15		Brahmanasahi	2	60	
16		Gunduribadi	2	15	
17		Ghogada	3	30	
18		Ghogada	4	75	
19		Ghogada	5	30	
20		Ambajhara	10	20	
21		Ambajhara	13	20	**310**
22	Jaganathprasad	J.Prasad	7	40	
23		J.Prasad	8	40	
24		J.Prasad	9	60	
25		J.Prasad	10	40	
26		Paichalia	5	40	**220**
27	Central	Dumudumi West	1	20	
28		Vinjigiri	1	20	
29		Vinjigiri	4	30	
30		Tiliki	4	30	
31		Tiliki	5	30	
32		Ragada	4	20	
33		Ragada	5	20	
34		Kaliamba	4	30	
35		Kaliamba	5	20	
36		Kaliamba	6	20	**240**
37	Mujagada	Kullada	3	40	
38		Tiliki	1	100	
39		Gallery	4	70	
40		Gallery	5	40	
42		Gallery	6	120	
43		Gallery	7	10	
44		Gallery	11	40	
45		Rambha	1	40	**460**
			Division Total	**1500**	**1500**

5.5 Analysis and Valuation of Crop

5.5.1 The areas included in this working circle are mostly blank patches with having bushy growth of inferior species and heavily infested with weeds. Since these areas are mostly devoid of

vegetation cover, the analysis and valuation of the crop have not been undertaken. Most of the sites allotted to this working circle.

5.6 Silvicultural System

5.6.1 Areas included in this working circle are required to be restocked through artificial regeneration. As these are all blank patches, therefore no formal silvicultural system is prescribed for this Working.

5.6.2 Under artificial regeneration, the barren/blank areas shall be restocked with suitable species of choice. Post planting operations as per Orissa Plantation Manual'1977 shall be followed.

5.7 Constitution of Plantation Series and Cycle

5.7.1 In view of different requirements for various areas within the circle, separate range wise plantation series are required to be constituted for 1500 hectares. This Working Circle has been divided into 04 (four) Planting Series. While constituting such series, care has been taken to restrict the series as far as possible within the Range jurisdiction to which the particular forest block belongs. This has been done mainly for administrative convenience and better implementation of the prescriptions. The details of planting series constituted are provided in **Table 5-2**.

Table 5-2 Plantation Series wise allotment of Block Plantation area of Ghumsur North Division

Plantation Series	Range	Specification of Area allotted to PWC			
		Forest Block	Compt. No.	Area in ha.	Total
1	2	3	4	5	6
Tiliki	Central	Ragada	4	20	420
			5	20	
		Vinjigiri	1	20	
			4	30	
		Dumdumi West	1	20	
		Kaliamba	4	30	
			5	20	
			6	20	
		Tiliki	4	30	
			5	30	
	Mujagada		1	100	
		Kullada	3	40	
		Rambha	1	40	
Gallery	Mujagada	Gallery	5	40	
			6	120	
			7	10	
			11	40	
			4	70	

	Gallery		16	20	**360**
			18	30	
			20	20	
			23	10	
Ghogoda		Ambazora	6	30	**440**
		Dimirijhoili	1	30	
			2	50	
		Chadhipalli	1	80	
	Tarasingi	Ghogada	3	30	
			4	75	
			5	30	
		Brahmanasahi	2	60	
		Gundiribadi	2	15	
		Ambazora	10	20	
			13	20	
Jaganath Prasad		Paichallia	1	20	**280**
			2	20	
			3	20	
	J.Prasad		5	40	
		J.Prasad	7	40	
			8	40	
			9	60	
			10	40	
Division Total				**1500**	**1500**

5.7.5 In that allotted 1500 ha plantation working circles, 335 ha of block plantation had achieved from the year 2013 to 2016-17. Out of 335 ha block plantation, 245 ha of block plantation were already achieved during the year 2013 to 2016-17 in the proposed compartments in the above plantation working circle areas. Apart from that 90 ha of plantations additionally carried out in various compartments comparing to the prescribed area of working circle. So, the Final area prescribed under the Plantation working circle is 1255 Ha. The detail list of plantation taken up in the various compartment wise has given in the **Table 5.3**

Table 5.3 **List of completed plantation in different Compartments in the Plantation series.**

Plantation Series	Range	Specification of Area allotted to PWC				2013-14	2014-15	2015-16	2016-17	Total
		Forest Block	Compt. No.	Area in ha.	Total	AR	AR	AR	AR	AR
1	*2*	*3*	*4*	*5*	*6*	*7*	*9*	*11*	*14*	*15*
Tiliki	Central	Ragada	4	20						0
			5	20				20		20
		Vinjigiri	1	20						0
			4	30						0

		Dumdumi West	1	20						0
		Kaliamba	4	30						0
			5	20			20			20
			6	20				10		10
		Tiliki	4	30						0
			5	30						0
	Mujagada		1	100						0
		Kullada	3	40						0
		Rambha	1	40	**420**					0
Gallery		Gallery	5	40		20				20
			6	120						0
			7	10						0
			11	40		20	20			40
			4	70						0
	Gallery		16	20			20			20
			18	30						0
			20	20						0
			23	10	**360**		25	20		45

Ghogoda	Gallery	Ambazora	6	30						0
		Dimirijhoili	1	30						0
			2	50					25	25
		Chadhipalli	1	80						0
	Tarasingi	Ghogada	3	30						0
			4	75						0
			5	30						0
		Brahmanasahi	2	60			20	20		40
		Gundiribadi	2	15						0
		Ambazora	10	20						0
			13	20	**440**					0
Jaganath Prasad		Paichallia	1	20						0
			2	20						0
			3	20						0
	J.Prasad		5	40						0
		J.Prasad	7	40		20	20	30	25	95
			8	40						0
			9	60						0
			10	40	**280**					0
Division Total				**1500**	**1500**	**60**	**125**	**100**	**50**	**335**

5.7.6 Since the areas allotted to this circle are to be treated with in the plan period, the plantation cycle of 10 years is fixed to coincide with the plan period.

5.8 Choice of Species

5.8.1 Indigenous species shall be given priority in all the planting series because they are better adapted to local environment. Based on the soil type, *Tectona grandis, Gmelina arborea*, *Dalbergia sissoo*, *Holoptelia integrifolia*,*Pongamia pinnata*, *Acacia catechu, Emblica officinalis, Syzigium cumini, Terminalia tomentosa*, *Dendrocalamus strictus*, *Bambusa arundinaceae*, *Cassia siamea*, *Acacia leucophloea, Albizia procera, Albizia lebbeck* etc may be planted. Apart from that, NTFP species, fuel wood and leguminous species shall be preferred. The monoculture of any species shall be dissuaded. While choosing the species for plantation the adaptive condition of the area shall be given priority. The list of species that can be grown in different sites may be made by referring to Hand Book of Afforestation techniques by Sri R.C. Ghosh or through relevant latest references.

5.8.2 Since correct choice of site-specific species has a great bearing on the success of establishment of a plantation, the points that shall also be taken into account are the site requirements of species with regard to soil depth, pH, slope and erosion, soil texture, soil moisture besides local and commercial demand for that species.

5.9 Rotation

5.9.1 Rotation is of theoretical importance only. As the area is to be restocked owing to plantation, rotation is out of question. Furthermore, no felling is even anticipated for the plantations to be raised during the revised plan period.

5.10 Calculation of Yield and Regulation

5.10.1 No yield is anticipated since the prime objective of this circle is to restock the barren and blank forest areas with artificial regeneration within the plan period of 10(ten) years and also to tend the existing plantations. However, dead and fallen trees shall be removed from the annual areas of treatments.

5.11 Methodology and Operations in Planting Series

5.11.1 Division into Annual Coupes: Prescriptions given in the Orissa Plantation Manual and other executive instructions, in force, shall be given due consideration. Each of the four planting series has been divided into 10 (ten) annual coupes. The sequence of planting series is given in **Table 5-3**. If the plantation operations could not be taken up in a particular year because of lack of funds, staff or other factors, those forest blocks will be taken for plantation in subsequent years in addition to current year's area. If more funds are available or the emergency situation warrants,

the areas due for plantation in future can also be advanced. However, all these deviations shall be subjected to the formal approval of the competent authority and duly reflected in the respective compartment history files as well.

Table 5-3 Division of Planting Series into Annual Planting Coupes						
I. Gallery Plantation Series						
Year	**Range**	**Coupe No.**	**Name of RF**	**Compt. No.**	**Area**	**Coupe area**
2015-16	Mujagada	I	Gallery	4 (Part)	40	40
2016-17		II	Gallery	4 (Balance)	40	40
2017-18		III	Gallery	5	20	20
2018-19		IV	Gallery	6 (Part)	20	20
2019-20		V	Gallery	6 (Balance)	20	20
2020-21		VI	Gallery	6 (Balance)	30	40
				7	10	
2021-22		VII	Gallery	6 (Balance)	20	20
2022-23	Gallery	VIII	Gallery	6 (Balance)	20	20
2023-24		IX	Gallery	18	30	30
2024-25		X	Gallery	20	20	20
Series Total						**270**

II. JagannathPrasad Plantation Series						
Year	**Range**	**Coupe No.**	**Name of RF**	**Compt. No.**	**Area**	**Coupe area**
2015-16	Jagannathprasad	I	Jagannathprasad	8(P)	20	20
2016-17		II	Jagannathprasad	8(B)	20	20
2017-18		III	Jagannathprasad	9 (P)	40	40
2018-19		IV	Jagannathprasad	9(B)	20	20
2019-20		V	Jagannathprasad	10(P)	20	20
2020-21		VI	Jagannathprasad	10(B)	20	20
2021-22		VII	Paichalia	5(P)	20	20
2022-23		VIII	Paichalia	5(B)	20	20
2023-24	Tarsing	IX	Paichalia	1	20	20
2024-25		X	Paichalia	2	20	40
				3	20	
Series Total					**Table**	**240**

III. Tiliki Plantation Series						
Year	**Range**	**Coupe No.**	**Name of Forest Block**	**Compt. No.**	**Area**	**Coupe area**
2015-16	Central	I	Ragada	4	20	20
			Ragada			
2016-17		II	Vinjigiri	1	20	50
			Vinjigiri	4	30	
2017-18		III	Dumddumi West	1	20	50
			Kaliamba	4	30	
2018-19		IV	Kaliamba	6	10	10
			Kaliamba			
2019-20		V	Tiliki	4	30	30
2020-21		VI	Tiliki	5	30	30
2021-22	Mujagada	VII	Tiliki	1 (P)	50	50
2022-23		VIII	Tiliki	1(B)	50	50
2023-24		IX	Kullada	3	40	40
2024-25		X	Rambha	1	40	40
Series Total					**Total**	**370**

IV. Ghogoda Plantation Series						
Year	**Range**	**Coupe No.**	**Name of Forest Block**	**Compt. No.**	**Area**	**Coupe area**
2015-16	Tarsing	I	Ghogoda	3	30	30
2016-17		II	Ghogoda	4	75	40
2017-18		III	Ghogoda			35
2018-19		IV	Ghogoda	5	30	30
2019-20		V	Brahmanasahi	2	20	20
2020-21		VI	Gundribadi	2	15	55
			Ambazora	10	20	
			Ambazora	13	20	
2021-22	Gallery	VII	Ambazora	6	30	30
2022-23		VIII	Dimirijholi	1	30	30
2023-24		IX	Dimirijholi	2	25	45
			Chadhiapalli	1(P)	20	
2024-25		X	Chadhiapalli	1(B)	60	60
Series Total					**Total**	**375**

5.11.2 Demarcation of Annual Planting coupes: The annual coupe shall be surveyed one year in advance which shall be treated as the zeroth (0th) year. Except where the annual planting coupe coincides with the compartment line/entire block, in strip to a width of at least 3 meters shall be

cleared along the survey line and stone cairns erected at each survey station. In case, any of these survey points coincide with the boundary pillars of the forest block, such pillars shall be maintained as per the requirement; however, no stone cairns shall be constructed there. Further, sign board shall also be constructed at conspicuous place indicating the details.

5.11.3 Preparation of Treatment Map and Plan: The identified sites shall be demarcated and mapped on 1:25,000 scale toposheet by the concerned Forester/ Range officer. Maps so prepared shall include relevant information regarding slopes, contours, watershed boundaries, nature of erosion/site degradation, and type and depth of soils. Other relevant information including crop condition shall also be included. An area treatment plan and estimate of costs shall be prepared by the concerned Range Officer duly spelling out the calendar of different operations. The treatment plan and estimates shall be as per the approved cost norms and the instructions of the authorities in vogue. It shall be checked by the Divisional Forest Officer/Asst. Conservator of Forests.

5.11.4 Method of Raising Plantation

5.11.4.1 Prescriptions given in the Orissa Plantation Manual and other executive instructions, in force, shall be given due consideration. It is needless to emphasize that success of the plantation depends largely on good planting stock and timely planting operations in the field. However, a tentative work schedule with different operations is indicated below.

5.11.4.2 Site preparation shall begin in the year zero. Area shall be closed for grazing at least up to next five years. Appropriate soil and moisture conservation measures shall also begin in the year zero. Species suitable for the site shall be identified in accordance with the objectives of management and preparations for nursery shall begin in the year zero. At least six month to one year old seedlings of good quality need to be planted. Every possible effort shall be made to ensure successful establishment of plantations. Clonal propagation may also be attempted, at least on experiment basis, in some plantations.

5.11.4.3 Site shall be cleared of undesired weeds, and shall be burnt. These operations shall be completed by December-January of the year zero. Alignment, stacking and pitting should be taken up as per the prescribed cost norms provided by PCCF, Odisha. Stacking and pitting shall be completed by March-April. However, in case of stump planting, crow bar holes shall be done just at the time of planting itself. The site preparation including pitting should be over by April so as to provide intervening time for weathering of the opened up soil. However, planting shall be commenced immediately on the onset of monsoon and not later than 1st week of July. At the time of planting, insecticide and fertilizer shall be applied as a basal doze depending on the requirement. Planting will be done departmentally and plantation journal shall be maintained as per the Orissa Plantation Manual.

5.11.4.4 Post Planting Operations shall include casualty replacement; weeding, soil working and other operations to be carried out as per calendar of operations. The planting and post-planting operations shall be carried out as per the norm approved by the Govt from time to time and in accordance with the prescriptions given in the Orissa Plantation Manual. The plantations shall be fully protected from all of biotic interferences. Further, the tending operations in these plantations shall be carried out. An indicative schedule of various planting operations is shown in **Table 5.4** for guidance of the field staff.

Table 5.4 : Tentative Schedule of Planting Operations

Operations	**Tentative time of execution**
0th Year Operations	
Raising of Nursery	September-October
Advance preparation of site	October-December
Alignment and Stacking	February
Soil and Moisture Conservation (Mechanical)(Part)	February-March
Digging of pits(Part Major work)	February-March
Planting and Post Planting Operations in 1st Year	
Digging of pits(Balance left over)	April
Soil and Moisture Conservation (Balance)	April-May
Scooping of Pits already Dug	May-June
Polypot Planting	June Last to 1st week of July
Casualty replacement	July Last to August
1st soil working, weeding and manuring	August-September
2nd soil working and weeding	December
Mulching	January=February
Fire Tracing	February-March
Post Planting Operations in 2nd Year	
Casualty replacement	Within July
one weeding, soil working and manuring	August-September
Fire Tracing	February-March
Post Planting Operations in 3rd and subsequent Years	
Soil working and casualty replacement	July-August
Pruning and other cleaning operations as required	May-June OR November
Fire Tracing etc	February-March

5.12 Miscellaneous Regulations

5.12.1 Plantation Journal and Nursery Journal shall be maintained for every plantation as per Orissa Plantation Manual, 1977. Further, the Compartment history files and Control forms besides other records shall be maintained for each planting Coupe/Compartment including that of Tending in accordance with the Management Plan Procedure, 1991.

5.12.2 All the annual coupes under different series shall be strictly protected from grazing and fires for a period of five years after planting. Suitable areas adjacent to these coupes may be developed into fodder plantation so as to even encourage stall feeding thereby diverting the grazing pressure from the annual coupe.

5.12.3 There are 5 permanent nurseries in the Division. Temporary nurseries shall be developed wherever necessary. Both the nurseries will be utilized for raising of nursery stocks for plantation as well as distribution of seedlings to the public.

5.13 Rights and Concessions

5.13.1 Only such rights and concessions shall be admitted as have been described in **Chapter-1 of Part I.** Additional usufructuary rights may be allowed in accordance with the provisions of the current policies and programmes of the Govt. with regard to Joint Forest Management. No other rights and concessions shall be admitted in this Working Circle.

5.14 Intermediate Revision and Cost Norm

5.14.1 The prescriptions of this working circle are not likely in need of any immediate changes during the plan period and hence, no such revision is anticipated.

5.14.2 The cost norm for implementation of prescription and the total estimated cost of working under this Working Circle is discussed in **Chapter-10 of Part II** (Financial Forecast and Cost of the Plan.

ADMINISTRATIVE MAP SHOWING BAMBOO WORKING CIRCLE AREAS OF GHUMSUR NORTH FOREST DIVISION

0 1.5 3 6 9 12 Kilometers

SCALE : 1: 75,000

MAHIPUR RANGE
NAYAGARH DIVISION

DASAPALA RANGE
NAYAGARH DIVISION

TIKABALI RANGE
PHULBANI DIVISION

KARADA RANGE
PHULBANI DIVISION

BUGUDA RANGE
GHUMSUR SOUTH DIVISION

SURADA RANGE
GHUMSUR SOUTH DIVISION

TARASINGI RANGE

JAGANNATHPRASAD RANGE

MUJAL RANGE

SENAPATI RANGE

LEGEND

- DIVISION BOUNDARY
- RANGE BOUNDARY
- SECTION BOUNDARY
- BEAT BOUNDARY
- DIVISION HQ.
- MAJOR DISTRICT ROAD
- MAJOR ROAD
- OTHER ROAD
- DRAIN
- RANGE HQ.
- FOREST
- RIVER
- WATER BODY
- SETTLEMENT
- B.W.C AREA
- I.B
- Medical
- P.O
- P.S
- R.H

ELEPHANT CORRIDOR

MAP PREPARED BY:
GEO INFOTECH

Under the Guidance of D.F.O Ghumsur North Forest Division

CHAPTER - VI

THE BAMBOO (OVERLAPPING) WORKING CIRCLE

6.1 General Constitution

6.1.1 This Working Circle is an overlapping working Circle and overlaps over the area of selection working Circle and rehabilitation working circle. It comprises of all commercially exploitable bamboo bearing areas. There are principally two types of Bamboo species found in the forest of this division and they are Salia bamboo (*Dendrocalamus strictus*) and Kanta Bamboo or Daba Bamboo (*Bambusa arundinecea*). All five ranges of the division are consisting of bamboo forests consisting of above two species of bamboo.

6.1.2 The former two varieties of bamboo species comprises of 90 to 95 percent of the total Bamboo crop of the division. In the economic point of view, Salia bamboo is greater importance to the people and the industry owing to its wide range of utility. In the recent past, kanta bamboo has also experienced a new found demand amongst the local artisans, household and industries both for domestic consumption and for commercial purposes.

6.2 General Character of Vegetation

6.2.1 Salia bamboo is found in pure form and is seen confined to the hills and hilly slopes and is mostly found in association with miscellaneous tree species. This form of bamboo occupies a significant percentage of the total crop diversity in the areas in which it is found. The growth and quality is poorer on the outer hills and southern aspects where clumps are not that large than in the interior slopes and northern aspects. In the plains especially in pure Sal forests, it is almost absent and if present, it is restricted to the outer periphery of the Sal belts.

6.2.2 It constitutes 80 to 90% of the total of the total forests under bamboo in this division. The quality of the Salia bamboo on the whole is good in this division. Salia bamboo is distributed in most of the RF of the Division but abundantly found in of the, Ambazora RF, Ghogodo RF, Kaliamba RF, Baiballi RF, Darpangia RF, Gundribadi RF.

6.2.3 Kanta or Daba bamboo is confined to the bottoms of the narrow ravines, broad valleys, interior pockets of hills and the ends of river banks where it tends to form a pure crop to the exclusion of other species. It is distributed in the all the compartments of the bamboo overlapping circle area of the division. As the climate becomes more humid, it tries to occupy higher and drier area. However it constitutes only 5 to 10% of the total of the total forests under bamboo in this division. The quality of bamboo varies from I, II and II/III.

6.2.4 Sporadic flowering has been observed in all areas. No gregarious flowering is reported in any area. Most of the bamboo areas are affected by grazing, fire and illicit removal. Many rural populations depend on bamboo basket and other products for their own use, fencing etc. and art and craft for selling purposes.

6.3 Area Statement

6.3.1 All areas bearing bamboos have been included in this Working Circle. The composition and the area extent of this overlapping working circle have been kept unchanged as was given in the outgoing plan. The total area that is covered in this working circle comes to 58,920.177 hectares which is 64% of the total forest area being managed under this plan. As many as 17 cutting series have been made in this working circle and the composition and extent of area of all the cutting series has been kept as it is, as was found in outgoing plan. The detailed list of Reserve forest blocks range wise included in this over lapping circle has been detailed in **Table 6-1**. Range wise area in abstract has given in the **Table.6-2.**

Table 6-1 Areas allotted to bamboo (overlapping) Working Circle

Name of Range	Name of Cutting Series	Name of Forest Block	Comptt. No.	Area (ha)	Total Range Area (ha)
Tarasingi	Ambazora	Ambazora	7	627.964	
		Do	8	684.257	
		Do	9	515.054	
		Do	10	611.817	
		Ambazora	11a	622.622	
		Do	12	607.527	
		Do	13	701.821	
		Do	14	692.432	
		Do	15	789.802	
	Gundiribadi	Gundiribadi	1	682.881	
		Do	2	485.957	
		Do	3	705.099	
		Do	4	707.042	
		Ambazora	16	458.964	
		Do	17	627.722	
		Do	18	628.248	
		Do	19	531	
	Lembhei	Chandragiri	4	582.113	
		Do	5	601.902	
		Do	6	459.935	
		Do	7	537.92	

		Do	8	367.503	
	Nabagochha	Paichalia	1	576.609	
		Do	2	574.666	
		Do	3	729.624	
	Tarasing	Brahmansahi	1	534.318	
		Do	2	845.852	
		Do	5	562.606	
		Do	6	434.197	
Total					***17487.454***
Gallery	Lembhei	Chandragiri	10	407.325	
	Gopadar	Ambazora	1	573.978	
		Do	2	644.881	
		Do	3	680.13	
		Do	4	713.76	
		Do	6a	694.86	
	Khamansahi	Chandragiri	3	912.141	
		Ambazora	5	583.691	
	Kathachira	Chandragiri	1	770.053	
		Do	2	726.831	
	Dimirijholi	Dimirijholi	1	683.165	
		Do	2	979.765	
Total					***8370.58***
Mujagada	Rambha	Rambha	1a & b	707.731	
		Do	2	800.404	
		Do	3a & 3b	521.044	
		Do	4a & 4b	774.504	
		Do	5	734.439	
		Do	6	697.207	
		Do	7a & 7b	1068.272	
	Baiballi	Baiballi	1	771.064	
		Do	2	783.327	
		Do	3	704.735	
		Do	5	470.984	
	Bapangi	Baiballi	4	793.363	
		Do	6	548.118	
		Do	7	969.405	
		Do	8	677.944	
		Do	9	572.804	
	Birikot	Darpangia	4	595.832	
		Do	5	503.035	
		Do	6	627.681	

		Do	7	1152.327	
	Durgaprasad	Darpangia	1	786.726	
		Do	2	783.974	
		Do	3	823.877	
		Do	11	224.363	
		Odinabadi	1	233.104	
	Kaliamba	Tiliki	1b	174.464	
		Do	2b	549.292	
Total					***18050.02***
Jaganathprasad	Nabagochha	Paichalia	4	679.522	
		Do	5	741.643	
	Banta	Jaganath prasad	1	925.01	
		Do	2	625.86	
		Do	3	604.452	
		Do	4	428.976	
		Do	5	622.218	
Total					***4627.681***
Central	Ragada	Ragada	1	567.584	
		Do	2a	513.153	
		Do	3a	367.867	
		Do	6a	452.796	
		Do	7a	787.495	
		Do	8a	408.64	
		Do	9a	760.967	
		Do	10	499.474	
		Vinjigiri	2	747.297	
	Kaliamba	Kaliamba	1	905.14	
		Do	2	898.745	
		Do	3	611.25	
		Do	4	615.135	
		Tiliki	3b	338.163	
		Do	4	597.491	
		Do	5	749.385	
		Do	6	563.86	
Total					***10384.442***
				Total	**58,920.177**

Table no. 6-2 Range wise abstract of bamboo Overlapping Working Circle

S.NO	Name of The Range	Area (Ha)
1	Mujagada	*18050.02*
2	Central	*10384.442*
3.	Gallery	*8370.58*
4.	Tarasing	*17487.454*
5.	Jaganathprasad	*4627.681*
	Total	**58920.18**

6.4 Special Objectives of Management

6.4.1 The special objectives of management in respect of this Working Circle are within the scope of general objectives of management. These are as follows.

- ✓ To improve the quality of bamboo growing stock and to manage it systematically and scientifically for ensuring maximum yield on a sustained basis.
- ✓ To ensure regular Silvicultural Operations to prevent deterioration of growing stock both in quantity and quality.
- ✓ To meet demand of the local people and artisans while catering to the demand of raw materials of bamboo based industry.
- ✓ To benefit the people dwelling in and around the forests especially the weaker section of the society through creation of employment opportunity.

6.5 Methods of Treatment

6.5.1 Analysis and Valuation of Crop: The present working is very unsustainable. Stock mapping and bamboo clump enumeration has been carried out at the time of tree enumeration. The number of clump, circumference of a clump and age of culms were also measured. Based on this data the number of bamboo clumps has been determined with average number of culms per clump in different age classes. The average length of bamboo of these blocks varies from 6-15 m, so the bamboo forests are classified into Quality I, II and II/III.

6.5.2 At the time of strip enumeration the bamboo clumps occurring within the 10 meter width on either side of the gridline i.e 20 meters width were enumerated and the number of old and new bamboo culms in each clump were recorded. The sampling intensity for all those compartments included in selection working circle was 5% of the total compartment area whereas all those compartments included in rehabiltation working circle was 1% of the total compartment area. Based on this sample enumeration data, the number of Bamboo clumps/hectare has been determined with an average number of old and new culms per clump. An abstract of this analysis forest block wise and compartment wise is given in **Table 6-6**. The past year wise production of bamboo in this division cutting series wise is given in **Table 4-7 of Chapter 4 of Part-I**.

6.6 Silvicultural System

6.6.1 The silvicultural system prescribed is "Culm Selection-cum-Clump improvement" combined with simultaneous cleaning and silvicultural operation for salia bamboo and "Clump improvement" combined with simultaneous cleaning and cultural operation for Kanta/Daba bamboo. A clump is taken as a unit for working. Only permissible number of old culms shall be removed. The young culms shall be left untouched and evenly spaced by removing short stunted or congested stumps to achieve optimum production in future. All new culms of two years shall be retained in the clump.

6.7 Cutting Cycle

6.7.1 A systematic cutting cycle of 4 years is adopted which is the optimum and suitable cycle for commercial exploitation for Salia/Daba bamboo. Each cutting series has been divided into four annual coupes. i.e A,B,C,D. The coupe in each cutting series shall be worked on rotation.

6.8 Stock Mapping and Enumeration

6.8.1 Stock mapping and enumeration have been done in all sample points of bamboo bearing areas where enumeration of growing stock was conducted. The average estimated yield of each coupe is provided in **Table 6-5.**

6.9 Yield

6.9.1 Yield will be regulated entirely by the area. The annual yield for some of the past years is provided below in **Table 6-4**. It is clearly seen that yield gets affected if there is over exploitation or if the forests are not scientifically managed. It also reveals drastic fall in output for the years 2012-13 and 2013-14. Those are the years when the division got hit the severe super cyclonic storm 'Phailin' that devastated the forests.

Table 6-4 Past Annual yield of Bamboo in Ghumsur North Division (1995-96 to 2014-15)

Year	Yield (Industrial Bamboo) in S.U.	Year	Yield (Industrial Bamboo) in S.U.
1995-96	6943.0847	2005-06	10152.75
1996-97	9997.6566	2006-07	7125.45
1997-98	7932.8113	2007-08	5553.28
1998-99	1787.3512	2008-09	6985.557
1999-2000	4007.0479	2009-10	4320.949
2000-01	Not Worked	2010-11	8392.12

2001-02	Not Worked	2011-12	4747.597
2002-03	Not Worked	2012-13	60.24
2003-04	2008.2596	**2013-14**	**756.35**
2004-05	7266.278	**2014-15**	**21.13**

6.10 Yield Estimation

6.10.1 Outturns of coupes varies as annual production of clumps varies with past systems of working, illicit removal of karadi, flowering (gregarious or sporadic), grazing, fire and others. Climate and physiographic conditions has control over the growth. The number of culms available at the time of enumeration are 4 years and above during the next cutting cycle. Besides that culms between 3-4 years are also available for cutting. Clump and Culm analysis was done from the data. The average number of culms, average number clumps per ha was determined.

6.10.2 For calculating the yield, the bamboo (cutting) rules were communicated by Ministry of Environment and Forest, Government of India vide their letter No. 13/FCW/OS-Gen dated 24.12.1990. The said rules have been followed for calculation of yield and the formula used for yield calculation is:

Yield = Area of the cutting series (or Annual coupe) x No of clumps per hectare x No of culms to be removed per clump x Average Culm height/2400*.

(*As one sale unit is equal to 2400 RMT or one MT)

The estimated yield of bamboo in different coupes is given in Table cutting series is given in **Table 6-5** and the estimated yield cutting series wise is given in **Table 6-6**.

Table 6-5	Estimated yield and No's Sale Unit to be exploited during the Plan Period									
Cutting Series	Coupes A		Coupe B		Coupe C		Coupe D		Total	
	Area in Ha.	Yield in SU	Area in Ha.	Yield in SU	Area in Ha.	Yield in SU	Area in Ha.	Yield in SU	Area in Ha.	Yield in SU
1	2	3	4	5	6	7	8	9	10	11
Ambazora	1862.403	1886	1199.311	2088	1482.234	1356	1309.348	2287	5853.296	7617
Gundiribadi	1086.686	1272.4	1412.141	1416.4	1168.838	1262	1159.248	1446.3	4826.913	5397.1
Lembhei	601.902	761.8	459.935	471.4	1312.748	929.1	582.113	882.6	2956.698	3044.9
Nabagochha	741.643	814.4	1151.275	364.2	679.522	784.1	729.624	583.9	3302.064	2546.6
Banta	625.86	384.4	1051.194	284.9	925.01	599.7	604.452	922.5	3206.516	2191.5
Tarasingi	475.152	529	534.318	497.2	996.803	1181.7	370.7	415.6	2376.973	2623.5
Gopadar	573.978	726.4	694.86	685.4	713.76	742.8	1325.011	1333.6	3307.609	3488.2
Khamansahi	317.685	400.8	266.006	314.9	534.237	774.1	377.904	516.1	1495.832	2005.9
Kathachira	350.425	412	419.628	337	452.893	312	273.938	432	1496.884	1493
Dimirijholi	366.491	67	339.7	189	273.574	49	683.163	76	1662.928	381
Rambha	1068.272	517	734.439	551	2282.639	664	1218.251	660	5303.601	2392
Baibali	470.984	359	704.735	643	783.327	147	771.064	296	2730.11	1445
Bapangi	572.804	712.9	677.944	265	969.405	703.7	1341.481	573.9	3561.634	2255.5
Birirkota	595.832	498.1	503.035	421.3	627.681	443.9	1152.327	1286.5	2878.875	2649.8
Durgaprasad	511.615	105	730.231	167	590.368	123	1019.83	91	2852.044	486
Ragada	1686.131	1075	1328.551	593	1209.571	1076	881.02	905	5105.273	3649
Kaliamba	898.745	131.6	905.14	808.6	1061.919	1147.1	3137.121	2465.6	6002.925	4552.9
TOTAL =	***12806.608***	***10652.8***	***13112.44***	***10097.3***	***16064.53***	***12295.2***	***16936.6***	***15173.6***	***58920.18***	***48218.9***

Table.6.6 Cutting Series wise Area and Projected Yield For the Plan Period													
Sl No	**Name of Cutting series**	**Forest Block**	**Compt no**	**Area of the compt**	**No of clump per ha**	**<1 year**	**>1 year <2 year old**	**>2 year <3 year**	**No. of Culms per Ha.**	**Growing stock (No of culms in compt) col 11X Col 4**	**No of culms above 3 year (Col 4 X Col 5 X Col 9)**	**Yield in sale unit (Col 13 x 0.0033)**	**Yield in SU of the Cutting series**
1	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**11**	**12**	**13**	**14**
1	Ambazora	Ambazora	7a	627.964	48	128	228	316	672	421992	198336	655	
		Do	8	684.257	68	207	370	511	1088	744472	349902	1155	
		Do	9	515.054	73	222	397	549	1168	601583	282744	933	
		Do	10	611.817	52	138	248	342	728	445403	209339	691	
		Do	11a	622.622	35	106	190	263	560	348668	163874	541	
		Do	12	607.527	85	258	462	639	1360	826237	388331	1281	
		Do	13	701.821	77	176	314	434	924	648483	304787	1006	
		Do	14	692.432	57	128	229	316	672.6	465730	218893	722	
		Do	15	789.802	47	98	176	243	517	408328	191914	633	**7617**
2	Gundiribadi	Gundiribadi	1	682.881	63	144	257	355	756	516258	242641	801	
		Do	2	485.957	51	116	208	288	612	297406	139781	461	
		Do	3	705.099	49	110	197	272	578.2	407688	191613	632	
		Do	4	707.042	65	136	243	336	715	505535	237601	784	
		Ambazora	16	458.964	71	162	290	400	852	391037	183788	606	
		Do	17	627.722	57	130	233	321	684	429362	201800	666	
		Do	18	628.248	73	164	293	405	861.4	541173	254351	839	
		Do	19	531	67	140	251	346	737	391347	183933	607	**5397**
3	Lembhei	Chandragiri	4	582.113	63	144	257	355	756	440077	206836	683	

		Do	5	601.902	68	155	277	384	816	491152	230841	762	
		Do	6	459.935	56	126	225	311	661	303925	142845	471	
		Do	7	537.92	44	92	165	227	484	260353	122366	404	
		Do	8	367.503	38	87	155	214	456	167581	78763	260	
		Do	10	407.325	35	80	143	197	420	171077	80406	265	**2845**
4	Nabagoch ha	Paichalia	1	576.609	15	34	60	83	177	102060	47968	158	
		Do	2	574.666	21	44	79	109	231	132748	62391	206	
		Do	3	729.624	43	98	175	243	516	376486	176948	584	
		Do	4	679.522	62	141	253	350	744	505564	237615	784	
		Do	5	741.643	60	135	241	333	708	525083	246789	814	**2547**
5	Banta	Jaganath prasad	1	925.01	38	79	142	196	418	386654	181727	600	
		Do	2	625.86	33	75	135	186	396	247841	116485	384	
		Do	3	604.452	82	187	335	462	984	594781	279547	923	
		Do	4	428.976	16	36	64	89	189	80991	38066	126	
		Do	5	622.218	15	31	56	78	165	102666	48253	159	**2191**
6	Tarasing	Brahmans ahi	1	534.318	50	114	204	282	600	320591	150678	497	
		Do	2	845.852	60	137	245	338	720	609013	286236	945	
		Do	5	562.606	68	152	273	377	802	451435	212174	700	
		Do	6	434.197	65	136	243	336	715	310451	145912	482	**2624**
7	Gopadar	Ambazora	1	573.978	68	155	277	384	816	468366	220132	726	
		Do	2	644.881	52	119	212	293	624	402406	189131	624	
		Do	3	680.13	57	128	229	316	673	457455	215004	710	
		Do	4	713.76	61	127	228	315	671	478933	225098	743	
		Do	6a	694.86	53	121	216	299	636	441931	207708	685	**3488**
8	Khamansa hi	Chandragi ri	3	912.141	76	173	310	429	912	831873	390980	1290	

		Ambazora	5	583.691	67	150	269	372	791	461466	216889	716	**2006**
8	Kathachira	Chandragiri	1	770.053	57	119	213	295	627	482823	226927	749	
		Do	2	726.831	55	125	224	310	660	479708	225463	744	**1493**
10	Dimirijholi	Dimirijholi	1	683.165	6	14	24	34	72	49188	23118	76	
		Do	2	979.765	17	38	68	94	201	196541	92374	305	**381**
11	Rambha	Rambha	1a & b	707.731	9	19	34	47	99	70065	32931	109	
		Do	2	800.404	3	7	12	17	36	28815	13543	45	
		Do	3a & 3b	521.044	48	109	196	271	576	300121	141057	465	
		Do	4a & 4b	774.504	36	81	144	200	425	329009	154634	510	
		Do	5	734.439	44	92	165	227	484	355468	167070	551	
		Do	6	697.207	15	34	61	85	180	125497	58984	195	
		Do	7a & 7b	1068.272	26	59	106	147	312	333301	156651	517	**2392**
12	Baiballi	Baiballi	1	771.064	21	47	84	116	248	191070	89803	296	
		Do	2	783.327	11	23	41	57	121	94783	44548	147	
		Do	3	704.735	49	112	200	276	588	414384	194761	643	
		Do	5	470.984	41	93	167	231	492	231724	108910	359	**1445**
13	Bapangi	Baiballi	4	793.363	26	58	104	144	307	243404	114400	378	
		Do	6	548.118	21	44	79	109	231	126615	59509	196	
		Do	7	969.405	39	89	159	220	468	453682	213230	704	
		Do	8	677.944	21	48	86	118	252	170842	80296	265	
		Do	9	572.804	68	152	273	377	802	459618	216020	713	**2255**
14	Birikot	Darpangia	4	595.832	49	102	183	253	539	321153	150942	498	
		Do	5	503.035	45	103	184	254	540	271639	127670	421	
		Do	6	627.681	38	87	155	214	456	286223	134525	444	
		Do	7	1152.327	61	137	245	338	720	829445	389839	1286	**2650**
15	Durgaprasad	Darpangia	1	786.726	5	10	19	26	55	43270	20337	67	

		Do	2	783.974	16	36	65	90	192	150523	70746	233	
		Do	3	823.877	10	23	41	56	120	98865	46467	153	
		Do	11	224.363	2	4	8	11	24	5295	2489	8	
		Odinabadi	1	233.104	6	13	22	31	66	15385	7231	24	**486**
16	Ragada	Ragada	1	567.584	35	80	143	197	420	238385	112041	370	
		Do	2a	513.153	68	155	277	384	816	418733	196804	649	
		Do	3a	367.867	38	85	152	211	448	164952	77527	256	
		Do	6a	452.796	42	88	157	217	462	209192	98320	324	
		Do	7a	787.495	62	141	253	350	744	585896	275371	909	
		Do	8a	408.64	46	105	188	259	552	225569	106018	350	
		Do	9a	760.967	16	36	64	89	189	143671	67525	223	
		Do	10	499.474	34	71	127	176	374	186803	87798	290	
		Vinjigiri	2	747.297	20	46	82	113	240	179351	84295	278	**3649**
17	Kaliamba	Kaliamba	1	905.14	48	109	196	271	576	521361	245040	809	
		Do	2	898.745	8	18	32	44	94	84842	39876	132	
		Do	3	611.25	51	107	191	264	561	342911	161168	532	
		Do	4	615.135	47	107	192	265	564	346936	163060	538	
		Tiliki	1b	174.464	68	155	277	384	816	142363	66910	221	
		Do	2b	549.292	60	135	241	333	708	388899	182782	603	
		Do	3b	338.163	56	117	209	290	616	208308	97905	323	
		Do	4	597.491	41	93	167	231	492	293966	138164	456	
		Do	5	749.385	40	91	163	226	480	359705	169061	558	
		Do	6	563.86	37	83	148	205	437	246181	115705	382	**4553**

6. 11 Bamboo Cutting Series

6.11.1 Seventeen cutting series have been constituted in this Working Circle in a cutting cycle of 4 years. Each Cutting Series has been divided into four coupes A, B, C and D. The details of cutting series range wise and the formation of coupes along with individual compartment area and cutting series area are provided in **Table 6-7**. The detailed annual sequence of operation is provided in **Table 6-8**.

Table 6-7 Cutting Series wise Bamboo coupe working area of Ghumsur North Division

Name of the Cutting Series	Name of the Range	Name of the Forest Block	Compartment No.	Area of Compartment in ha.	Area of the Cutting Series in ha.
1	2	3	4	5	6
Ambazora	Tarasing	Ambazora	7a	627.964	**5853.296**
		Do	8	684.257	
		Do	9	515.054	
		Do	10	611.817	
		Do	11a	622.622	
		Do	12	607.527	
		Do	13	701.821	
		Do	14	692.432	
		Do	15	789.802	
Gundiribadi		Gundiribadi	1	682.881	**4826.913**
		Do	2	485.957	
		Do	3	705.099	
		Do	4	707.042	
		Ambazora	16	458.964	
		Do	17	627.722	
		Do	18	628.248	
		Do	19	531	
Lembhei		Chandragiri	4	582.113	**2956.698**
		Do	5	601.902	
		Do	6	459.935	
		Do	7	537.92	
		Do	8	367.503	
	Gallery	Do	10	407.325	
Nabagochha	Tarasing	Paichalia	1	576.609	**3302.064**
		Do	2	574.666	
		Do	3	729.624	
	Jaganath Prasad	Do	4	679.522	
		Do	5	741.643	
Banta	Jaganath Prasad	Jaganath	1	925.01	**3206.516**
		Do	2	625.86	
		Do	3	604.452	
		Do	4	428.976	
		Do	5	622.218	

Tarasing	Tarasing	Brahmansahi	1	534.318	
		Do	2	845.852	
		Do	5	562.606	
		Do	6	434.197	**2376.973**
Gopadar	Gallery	Ambazora	1	573.978	
		Do	2	644.881	
		Do	3	680.13	
		Do	4	713.76	
		Do	6a	694.86	**3307.609**
Khamansahi	Gallery	Chandragiri	3	912.141	
		Ambazora	5	583.691	**1495.832**
Kathachira		Chandragiri	1	770.053	
		Do	2	726.831	**1496.884**
Dimirijholi		Dimirijholi	1	683.165	
		Do	2	979.765	**1662.93**
Rambha	Mujagada	Rambha	1a & b	707.731	
		Do	2	800.404	
		Do	3a & 3b	521.044	
		Do	4a & 4b	774.504	
		Do	5	734.439	
		Do	6	697.207	
		Do	7a & 7b	1068.272	**5303.601**
Baiballi		Baiballi	1	771.064	
		Do	2	783.327	
		Do	3	704.735	
		Do	5	470.984	**2730.11**
Bapangi		Baiballi	4	793.363	
		Do	6	548.118	
		Do	7	969.405	
		Do	8	677.944	
		Do	9	572.804	**3561.634**
Birikot		Darpangia	4	595.832	
		Do	5	503.035	
		Do	6	627.681	
		Do	7	1152.327	**2878.875**
Durgaprasad		Darpangia	1	786.726	
		Do	2	783.974	
		Do	3	823.877	
		Do	11	224.363	
		Odinabadi	1	233.104	**2852.044**
Ragada	Central	Ragada	1	567.584	
		Do	2a	513.153	
		Do	3a	367.867	
		Do	6a	452.796	
		Do	7a	787.495	
		Do	8a	408.64	
		Do	9a	760.967	

Ragada		Do	10	499.474	
		Vinjigiri	2	747.297	**5105.273**
Kaliamba	Central	Kaliamba	1	905.14	
		Do	2	898.745	
		Do	3	611.25	
		Do	4	615.135	
	Mujagada	Tiliki	1b	174.464	
		Do	2b	549.292	
	Central	Do	3b	338.163	
		Do	4	597.491	
		Do	5	749.385	
		Do	6	563.86	**6002.925**
Total				**58,920.18**	**58,920.18**

Table 6-8 Constitution of Bamboo Cutting Series and Annual Coupe

1. Ambazora Cutting Series

Year	Coupe	Name of Forest Block	Compt. No.	Area (ha)	Annual Coupe Area (ha)
2015-16 2019-20 2023-24	A	Ambazora, RF	7a	627.964	
			10	611.817	
			11a	622.622	**1862.403**
2016-17 2020-21 2024-25	B	Ambazora, RF	8	684.257	
			9	515.054	**1199.311**
2017-18 2021-22	C	Ambazora, RF	14	692.432	
			15	789.802	**1482.234**
2018-19 2022-23	D	Ambazora, RF	12	607.527	
			13	701.821	**1309.348**
				Total	**5853.296**

2. Gundribadi Cutting Series

2015-16 2019-20 2023-24	A	Ambazora, RF	16	458.964	**1086.686**
			17	627.722	
2016-17 2020-21 2024-25	B	Gundiribadi, RF	3	705.099	**1412.141**
			4	707.042	
2017-18 2021-22	C	Gundiribadi, RF	1	682.881	**1168.838**
			2	485.957	
2018-19 2022-23	D	Ambazora, RF	18	628.248	**1159.248**
			19	531.000	
				Total	**4826.913**

3. Lembhei Cutting Series

2015-16 2019-20 2023-24	A	Chandragiri, RF	5	601.902	**601.902**

2016-17 2020-21 2024-25	B	Chandragiri, RF	6	459.935	**459.935**
2017-18 2021-22	C	Chandragiri, RF	7	537.920	**1312.748**
			8	367.503	
			10	407.325	
2018-19 2022-23	D	Chandragiri, RF	4	582.113	**582.113**
				Total	**2956.7**
4. Nabagochha Cutting Series					
2015-16 2019-20 2023-24	A	Paichalia,RF	5	741.643	**741.643**
2016-17 2020-21 2024-25	B	Paichalia, RF	1	576.609	**1151.275**
			2	574.666	
2017-18 2021-22	C	Paichalia,RF	4	679.522	**679.522**
2018-19 2022-23	D	Paichalia,RF	3	729.624	**729.624**
				Total	**3302.064**
5. Bantha Cutting Series					
2015-16 2019-20 2023-24	A	Jagannathprasad, RF	2	625.860	**625.860**
2016-17 2020-21 2024-25	B	Jagannathprasad, RF	4	428.976	**1051.194**
			5	622.218	
2017-18 2021-22	C	Jagannathprasad, RF	1	925.010	**925.010**
2018-19 2022-23	D	Jagannathprasad, RF	3	604.452	**604.452**
				Total	**3206.516**
6. Tarasingi Cutting Series					
2015-16 2019-20 2023-24	A	Brahmansahi,RF	2(p)	475.152	**475.152**
2016-17 2020-21 2024-25	B	Brahmansahi,RF	1	534.318	**534.318**
2017-18 2021-22	C	Brahmansahi,RF	5	562.606	**996.803**
			6	434.197	
2018-19 2022-23	D	Brahmansahi,RF	2(balance)	370.700	**370.700**
				Total	**2376.973**

7. Gopadar Cutting Series					
2015-16 2019-20 2023-24	A	Ambazora,RF	1	573.978	**573.978**
2016-17 2020-21 2024-25	B	Ambazora,RF	6a	694.860	**694.860**
2017-18 2021-22	C	Ambazora,RF	4	713.760	**713.760**
2018-19 2022-23	D	Ambazora,RF	2	644.881	**1325.011**
			3a	680.130	
				Total	**3307.609**
8. Khamansahi Cutting Series					
2015-16 2019-20 2023-24	A	Ambazora,RF	5(p)	317.685	**317.685**
2016-17 2020-21 2024-25	B	Ambazora,RF	5(balance)	266.006	**266.006**
2017-18 2021-22	C	Chandragiri,RF	3 (part)	534.237	**534.237**
2018-19 2022-23	D	Chandragiri,RF	3 (balance)	377.904	**377.904**
				Total	**1495.832**
9. Kathachira Cutting Series					
2015-16 2019-20 2023-24	A	Chandragiri,RF	1(p)	350.425	**350.425**
2016-17 2020-21 2024-25	B	Chandragiri,RF	1(balance)	419.628	**419.628**
2017-18 2021-22	C	Chandragiri,RF	2(p)	452.893	**452.893**
2018-19 2022-23	D	Chandragiri,RF	2(balance)	273.938	**273.938**
				Total	**1496.884**
10. Dimirijholi Cutting Series					
2015-16 2019-20 2023-24	A	Dimirijholi,RF	2a/b(p)	366.491	**366.491**
2016-17 2020-21 2024-25	B	Dimirijholi,RF	2a/b(p)	339.700	**339.700**
2017-18 2021-22	C	Dimirijholi,RF	2a/b(balance)	273.574	**273.574**
2018-19 2022-23	D	Dimirijholi,RF	1	683.163	**683.163**
				Total	**1662.928**

11. Rambha Cutting Series					
2015-16 2019-20 2023-24	A	Rambha,RF	7	1068.272	**1068.272**
2016-17 2020-21 2024-25	B	Rambha,RF	5	734.439	**734.439**
2017-18 2021-22	C	Rambha,RF	1	707.731	**2282.639**
			2	800.404	
			4	774.504	
2018-19 2022-23	D	Rambha,RF	6	697.207	**1218.251**
			3	521.044	
				Total	**5303.601**
12. Baibali Cutting Series					
2015-16 2019-20 2023-24	A	Baibali,RF	5	470.984	**470.984**
2016-17 2020-21 2024-25	B	Baibali,RF	3	704.735	**704.735**
2017-18 2021-22	C	Baibali,RF	2	783.327	**783.327**
2018-19 2022-23	D	Baibali,RF	1	771.064	**771.064**
				Total	**2730.11**
13. Bapangi Cutting Series					
2015-16 2019-20 2023-24	A	Baibali,RF	9	572.804	**572.804**
2016-17 2020-21 2024-25	B	Baibali,RF	8	677.944	**677.944**
2017-18 2021-22	C	Baibali,RF	7	969.405	**969.405**
2018-19 2022-23	D	Baibali,RF	4	793.363	**1341.481**
			6	548.118	
				Total	**3561.634**
14. Birikota Cutting Series					
2015-16 2019-20 2023-24	A	Darpangia,RF	4	595.832	**595.832**
2016-17 2020-21 2024-25	B	Darpangia,RF	5	503.035	**503.035**
2017-18 2021-22	C	Darpangia,RF	6	627.681	**627.681**

2018-19 2022-23	D	Darpangia,RF	7	1152.327	**1152.327**
				Total	**2878.875**
15. Durgaprasad Cutting Series					
2015-16 2019-20 2023-24	A	Darpangia,RF	2(p)	511.615	**511.615**
2016-17 2020-21 2024-25	B	Darpangia,RF	2(balance)	272.359	**730.231**
			3(p)	233.509	
		Darpangia,RF	11	224.363	
2017-18 2021-22	C	Darpangia,RF	3(balance)	590.368	**590.368**
2018-19 2022-23	D	Darpangia,RF	1	786.726	**1019.83**
		Odinabadi,RF	1	233.104	
				Total	**2852.044**
16. Ragada Cutting Series					
2015-16 2019-20 2023-24	A	Ragada, RF	6a	452.796	
			7a(P)	486.038	
		Vingijiri,RF	2	747.297	**1686.131**
2016-17 2020-21 2024-25	B	Ragada, RF	1	567.584	
			9	760.967	**1328.551**
2017-18 2021-22	C	Ragada, RF	10	499.474	
			8	408.640	**1209.571**
			7a(balance)	301.457	
2018-19 2022-23	D	Ragada, RF	2a	513.153	
			3a	367.867	**881.02**
				Total	
17. Kaliamba Cutting Series					
2015-16 2019-20 2023-24	A	Kaliamba,RF	2	898.745	**898.745**
2016-17 2020-21 2024-25	B	Kaliamba,RF	1	905.140	**905.140**
2017-18 2021-22	C	Tiliki RF	1	174.464	**1061.919**
			2	549.292	
			3	338.163	
2018-19 2022-23	D	Kaliamba,RF	3	611.250	**1226.385**
			4	615.135	
		Tiliki,RF	4	597.491	**1910.736**
			5	749.385	
			6	563.860	
				Total	**6002.925**

6.12 Methods of Execution of Operations

6.12.1 Demarcation of annual Coupes:

6.12.1.1 As already stated above, the cutting will be done annual coupe wise, so it is necessary first to demarcate the coupe with the help of management maps. Coupes have been formed with the boundaries mostly coterminous with that of forest blocks / compartments or taking natural features like nalla's, prominent paths and ridges of the hills as the coupe line.

6.12.1.2 The section Forester shall demarcate the coupe in the field with the assistance of beat Forest Guard in the month of April / May i.e. well ahead of the starting of work in the month of October. Use of GPS in this work shall be encouraged. After demarcation, the coupe will be divided into 4 (four) sections running along the contours and numbered as 1 to 4 serially from uphill side to downwards. Two coal tar rings of 3 cm width each at a space of 15 cm between them shall be given at the breast height of all prominent trees distinctly visible from each other standing on the coupe lines. The demarcation of the sections within the coupe will be indicated by giving one coal tar ring in the aforesaid manner. Where coupe line meets the boundary of block crosses roads or prominent paths, signboard showing the name of felling series, coupe number, area of the coupe and year of working etc. should be fixed. Good coating of coal tar should be given to withstand the weathering by rains, light etc. so that the demarcation will be well exhibited.

6.13 Working Agency

6.13.1 The working of bamboo is entrusted to Orissa Forest Development Corporation Limited as the agent of the Government since nationalization of bamboo in the State. Earlier, the OFDC Ltd. was working through Raw Material Procurer (RMP) and for this Division the M/S J.K. Paper Mills, Rayagada was functioning as RMP.

6.14. Estimation of Yield for fixation of Target: -

6.14.1 Production from a coupe is variable depending on a number of factors like rainfall, flowering of clumps, incident of fires and other biotic factors. So the enumeration of clumps as well as culms through stratified sampling shall be conducted to estimate the yield in accordance with the formula stated in preceding Para 6.10.2. Such exercise should be done jointly by the Range Officer and Sub-Divisional Manager of OFDC Ltd. so as to prevent the disagreement with regard to the anticipated production. This should be completed by the month of June.

6.15 Preparation of Treatment Map: -

6.15.1 After demarcation of the coupe and before taking of working, preparation of treatment map is very much essential and this shall be prepared jointly by the officials of Working Agency i.e. S.D.M., OFDC Ltd. and Range Officer on a copy of the available management map indicating

Salia/Daba bamboo areas. This work shall be carried out and completed simultaneously with that of yield estimation by the month of June.

6.16. Period of Felling or Cutting: -

6.16.1 The felling / cutting of bamboo shall commence from 1st October and continue up to 31st May of the following year. In case of gregarious flowering, the working period will be extended up to end of June. The extraction of cut bamboo shall be carried out simultaneously and the transportation from the coupe to depot shall be completed within 30th June. No work shall be allowed to be carried out in the coupe between 1st July to 30th September.

6.17. Sequence of Cutting

6.17.1 A definite sequence of felling is essential for bamboo coupes to ensure the smooth and proper working. The coupe shall be divided into four sections running along the contours. The sections from the uphill side should be worked first and the first section shall be completed in all respect before the work commences in the second section and so on.

6.18. Working of Bamboos

6.18.1 Though the working of bamboo is a broadly speaking term, it mainly means the execution of felling / cutting of bamboo and its related activities. Bamboo shall be worked as per bamboo cutting rules prescribed by the CCF (Central) Eastern Regional Office Ministry of Environment and Forest, Govt. of India, Bhubaneswar *vide Letter No. 13/FC WP/US-Gen dated 24.12.1990* and communicated *vide Pr.CCF, Orissa, Memo No.26951(40) dated 28.12.1990*.

6.19 Felling / Cutting Rules

6.19.1 The above cited cutting rules prescription by CCF (Central) envisages preparation of treatment maps and following of different rules.

16.19.2 Treatment Maps

- ✓ After demarcation of bamboo Coupes and before taking it up for working, a Treatment map will be prepared, by the Agency for working on a copy of the available Management Map in 1:25,000 scale indicating Salia and Daba bamboo areas separately.
- ✓ Treatment types to be distinguished shall be based on the assessment on the standard Salia bamboo quality classes and actual clump condition.
- ✓ In both these cases areas less than 4 ha in extent will not be separated out as distinct treatment Types.
- ✓ Treatment types of Salia Bamboos

The following Treatment Types have been identified for Salia Bamboo areas. Salia bamboo forest will be categorized for different Treatment as described below:

16.19.2.1 Treatment Type –A

Area with healthy and well stocked Bamboo clumps consisting of
Clump Quality-I Culm height of Bamboo 9 m and up
Clump Quality-II-Culm height of bamboo between 6 to 9 m.
Clump quality-III: Culm height of bamboo below 6m.

16.19.2.2 Treatment Type–B

Areas with well stocked but degraded, damaged, congested and / or fire burnt clumps.

16.19.2.3 Treatment Type-C

Areas wherein Bamboo clumps are sparse and scattered.
If necessary, these Treatment Types B and C may be further classified into the above three clump quality classes.

16.19.3 Cutting Rules for Salia Bamboo

Salia Bamboo (*Dendrocalamus strictus*) will be worked as per the following prescriptions.

16.19.3.1 Rules which are uniformly applicable to all the Treatment Types

i) Karadi (Culm upto one year of age) and the bamboo culm over one year but under two years of age will not be cut under any circumstances. Such more than one year old culms and the culms which are older than 2 years but less than 3 years of age are to be retained in the clump and their number should not be less than number of Karadis.

ii) The minimum number of culms to be retained in a clump is fixed on the basis of quality of the clump and it is as follows:

Clump Quality I – 20 culms
Clump Quality II-15 culms
Culms Quality-III –10 culms

iii) Clumps having the minimum or less than the minimum prescribed number of culms shall not be commercially exploited. Only broken, dead, dry, badly damaged and malformed bamboos will be felled.

iv) A clump will be distinguished as an independent clump where its periphery is easily discernible from others. Only where such a distinction is not possible, two clumps within one meter distance will be regarded as one.

v) While retaining culm against fellings in a clump they should remain well spaced and preferably at the periphery and in the order of preference as follows:
   (a) Karadi bamboos.
   (b) Kasi bamboo (older than one year but less than 2 years)
   (c) Pakala Bamboo (Young green Bamboos)
   (d) Older live Bamboos
   (e) Other as may be available.

vi) Rhizomes will not be dug.

vii) The height above which culms are cut shall not be less than 15 cms or more than 45 cms from the ground level and in no case below the first prominent made from the ground.

viii) The cut shall be made with a short instrument to ensure that the stump remains intact without splitting.

ix) Lops and tops of bamboos will be simultaneously cleared to avoid fire hazard at least to a distance of one meter away from the periphery of the worked clumps.

x) Climbers shall be cut from all the Bamboo clumps during Working of the coupe.

xi) Bamboo strip will not be used in tying bamboo bundles.

xii) Bamboo felling will not be done from last May to 30th September each year. However, all fellings and transport of Bamboo in the Sanctuaries shall be completed by the end of April positively. In case of gregarious flowering in Sanctuary areas, working period will be extended up to end of June.

xiii) If sporadic flowering of bamboo clumps is observed, such clumps will be clear felled once the seeds from such clumps have fallen.

xiv) In case of gregarious flowering of Bamboo on the shedding of ripe seeds, the clumps will be clear felled and extracted early so that bamboo may not dry on deteriorate or become prone to fire damage. Disposal of such Bamboo should be expeditiously arranged to prevent deterioration in quality and prescribed treatment as mentioned below shall be adopted in the gregariously flowered areas.

xv) Lopping of Bamboo either for feeding livestock or otherwise is strictly prohibited.

xvi) As far as possible Bamboo felling should be completed by the end of May (Expect in sanctuaries where it should be completed by April.)

xvii) Bamboo forests should be rigidly protected from fires and in any case forest fire should not occur during the year of working and the year following.

xviii) No grazing is permitted during rains in Bamboo forests which have been worked in the previous season.

16.19.4 Rules applicable to specific Treatment Types.

16.19.4.1 Treatment Type-A

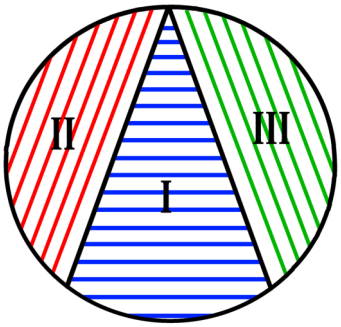
I. Commercial felling will be done in those clumps which have more than the prescribed minimum number of culm in each.

II. Cultural operation will be carried out in clumps having less than the prescribed minimum number of culms in each. In such clumps commercial fellings will not be done.

16.19.4.2 Treatment Type:-B

- ✓ There will be no commercial felling's in any clump
- ✓ Only cultural operations will be carried out which will includes.

- ✓ Felling of all dead, dried, over mature, burnt broken and grossly damaged bamboos
- ✓ Broken of cut bamboos or high stumps in green condition having length of 2.5 meter or more may be retained, if necessary, to maintain size of the clumps.
- ✓ The minimum number of culms to be retained per clump as prescribed in foregoing paras for various quality classes may not be strictly followed if necessity so arises.
- ✓ The congested bamboo clumps should be clear felled by forming segments. The maximum number of segments under which congested clump should be worked, will be three and at each working not more than one segment will be cut. Where three segments are formed, the middle segment will be in the shape of triangle having apex at the periphery. Only this middle segment should be felled at the first working. In subsequent cycles, size segment should be felled. Diagram showing divisions of the clump in these segments is given below:



16.19.4.3 Treatment Type-C

- ✓ Only cultural operations will be carried out in the existing bamboo clumps.
- ✓ Raising bamboo plantation will augment the bamboo potentiality of such forests. The minimum area to be planted annually will be 40 ha. or one third of the area under this type.
- ✓ Tending and cultural operations in the area planted with the bamboo will be done as per the standard practice.

16.20 Cutting Rules for Daba Bamboo (*Bamboo arundinacea*)

- ✓ All bamboo culms in a clump which are more than 3 years old shall be harvested on culm selection basis provided the number of culms left uniformly distributed in a clump shall not be less than 10.
- ✓ In case of congested clumps where culm selection is not possible, the clump should be carefully felled by forming segment as per any of the two diagram given below and depending on the interlacing of the bamboo with a view to provide support to the remaining segments against wind damage.
- ✓ The maximum number of segments under which a congested clump should be worked will be three and at each working not more than one segment will be cut. Stumps higher than 50 cms or more than two internodes should not be left.

- ✓ Where three segments are formed, the middle segment will be in the shape of a triangle. Only the middle segment (I) should be felled at the first working. Two diagrams showing division of the clump in three segments are given below:

First Preference **Second Preference.**



16.21. Simultaneous Silvicultural operations

16.21.1 Since productivity of the bamboo forest depends on proper and timely silvicultural operations, it should be ensured to carry out such operations during or immediately after the year of actual harvest. Even, the early stage established natural regeneration shall also be taken care of at that time of silvicultural operations so as to add to the future crop of the bamboo forests. Simultaneous silvicultural operations shall preferably be done along with the main cutting. But the working of bamboo usually continues up to end of June as per the prevailing practice and by that time rainy season has already been started. So the silvicultural operations are usually taken up from the month of October onwards after the rainy season is over. It follows the main cutting period and is called as subsidiary silvicultural operations in practical sense. The operation comprises of the following components.

- ✓ All cutting debris shall be removed and the clump shall be left cleaned.
- ✓ If any clump has not been cleaned at the time of felling, such clumps shall also be attended to through pruning in addition to the climber cutting. If any high stumps have been left, those shall also be rectified.
- ✓ The exposed rhizomes shall be covered with soil scrapped from the uphill side of a hilly or undulating terrain (Earth Mounding). Wherever necessary stacking of boulders shall also be taken up on the downhill side to support the soil till its stabilisation, this shall be concentrated mainly in steep slope areas. However, in the process care should be taken to ensure that no damage is caused to the rhizomes and rootstock.
- ✓ As a moisture conservation measure, half-moon trenching shall also be dug on the uphill side of the clump in concave shape. No damage shall be caused to rhizomes and rootstock.
- ✓ As a moisture conservation measure, half-moon trenching shall also be dug on the uphill side of the clump in concave shape. No damage shall be caused to rhizomes and rootstock.
- ✓ Besides, pulverization and sufficient soil working around the clumps shall be done to improve the overall quality and productivity of the bamboo forests.

6.22 Treatment of gregariously flowered areas

- ✓ Bamboo seedlings at a spacement of about 4 m x 4 m is to be adopted and retained and the rest are to be thinned out.
- ✓ Cleaning, soil working and seedling is to be done around the adopted bamboo seedlings upto a radius of 50 cm.
- ✓ To maintain the continuity, planting up of bamboo rhizomes is also to be resorted to especially in big gaps.
- ✓ All the flowed clumps are to be worked up following the prescriptions of the Working Plan.
- ✓ The area should be closed for grazing.
- ✓ Elaborate fire protection manner are also to be taken.

6.23. Flowering in Bamboo

6.23.1 In selection forest, the age of clump varies and accordingly varies the intensity of gregarious/ sporadic flowering. The delay in flowering in poor sites is due to the effect of site quality, which is related with the growth, and storage of starch, sugar and other substances in the clump, which help flowering. In a well-managed forest intensity of flowering is less in comparison to un-worked forest consisting congested clumps. Intensity of flowering is more in area having more biotic interference in form of grazing and fire in comparison to protected area. It is important to identify the characters of flowering in Salia bamboo to decide appropriate management technique. The major differences noticed during the sporadic and gregarious flowering in bamboo has been depicted in **Table 6-9**.

Table 6-9 Major differences between sporadic and gregarious flowering of Bamboo

Sporadic flowering	**Gregarious flowering**
1) Scattered nature of flowering, only few clumps are involved in flowering	1) Flowering occurs almost in the entire area.
2) Only a few culms flower in a clump	2) It involves almost all or some proportion of places. Flowering taken place in all the culms in clump.
3) The culms may or may not die after flowering	3) All the culms of a clump die after flowering.
4) The clump does not die	4) Flowering is followed by the death of the clump
5) It taken place usually irregularly almost every alternative years.	5. It follows a cycle of long interval 20 to 65 years.
	6) It progress in a definite direction like an epidemic wave.
	7) It taken 2 to 4 years to complete the flowering in the area.

6.24 Distinguishing Morphological Characters of the Culms of different age.

6.24.1 The prominent morphological characters noticed at various ages of the culms is described in **Table 6-10**.

Table 6-10 Morphological characters of Bamboo as per the age of the culm	
Culm Age	**Morphological Character**
Karadi (first year culm)	Culm sheath present on lower half of culm. Branches present throughout the length of culm. Culm is green uniformly; block is abundantly present and comes off easily on finger. A fresh cut just under the node shows the same fresh colouration even after one or two minutes.
Kasi (second year culm)	Culm sheath mostly absent except some remnants. Culm dark in colour. Branches present practically at all nodes. Bloom is patchy, grayish-white in colour and comes off less easily on finger. A fresh cut just under the nods shows the same fresh colouration even after one or two minutes.
Pakala (3^{rd} and 4^{th} year culm)	Culm sheath absent. White-bloom absent. Blackish gray or dark blotches appear which come off on finger slightly on rubbing. A fresh cut just under the node shows clear reddish-brown colouration after one or two minutes.

6.25 Main threats to Bamboo forests

6.25.1 The major threats to the management of bamboo forests are

- ✓ Indiscriminate cutting of bamboos by the tenants and artisans
- ✓ Annual forest fire
- ✓ Excessive grazing and
- ✓ Clear felling of Daba bamboos.

6.25.2. These factors required to be checked on one hand and other techniques are to be developed to improve the quality and quantity of the clumps in order to conserve the deterioration of bamboo forests. Decreasing trend in production of bamboo has already indicated the deterioration of bamboo forests. Appropriate silvicultural techniques to manage the bamboo forests will therefore be essential in restoring the valuable bamboo forests of the division.

6.26 Miscellaneous Regulation

6.26.1 Grazing: Grazing will be regulated in this working circle in accordance with the Orissa Forest (Grazing of Cattle) Rule 1980 and carrying capacity of the forests. Regeneration in bamboo coupes shall be strictly protected from grazing.

6.26.2 Fire Protection: Fire lines on the boundaries of each coupe shall be cleared to prevent spread of fire. The Orissa Forest Protection Rules, 1980 and Provisions of Chapter 7 of Orissa

Forest Department Code shall be strictly implemented.

6.26.3 Flowering of Bamboos: Flowering of Bamboos should be recorded in the compartment history as well as in the Divisional forest Officers book.

6.26.4 Rights and Concession: It shall be regulated as per the provision of notifications and prevailing Govt. policy.

6.27 Bamboo Plantation: it may be taken up in deficient areas. The technique of raising bamboo plantation prescribed in the Forest Plantation Manual 1977 shall be adopted.

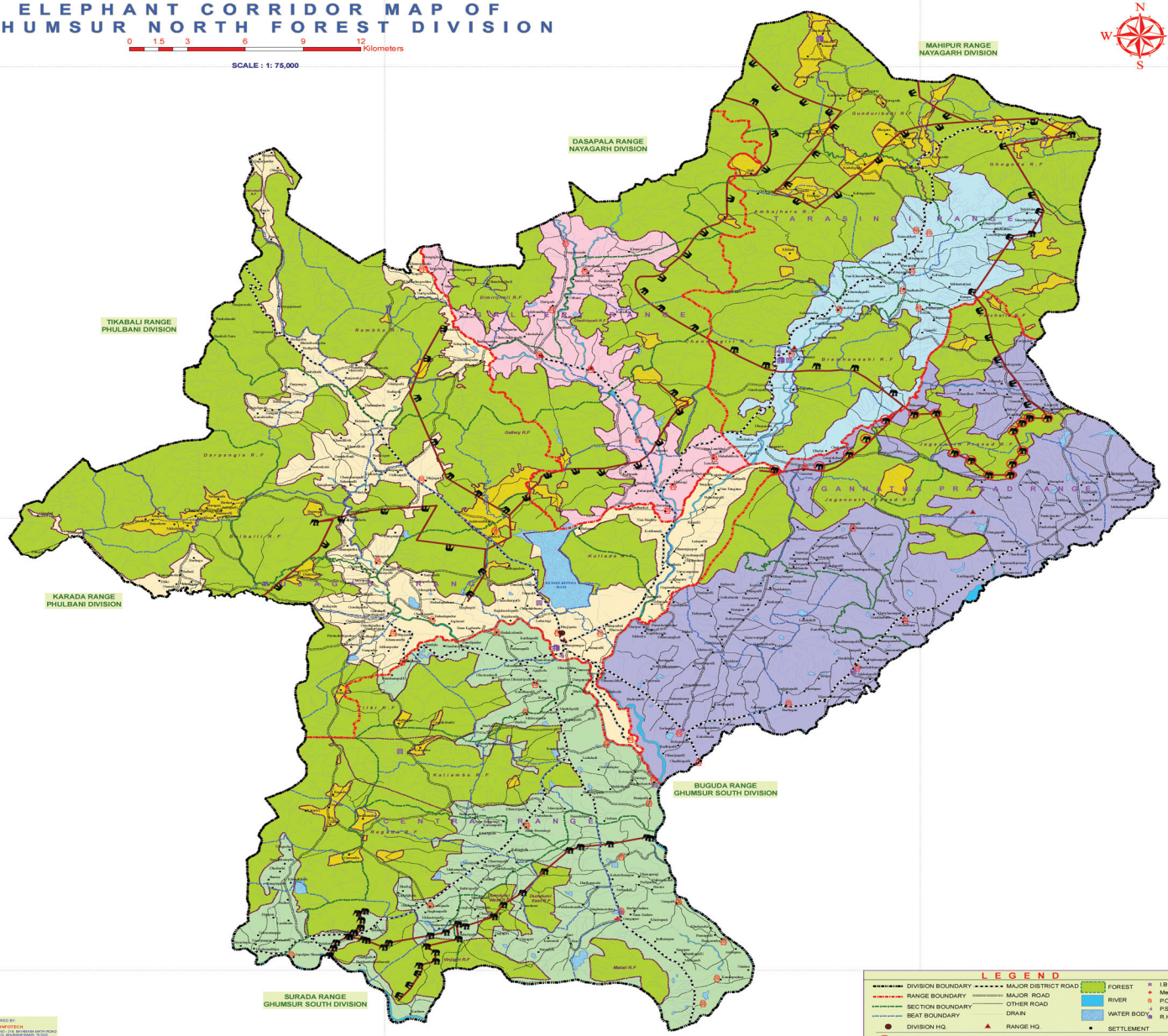
6.28 Intermediate Revision: No intermediate revision is anticipated. However, if necessary it can be recommended by the Regional Chief Conservator of Forest, Berhampur Circle in consultation with Conservator of Forest, (Working Plan) Bhanjanagar only after five years after reviewing the results of the main plan prescriptions. Any deviation shall be subject to sanction of competent authority.

6.29 Cost Norm: The cost norm for this working circle is given in the **Part II of Chapter 10 of Financial Forecasts** of Plan.

ELEPHANT CORRIDOR MAP OF GHUMSUR NORTH FOREST DIVISION

0 1.5 3 6 9 12 Kilometers

SCALE : 1: 75,000

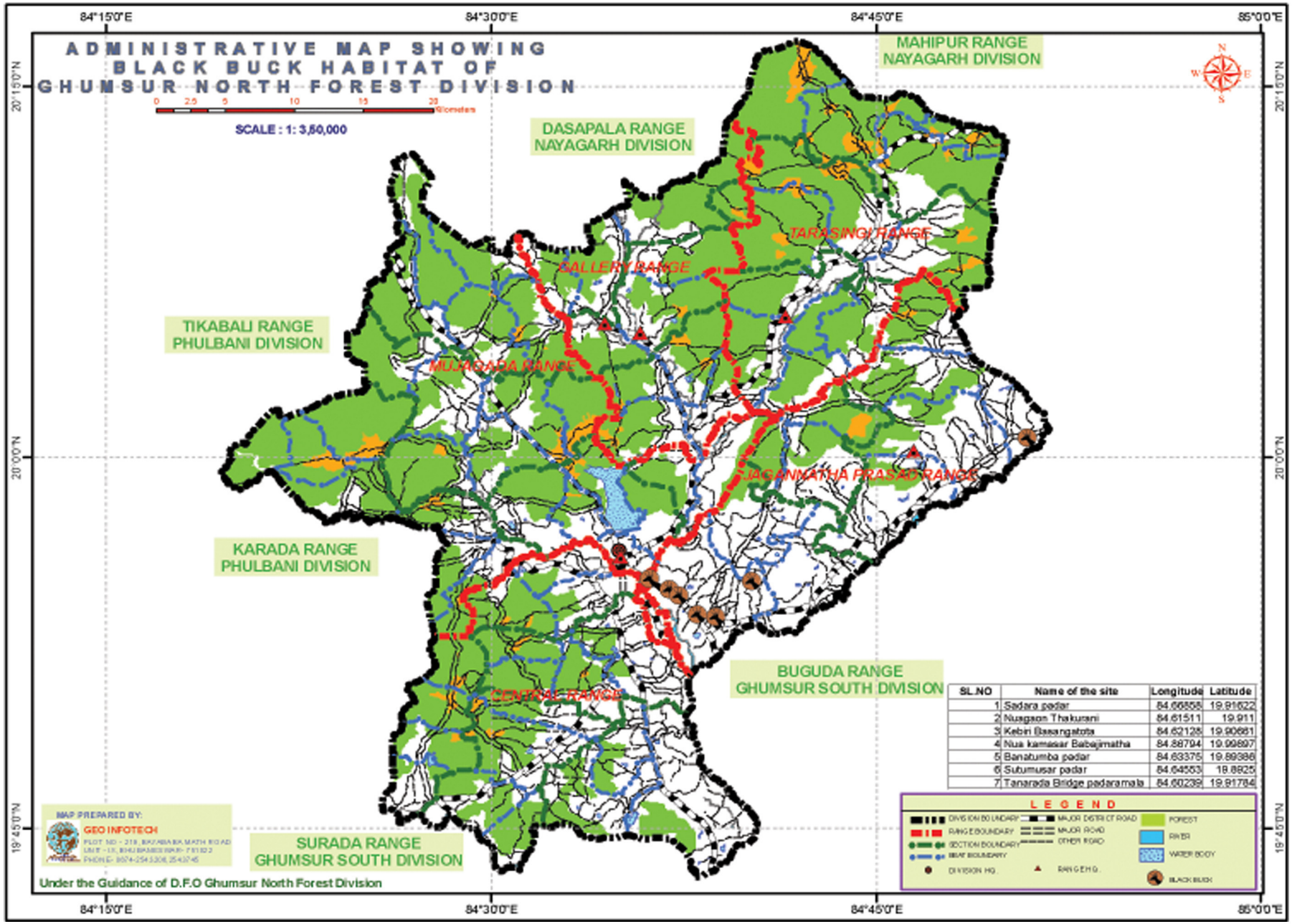


LEGEND

- DIVISION BOUNDARY
- RANGE BOUNDARY
- SECTION BOUNDARY
- BEAT BOUNDARY
- DIVISION HQ.
- MAJOR DISTRICT ROAD
- MAJOR ROAD
- OTHER ROAD
- DRAIN
- RANGE HQ.
- FOREST
- RIVER
- WATER BODY
- SETTLEMENT
- I.B
- Medical
- P.O
- P.S
- R.H
- RESIDENT ELEPHANTS
- MIGRATORY ELEPHANTS
- ELEPHANT CORRIDOR

MAP PREPARED BY:
GEO INFOTECH
PLOT NO- 318, BAYABARA MATH ROAD
BHUBANESWAR-751002(ODISHA)
PHONE: 09764342818,9764274

Under the Guidance of D.F.O Ghumsur North Forest Division



SL.NO	Name of the site	Longitude	Latitude
1	Sadara padar	84.66858	19.91622
2	Nuagaon Thakurani	84.61511	19.911
3	Kebiri Basangatota	84.62128	19.90661
4	Nua kamasar Babajimatha	84.88794	19.99697
5	Banatumba padar	84.63375	19.89386
6	Sutumusar padar	84.64553	19.8825
7	Tanarada Bridge padaramala	84.60239	19.91784

CHAPTER - VII

THE WILD LIFE (OVERLAPPING) WORKING CIRCLE

7.1 General Constitution

7.1.1 Wildlife is an integral part of the forests and performs important functions in the ecosystem. Wildlife resources in the Division are quite rich. In fact, the National Forest Policy 1988 has emphasized the need to conserve the wild life and their habitat. Despite the overwhelming importance given to the conservation of biodiversity and wildlife during recent years, forest patches maintained exclusively for the purpose has remain confined largely to Protected Areas (PAs). These sacrosanct patches, both National Parks and Sanctuaries, constitute a very small percentage of the geographical area of our State. Most of the forest areas, both reserved and unreserved, lie outside the Sanctuaries and national Park and therefore, it is imperative that steps for conservation and protection of wildlife is taken up in all our forests and nothing is left to endanger precious wildlife.

7.1.2 Though there has been general decline in the forests and the wild life habitat, Ghumsur North Division continues to have rich wild life resources as stated in **Chapter 2B of Part-I.** In fact, different studies in India have indicated that reserved forests in general sustain a substantial number of floral and faunal species, and their level of biodiversity is very large. While revising this working plan conscious attempt has been made to incorporate elements of conservation ethos.

7.1.3 Wildlife, embraces all forms that are wild, and is therefore any plant or animal which is neither domesticated nor reared/cultivated; and inhabit a wild landscape which may include even land, wetlands and sea. Therefore, for protection of the existing wildlife, to improve their habitat and to conserve biodiversity, this overlapping Working Circle that extends over the entire reserve forest areas of the Division.

7.2 General Character of Vegetation

7.2.1 The relentless biotic pressure by humans and domestic cattle has adversely affected the biodiversity of flora and fauna due to considerable degradation of forests over the years. No systematic biodiversity survey of animals and plants has been carried out in the past, barring some qualitative observations. Formal floral-diversity surveys have been taken for the first time during the revision of this plan.

7.2.2 Detailed description of the composition and diversity (including fauna) of these forests, have been already discussed in **Chapter-2B of Part– I** of this Plan. The rich biodiversity in flora and fauna of the Division has an important place in the wildlife wealth of Odisha.

7.3 Special Objectives of Management

7.3.1 The special objectives of Management set for this Working Circle are within the general objectives of management. These include

i. To conserve, protect and improve wild life habitat with special emphasis on the forest cover for the wildlife.
ii. To protect wild life in general and endangered species in particular.
iii. To create awareness among the local people regarding the necessity to conserve and protect the wild life and their habitat.
iv. To conserve and develop important wild life habitat for the purpose of maintaining genetic pool.
v. Increase in biodiversity and wildlife population.
vi. Prevention of wildlife poaching and related crimes.

7.4 ANALYSIS AND VALUATION

7.4.1 Wildlife census has been carried out at intervals for different species of wildlife but no formal analysis and valuation of all such data has been done at the Divisional level except for statistical purpose. A few census data has been reported in **the Chapter 2B of Part I.** Due to degradation of forest cover and shrinkage in habitat the number and type of wild animals in the forest is put to threat. In spite of negligible inputs for wildlife and habitat improvement in the past, the Division still has rich variety of wild animals which has been described in detail in **Chapter-2B of Part-I**. Wildlife habitat degradation results in wild animal coming out of the forests leading to man-animal conflicts. The causes for habitat destruction and loss in wildlife are:

i. Increasing incidences of encroachment and settlements.
ii. Increasing demand for fuel wood, timber, fodder and other NTFPs
iii. Poaching for sport and meat. Hunting for festivals
iv. Inadequacy of the forest staff to combat poaching.
v. Lack of awareness amongst the people.
vi. Less focus of management to improvement on habitat for wildlife.
vii. Habitat destruction and fragmentation, which affects wild life population

7.5 AREA AND ALLOTMENT

7.5.1 All the forest blocks, included in the Plan have been allotted to this Over-lapping Working Circle. The circle covers the entire geographical area of the Division as far as protection of the wildlife is concerned. This Working Circle overlaps the entire Plan area, the range wise details of area allotment to this circle has been furnished below in **Table no.7.1**

Table No.7.1:Area Allotted To Wildlife (Overlapping) Working Circle

Range	Forest Block	Compt No.	Area (Ha)
1	**2**	**3**	**4**
Mujagada	Tiliki	1	824.403
	Tiliki	2	829.583
	Ambajhara	11	622.622
	Ambajhara	12	607.527
	Gallery	1	385.472
	Gallery	2	418.778
	Gallery	3	491.097
	Gallery	4	579.482
	Gallery	5	739.903
	Gallery	6	485.835
	Gallery	7	361.513
	Gallery	8	434.075
	Gallery	9	403.926
	Gallery	10	525.415
	Gallery	11	464.751
	Gallery	12	346.702
	Gallery	13	435.572
	Gallery	14	472.683
	Gallery	15	799.797
	Gallery	17	551.801
	Rambha	1	707.731
	Rambha	2	800.404
	Rambha	3	521.044
	Rambha	4	774.504
	Rambha	5	734.439
	Rambha	6	697.207
	Rambha	7	1068.272
	Darpangia	1	786.726
	Darpangia	2	783.974
	Darpangia	3	823.877

	Darpangia	4	595.832
	Darpangia	5	503.077
	Darpangia	6	627.681
	Darpangia	7	1152.527
	Darpangia	8	302.833
	Darpangia	9	465.399
	Darpangia	10	502.711
	Darpangia	11	224.363
	Darpangia	12	366.329
	Kullada	1	530.838
	Kulada	2	232.376
	Kullada	3	456.424
	Kullada	4	350.789
	Baiballi	1	771.064
Mujagada	Baiballi	2	783.327
	Baiballi	3	704.735
	Baiballi	4	793.363
	Baiballi	5	470.984
	Baiballi	6	548.118
	Baiballi	7	969.405
	Baiballi	8	677.944
	Baiballi	9	572.804
	Baiballi	10	324.322
	Baiballi	11	475.84
	Baiballi	12	449.535
	Odinabadi	1	233.104
	Jagannathprasad	11	477.216
		Total Mujagada Range	**33042.055**
Central	Tiliki	3	676.892
	Tiliki	4	597.491
	Tiliki	5	749.385
	Tiliki	6	563.86
	Kaliamba	1	905.14
	Kaliamba	2	898.745
	Kaliamba	3	611.25
	Kaliamba	4	615.135
	Kaliamba	5	437.92
	Kaliamba	6	425.294
	Malati	1	766.41
	Dumudumi East	1	588.952
	Dumudumi West	1	443.424

	Vinjigiri	1	415.441
	Vinjigiri	2	747.297
	Vinjigiri	3	489.724
	Vinjigiri	4	386.928
	Ragada	1	567.584
	Ragada	2	513.153
	Ragada	3	807.163
	Ragada	4	979.28
	Ragada	5	563.133
	Ragada	6	492.796
	Ragada	7	819.83
	Ragada	8	408.64
	Ragada	9	760.987
	Ragada	10	499.474
		Total Central Range	**16731.328**
Gallery	Dimirijholi	1	683.165
	Dimirijholi	2	979.765
	Chadhiapalli	1	328.167
	Ambajhara	1	573.978
	Ambajhara	2	644.881
Range	**Forest Block**	**Compt No.**	**Area (Ha)**
1	**2**	**3**	**4**
Gallery	Ambajhara	3	682.558
	Ambajhara	4	713.76
	Ambajhara	5	583.691
	Ambajhara	6	736.827
	Gallery	16	503.844
	Gallery	18	413.436
	Gallery	19	514.65
	Gallery	20	372.319
	Gallery	21	430.595
	Gallery	22	416.836
	Gallery	23	472.683
	Chandragiri	1	770.053
	Chandragiri	2	726.831
	Chandragiri	3	912.141
	Chandragiri	10	407.325
	Chandragiri	11	842.803
	Chandragiri	12	345.123
		Total Gallery Range	**13055.431**
Tarasingi	Ambajhara	7	627.964

	Ambajhara	8	684.257
	Ambajhara	9	515.054
	Ambajhara	10	611.817
	Ambajhara	13	701.821
	Ambajhara	14	692.432
	Ambajhara	15	789.802
	Ambajhara	16	458.964
	Ambajhara	17	627.722
	Ambajhara	18	628.248
	Ambajhara	19	531
	Chandragiri	4	582.113
	Chandragiri	5	601.902
	Chandragiri	6	459.935
	Chandragiri	7	537.92
	Chandragiri	8	367.503
	Chandragiri	9	501.335
	Paichalia	1	576.609
	Paichalia	2	574.666
	Paichalia	3	729.624
	Ghogoda	1	638.244
	Ghogoda	2	568.515
	Ghogoda	3	746.459
	Ghogoda	4	673.533
	Ghogoda	5	737.07
	Ghogoda	6	767.543
	Gunduribadi	1	682.881
	Gunduribadi	2	485.957
	Gunduribadi	3	705.099
Range	**Forest Block**	**Compt No.**	**Area (Ha)**
1	**2**	**3**	**4**
Tarasingi	Gunduribadi	4	707.042
	Bramhanasahi	1	534.318
	Bramhanasahi	2	845.852
	Bramhanasahi	3	450.748
	Bramhanasahi	4	243.343
	Bramhanasahi	5	562.606
	Bramhanasahi	6	434.197
		Total Tarasingi Range	**21584.095**
Jagannathprasad	Jagannathprasad	1	925.01
	Jagannathprasad	2	625.86
	Jagannathprasad	3	604.452

	Jagannathprasad	4	428.976
	Jagannathprasad	5	622.218
	Jagannathprasad	6	533.994
	Jagannathprasad	7	584.096
	Jagannathprasad	8	522.541
	Jagannathprasad	9	922.885
	Jagannathprasad	10	444.638
	Paichalia	4	679.522
	Paichalia	5	741.643
Total Jaganathprasad Range			**7635.835**
Grand Total			**92048.744**

7.6 WILDLIFE HABITAT

7.6.1 Bulk of the area within the Division is terrestrial habitat. They form ideal habitat for all wildlife including the transitory home for migratory birds. The studies are insufficient on this account. Number of other seasonal and perennial streams criss-cross the entire Division providing water sources for the wildlife. Sub-terrestrial habitat consists of burrows and natural caves and crevices interspersed extensively all over the forest areas. Many burrows are even dug by the locals in the process of removal of roots and tubers. Besides, the accumulated rock pieces at the foothills and cracks in the rocky patches on the steep slopes also serve as a shelter for many reptiles like snakes; lizards etc. The vast stretch thickly wooded forest cover in different Ranges besides interspersed scrubs all through the Division which are criss-crossed by many nallahs and streams provide most ideal habitat for varieties of avifauna as well.

7.6.2 **Special habitats** for wildlife which are biological in origin and provide habitat functions not served by ecological successions are also available in the forests. They include snags, snag recruits, den trees, down-wood, isolated large old trees, trees with fluting boles, buttresses, lianas, some significant species of fruit bearing trees and shrubs. This special habitat shall have to be maintained and proper care should be taken to retain them during the course of silvicultural operations in the forests.

7.6.3 **Unique wildlife habitats** provide special functions not provided by successional stages and special habitats. They are geomorphic in origin and they include caves, overhangs, dens, cliffs and ledges etc which are used by specific groups of rare wildlife. These unique habitats need to be identified and maintained by the Divisional Forest Officers.

7.6.4 The major species, found in Ghumsur North Division, having highest conservational importance are leopard, Elephants, Indian Sloth Bear, Bison, Pangolins, Spotted deer, Sambar, Black Bucks, Barking deer and others. Availability of rich food source, plenty of rivers and streams, natural saltlicks provide a congenial home for the wild animals and elephant in particular. The Range wise distribution of wild animals rarely and frequently seen in important forest blocks is given **Table 7-2**.

Table 7-2 Range wise distribution of Wild animals in Forest Blocks of Ghumusur North Division

Sl. No.	Name of the Range	Name of Forest Block	Usually seen	Rarely seen
1	Central	Tiliki	Wild boar, Spotted deer, Barking deer, porcupine, Rabbit	Elephant
2	Central	Kaliamba	Wild boar, Spotted deer, Barking deer, Bison, Peacock, Leopard, Porcupine, Rabbit, Giant squirrel, Sambar, Gurandi, Pangolin	Elephant
3	Central	Rageda	Wild boar, Spotted deer, Barking deer, Peacock, Leopard, Porcupine, Rabbit, Sambar, Gurandi, Pangolin	Elephant
4	Central	Vinjigiri	Wild boar, Spotted deer, Barking deer, Porcupine, Rabbit, Sambar, Gurandi, Pangolin	Elephant
5	Central	Malati	Wild boar, Spotted deer, Barking deer, Bison, Peacock, Leopard, Porcupine, Rabbit, Sambar, Gurandi, Pangolin	Elephant
6	Central	Dumudumi East	Wild boar, Spotted deer, Barking deer, peacock, porcupine, Rabbit, Sambar, Gurandi, Pangolin	Elephant
7	Central	Dumudumi West	Wild deer. Spotted deer, Barking deer, Peacock, Porcupine, Rabbit, Sambar, Gurandi, Pangolin	Elephant
8	Tarasingi	Chandragiri	Spotted deer, Sambar, Barking deer, Wild boar, Hare, Porcupine	Elephant
9	Tarasingi	Ambhazora	Sambar, Barking deer, Wild boar, Hare, Porcupine, Elephant, Bison	Leopard
10	Tarasingi	Gundiribadi	Barking deer, Wild boar, Hare, Porcupine	Elephant
11	Tarasingi	Ghogada	Spotted deer, Barking deer, Wild boar, Elephant	Elephant/ Leopard
12	Tarasingi	Paichalia	Barking deer, Wild boar, Elephant	Leopard
13	Tarasingi	Brahamansahi	Barking deer, Spotted deer, Sambar, Porcupine, Wild boar, Elephant	Leopard

14	J.Prasad	J.Prasad	Barking deer, Wild boar	Leopard
15	J.Prasad	Paichalia	Barking deer, Wild boar	Leopard
16	Gallery	Chandragiri	Wild boar, Sambar, Spotted deer, Barking deer, Bear, Leopard, Bison, Rabbit, Gurandi, Pangolin	Elephant
17	Gallery	Ambazora	Wild boar, Sambar, Spotted deer, Barking deer, Bison, Peacock, Leopard, Porcupine, Rabbit, Giant Squirrel, Gurandi, Pangolin	Elephant
18	Gallery	Dimirijholi	Wild boar, Sambar, Spotted deer, Barking deer, Peacock, Leopard, Porcupine, Rabbit, Squirrel, Gurandi, Pangolin	Elephant
19	Gallery	Gallery	Wild boar, Spotted deer, Barking deer, Sambar, Gurandi, Pangolin	Elephant
20	Gallery	Chadhiapalli	Wild boar, Spotted deer, Barking deer, Peacock, Rabbit, Bear, Gurandi, Pangolin	Elephant
21	Mujagada	Gallery	Wild boar, Sambar, Spotted deer, Barking deer, Bison, Peacock, Elephant, Porcupine, Rabbit, Giant Squirrel, Gurandi, Pangolin	Elephant Leopard
22	Mujagada	Darpangia	Wild boar, Sambar, Spotted deer, Barking deer, Bison, Peacock, Elephant, Porcupine, Rabbit, Giant Squirrel, Gurandi, Pangolin	Leopard
23	Mujagada	Rambha	Wild boar, Sambar, Spotted deer, Barking deer, Bison, Peacock, Elephant, Porcupine, Rabbit, Giant Squirrel, Gurandi, Pangolin	Leopard
24	Mujagada	Baibali	Wild boar, Sambar, Spotted deer, Barking deer, Bison, Peacock, Elephant, Porcupine, Rabbit, Giant Squirrel, Gurandi, Pangolin	Leopard
25	Mujagada	Kullada	Wild boar, Spotted deer, Barking deer, porcupine, Rabbit	Elephant

7.7 Species Structure

7.7.1 Both flora and fauna have been described in detail under Chapter-II of Part-I. However the synopsis of the description is furnished below in two major heads i.e. Autotrophs (mostly flora) and Heterotrophs (mostly fauna).

7.7.2 Autotrophs

7.7.2.1 Most of the forest blocks of the Division support almost dry and moist deciduous types of forest. The top canopy includes species like *Shorea robusta, Pterocarpus marsupium, Terminalia tomentosa, Bombax ceiba, Mitragyna parviflora, Anogeissus latifolia* and *Gmelina arborea* etc. The middle storey consists of *Bridelia retusa, Dalbergia sissoo, Ougenia oojeinensis, Lannea*

coromandelica, Lagerstroemia parviflora, Buchanania lanzan, Aegle marmelos, Terminalia bellerica, Terminalia chebula, Semicarpus anacardiu, Sygygium cumini, Diospyros melanoxylon, Schleichera oleosa, Madhuca indica, Cleistanthus collinus, Morinda tinctoria, Sterculia urens, Dillenia pentagyna, Emblica officinalis, Tamarindus indica, Annogeissus acuminate, Mangifera indica, Bauhinia variegate, Mallotus phillippensis and Pongamia pinnata etc. Undergrowth like Woodfordia fructicosa, Holarrhena antidysenterica, Indigofera pulchela, Andrographis paniculata, Phoenix acaulis, Tridax procumbens, Eupatorium odoratum and Clerodendron infortunatum etc are noticed in these forest types. Interspersed amongst the wooded land are grasslands which may be in small or large patches which are very important for the herbivores in the forests. And, in case of degraded forests, areas are mostly open and having scrubby growth of some of the above referred species.

7.7.3 Heterotrophs

7.7.3.1 The species structure of major communities is as follows

i. Primary heterotrophs are Sambar (*Cervus unicolor*); Cheetal (*Axis axis*); Barking deer (*Muntiacus muntjak*). Common Indian Hare (*Lepus nigricollis*).

ii. Secondary heterotrophs are Leopard (*Panthera pardus*), Jungle cat (*Felis chaus*), Civet cat (*Vivericula indica*)

iii. Scavengers and other animals are Hyaena (*Hyaena hyaena*), Jackal (*Canis aureus*), wild dog (*Cuon alpinus*), Sloth bear (*Melursus ursinus*), Mongoose (*Herpestes edwardsii*), large Indian squirrel (*Ratufa indica*) and Otters (*Lutrogale perspicilata*), Pangolin (*Manis crassicaudata*), Wild boar (*Sus scrofa*).

iv. Primates are represented by the common langur (*Presbytes entellus*) and the common Pati (*Macaca mulata*)

v. Amongst the snakes, Python (*Python molurus*) Banded Krait (Rana) *Bungarus fasciatus*, Cobra (Naga or Gokhar Sapa) *Naja naja*, Common Blind Snake (Teli Sapa) *Typhlops brahminus*, Russell's Earth Boa (Domundia Sapa) *Eryx conicus*, Indian Rat Snake (Dhamana) *Ptyas mucosus*, Water Snake (Dhanda) *Natrix piscator* are mostly available in the division

vi. The avifauna includes Indian Red Jungle fowl (Bana Kukuda) *Gallus gallus* murghi (Robinson & Kloss), Pariah kite (*Matia Chila*) *Milvus mirgrans govinda* (Sykes), Indian Roller (Bhadabhadalia/Terra) *Coracias benghalensis* (Linnaeus), House Crow (Kau or Indian house crow) *Corvus splendens*, (Viellot), Spotted Dove (Kapota or Indian Spotted Dove) *Streptopelia chinensis suratensis* (Gmelin), Cattle egret (Gaya Baga) *Bubulcus ibis coromandus* (Boddaert), Indian House Sparrow (Ghara Chatia)–*Passer domesticus*

indicus (Jerdire & selby), Yellow legged green pigeon or Harada Chadhei -Teron *Phoenicopitera phoenicopitera* (lathum), Indian Pond Heron (Kantia Baga) *Ardeola grayii grayii* (Sykes), Kajalpati or King Crow or Common Drongo- *Dicrurus adsimilis macrocercus* (Vieillot), North Brown Crowned Pigmy Wood Pecker (Katha ana)- *Picoides nanus nanus* (Vigors), Indian Koel (Koili)–*Eudynamys scolopacea scolopacea* (Linnaeus), Common Crow Pheasant or Kumbhatua–*Centropus sinensis sinensis* (Stephens), Barn Owl or Indian Barn Owl or *Pecha–Tyto alba stertens* (Hartert), Rose-ringed Parakeet (Sua)–*Psittacule krameri manillensis* (Bechstein), Southern Hill Myana (Sari)–*Gracula religiosa indica* (Cuvier) and Bani or Indian Common Myana – *Acridotheres tristis* etc.

7.8 Wildlife Crime

7.8.1 Wild animals live primarily in the forests but since it also moves outside, crime against it is committed both inside and outside the forests. Man kills wildlife as a sport or fancy, for its meat or to make quick monetary gains by sale of wildlife products. The illegal trade worldwide in wildlife products is estimated to be in the magnitude of about $125 billion annually.

7.8.2 Wildlife crime may comprise of poaching of wild animals, capture, possession, transport or trade of live animals and plants or their parts, products and derivatives. It also includes damaging or destroying its habitat besides the mass-hunting which is associated with local festivals and rituals. In fact, this crime is one of the fastest growing crimes in the world and is said to be next to only the narcotic trade due to the huge financial returns. A wildlife criminal may be a villager or a poor tribal or he may be a smuggler operating from towns/cities, depending on the level at which he is operating in the trade link starting from poaching within a locality to international border smuggling. However, the extent of poaching and the wildlife crimes detected in the Division are reflected in **Chapter 2B of Part I.**

7.8.3 Methods of poaching wild animals vary from place to place in the State depending upon even the type of animal being poached. Shooting is a common method for all kinds of mammals and some birds. However, poisoning of big cats, birds and large herbivores, trapping and snaring mammals like deer and some reptiles, and netting small mammals, small birds and butterflies are frequently resorted to. Stick and glue, insecticides and pesticides for killing fast flying birds and taking young hatchlings from birds' nest holes on trees are also commonly practiced. Digging out of snakes, porcupines, lizards etc from underground pits is commonly seen.

7.8.4 Poaching of herbivores which is reportedly not frequent is mainly for meat and for their trophy and includes elephant, spotteddeer, sambar, wild boar, mouse deer, hare etc. During the hot summer

months when natural streams become dry or when paddy or other crop ripens, these animals generally stray into the human habitation and are killed by the villagers. Animals are also killed by laying traps and snares on the jungle paths. Wire nooses for hare are a common sight in most of the tribal dominated forest areas. Bows and arrows are used to kill cheetal, wild boar and sambar. Most of them are expert at tracking wild animals and they follow them for two to three days accompanied by hunting dogs and they finally kill the animals using arrows. It is said that poaching of leopards in some areas has been by use of steel leg traps which would spring up when the animal stumbles on the same while on its regular path. Other traps to kill deer and other herbivores are also used.

7.8.5 Past few years this division is experiencing the New Method is called Electrical Hooking by using 11kv Electric line. This practice is peculiar in this division which used to lay down in and around the agriculture land to protect the crops from wild boar but sometimes it become a trap for elephants, other herbivores and carnivores also.

7.8.6 Many cases of poaching go undetected for variety of reasons. However, organized poaching for trade is negligible. This area does not witness any customary or ethnic culture related mass poaching. Poaching takes place for livelihood or as a local custom, incidental kill or killing in retaliation. The extent of different animals poached and reported during the outgoing Plan and intervening period is reflected in the said Chapter 2B of Part-I on wildlife of the Division.

7.9 Methods of Treatment

7.9.1 Maintaining Special Habitats

7.9.1.1 Special habitats are biological in origin and provide habitat functions for small wild animals. They include snags, snag recruits, den trees, down-wood, isolated large old trees, trees with fluting boles, buttresses, lianas, some significant species of fruit bearing trees and shrubs. These special habitats have been neglected in the past. Care should be taken while implementing the revised Plan to maintain these special habitats especially in the areas coming under the Selection working Circle.

7.9.1.2 Snag: As a thumb rule, at least 5 tallest and largest diameter snags per hectare shall be maintained, in a well distributed design in all silvicultural treatments. Retained snags should be entered in the Compartment History. These are vital for a variety of primary hole-nesting birds like woodpeckers and barbets, which are colonized by secondary hole-nesters like hill mynas, rollers, owlets etc during subsequent years.

7.9.1.3 Snag Recruits: 5 snag recruits per hectare shall be maintained. These are dying trees, mostly affected by heart rot fungus but not quite dead. They can be recognized by their external symptoms.

All such trees, which are being retained, need to be reflected in the Compartment Histories. These, along with snags provide a very good substrate for epiphytic orchids, especially of genus *Dendrobium* spp.

7.9.1.4 Down Wood: In felling operations, among the rejects, apart from lops and tops, large size irregular shaped hollow logs often fissured, being uneconomical they usually remain on site, or are converted into fuel wood. Such large sized woody material provides critical ecological functions in support of maintenance of vegetation and animal diversity, besides serving the functions of cover and micro-habitat for several species. The largest size hollow logs, or rejects for any reason shall be retained at the rate of at least three logs per hectare, and as far as practicable evenly distributed. These should find place in the Compartment History.

7.9.1.5 Large old trees: In low density open areas large very old trees occur in few numbers. The *Ficus sp*. should not be counted among these since Ficus is not felled even otherwise. Large old trees of different species as mango, as and when encountered shall be reserved in any felling/tending operation. The retained trees (2 to 4 per ha) shall be entered in the Compartment Histories. They serve as daytime roosts/nesting sites for large owls of *Bubo spp*, found in the Division.

7.9.1.6 Trees with Fluting Boles and Buttresses and Holes at the Base: These occur in very low densities forest represented by a small number of species. They provide significant micro-habitat functions for small mammals like the mouse deer and reptiles. One such trees at least, the largest possible, needs to be retained per hectare and entered on the marking list.

7.9.1.7 Lianas and tangled climbers: Climber cutting operation is a standard practice and prescription for the same is there in all working circles. However, lianas provide significant habitat functions in support of mobility of arboreal animals, and depending on animal species, serve as resting and escape cover for primates. They are equally important for arboreal small carnivores, some rodents and lizards. A climber with tangles is especially important. It is recommended that at least two old spaced apart climbers per hectare shall be retained, and recorded in Compartment Histories.

7.9.1.8 Fruit Bearing Trees and Shrubs: All Working Plans now reserve all fruit bearing tree species in felling/tending operations that are known to provide fruits to local human inhabitants and wildlife. Such significant trees shall be retained. Marking rules shall be specific on this.

7.9.1.9 Roosting/Nesting Trees: All trees which are known to support nesting colonies of birds or roosting congregations of raptors/other birds shall be retained. This is crucial especially with reference to vultures and kochila khai which are critically endangered and have become very rare.

7.9.2 Wildlife Habitat Management Plan

7.9.2.1. Habitat shall be developed with the cooperation of local people using silvicultural techniques. The aim should be to provide more food, water and shelter to the wild life so as to reduce the man-animal conflict.

7.9.2.2. Improving the cover: Providing adequate forest cover to different wild animals within their habitat is necessary for shelter and protection of wild animals from weather, predators and enemies. Keeping in view this aspect, it has been prescribed in Selection Working Circle shall not fell those mature trees, which create a lasting gap in the canopy. It is also prescribed not to fell trees near water holes, wallows, and saltlicks to maintain cover. In case of Rehabilitation working circle it has been prescribed to go for mixed plantations instead of pure plantations to create ground flora and middle storey to provide cover for different types of wild animals. Tree cover around the stream, water holes and salt licks shall also be maintained and improved.

7.9.2.3 Improving Availability of Food: The adequacy of food in a particular wild life habitat depends upon the quality and quantity of food produced and the animal population living therein. Keeping in view this aspect of wild life management, the exploitable diameter of various species has been kept on higher side and the percentage of removal of exploitable size trees have been properly regulated and safe guarded. Similarly, under various subsidiary silvicultural operations like opening of canopy, thinning of congested patches, improving the general availability of food shall always be taken into consideration. For these reasons and also, for their utility as NTFPs, the fruit bearing trees like Amla, Mango, Kendu, Jamun, Mahua, Char shall be prohibited from felling under the respective working circles. Further, the species of any plantation/retention operation taken in forest areas shall be as follows.

i. Food availability in a habitat changes with the season. Herbivores depend on plant materials like leaves, barks, twigs, flowers, fruits and seeds of species like *Mallotus philippinensis, Dendrocalamus strictus, Adina cordifolia, Albizzia lebbek, Aegle marmelos, Cassia fistula, Ficus bengalensis, Ougeinia ougenensis, Shorea robusta, Syzygium cumini, Terminalia alata, Terminalia belerica, Zizyphus mauritiana, Bombax ceiba* etc.

ii. Deer, monkey, langurs, rats and hare feed on wild fruits of plants like *Ficus* species, *Terminalia belerica*, *Buchanania lanzan, Aegle marmelos, Syzygium cumini, Emblica officinalis, Zizyphus spp, Diospyros melanoxylon*, *Grewia hirsute* etc. These animals help in dispersal of fruits and seeds in the forests.

iii. Among the plant materials, grasses constitute major portion of the herbivores' food. Grasses, which are highly preferred and consumed by herbivores, are *Dicanthium* spp, *Eragrostis pilosa, Saccharum bengalensis* etc. These grasses should be raised in the wild life concentrated areas to meet the food requirement of herbivores. Natural meadow shall be enriched, and new small patches should be created and maintained near water holes and saltlicks in Malati RF, Gallery RF and Brahmansahi RF

7.9.2.4 Water Availability: Generally, there is no dearth of water from July to December. However, scarcity is felt from January to June, when most of the seasonal nallahs and streams dry up. Hence, it is necessary to create waterholes and check dams on the higher slopes across nallahs to improve water availability during summer. Available waterholes should be well protected from poaching during the summers as animals frequently move to areas where water is available. Check-dams can be created in Gallery RF, Darpangia RF, Rambha RF, Jaganathprasad RF, Baiballi RF, Odinabadi RF, Ghogoda RF and Ambazora RF.

7.9.2.4.1 Minimum 2 Nos. of water bodies are proposed to be opened up at various locations in the each range/ year. The details of Forest Blocks where waterbody have been created are provided in **Table-2B-13 Chapter-IIB Part-I** Priority shall be given to Forest Blocks that do not have any permanent water source. However, based on the location the relevant modifications in the plan can be taken up.

7.9.2.5 Distribution of Natural Salt Licks: There are good numbers of natural salt licks scattered in the Division being mostly on sides of nallahs and in foothills. These saltlicks shall be protected and improved upon. New salt licks shall be created in areas in those Reserve forest as mentioned above as they cover a variety of vegetation, where more protection is required due to the wildlife concentration near. Some of these salt licks can be of great significance for wild life lovers. 15 Nos. of salt licks are proposed to be prepared near some of these water bodies that will have water round the year.

7.9.2.6 Meadow Development: Development of meadows shall be taken up at suitable locations. Particularly, during the cultivation season when the water from the reservoir is diverted for irrigation, the water level drops and large tracts of barren earth gets exposed. These places can be sown with grass seeds and meadows can be developed. Since the area is surrounded by Forest Blocks the availability of grasses at the water source will be a good source of food for the wild life. The financial requirement for this plan is shows in the following **Table. 7.3**

Table 7.3- Financial Forecast- Habitat Management Plan				
Sl.No.	**Item**	**Cost (in lakhs) Per annum**	**Cost (in lakhs) one time**	**Cost (in lakhs) for 10 years**
1.	2 Nos. of water bodies to be opened @Rs 5.0 lakhs per water body/year	5.00		100.0
2.	15 Nos. of salt licks to be created @Rs.30, 000/- per salt licks.		4.5	
3.	Creation of meadow at kaliamba	0.20		2.0
4.	Annual Maintenance of salt licks @ 2000/- per site	0.30		3.0
	Total outlay Per annum/one time expenditure / for 10 years	**5.5**	**4.5**	**105.0**

7.9.2.7 Corridor Development: Due to decreasing in the area and loss of connectivity and fragmentation of the habitat there is increase in man-animal conflicts. Along with strengthening of protection measures for wildlife, corridor development of elephant shall be given priority. These corridors are the connecting links between different habitats. So it is imperative that the corridor shall be maintained and improved to render adequate safety to the wild animals for their movement / other activities. This is very much essential for the large animals particularly the elephant. The elephants usually adopt the same corridor for several years until and unless, there is some pressing need to change it.

7.9.2.7.1 Elephant Conservation

7.9.2.7.1.1 In this division, two types of elephants are present 1. Migratory Elephants 2. Residential Elephants. A herd of 7 numbers of elephants in Jaganathprasad range which are residential and confined to banta beat of Jaganathprasad RF. A herd of 14 numbers of elephants usually migrated from the phulbani divison through Daha, Baibali RF. Another herd of elephants number is varying from 10-15 come through Ghogada RF of Tarasingi Range from daspalla Range of Nayagarh division. One herd of 12 numbers of elephants is migrating from buguda range of ghumsur south division to dumdumi RF of central range. Mostly the migratory season starts from November to January, during harvesting time of paddy fields. Apart from that one single lone juvenile tusker used to be resident to this division moving all the ranges.

The important corridors in the division are furnished as under.

(a) Phulbani divisions Karada Range – Daha – Baibali –

Mujagada-Ramba-.and back.

(b) Buguda Range of Ghumsur South Division– Dumdumi RF – Gangapur –Malati RF and back.

(c) Naygarh Division of Daspalla range – Ghogada-Paichalia - Bramansahi RF – Tarasingi and back.

(d) Jaganathprasad – Banta – Paichalia RF

7.9.2.7.1.2 The Objectives of the elephant management in this Division are as follow.

- ✓ To prevent casualty of both humans and elephants arising due to the conflict and Electrocution
- ✓ To decrease the crop damage caused by elephants.
- ✓ To create awareness among people so as to make them more tolerant to the presence of elephants in their neighborhood.
- ✓ Taking up enrichment plantation of elephant fodder species in the forest Blocks of elephants habitat.

7.9.2.7.1.2 Causes

I. **Death of Elephants by Electrocution**: Villagers around the forest blocks often lay electric lines by illegal hooking to trap small mammals such as wild pigs. Elephants have been incidentally killed in such traps in the past.

II. **Depredation:** Heavy crop raiding and human deaths due to elephants have created animosity of local people with the elephants and also the forest staff.

III. **Staff Strength:** Inadequacy of staff to deal with the conflict that is taking place on daily basis and the lack of quick mobility for the staff in the area.

7.9.2.7.1.3 Strategy for Elephant Management

I. Solar Fencing & Its Maintenance and Creation Of Elephant Proof Fence : A certain section (About 1.5 km) of the Jaganathprasad forest RF C/11 of gajapadar village fringe with agricultural fields was fenced by solar electric fence in the last two three years. The strategy was to prevent the elephants from entering certain vulnerably crop fields. The fence requires daily maintenance to prevent short circuits caused by growth of vegetation. It is therefore suggested to employee one daily wage worker for each 1.5 km stretch of the fence for the entire year. To avoid entry of elephants in fringe villages, Elephant proof fence may be developed for protection. This is need very less care and more effective when compared with

the solar fencing. At least 2 km may be given for development of Elephant Proof trench for each range in the cost of 5 lakhs / km.

II. **Anti Depredation Squad:** To manage the crop raids, squads of daily wage worker have to be on standby round the year. Already different squads engaged even though more no of squads are essential during the crop raiding seasons of the Elephants. To prevent illegal hooking of electric wires for poaching of small animals in the cashew plantations around the forest blocks, the additional or separate anti-depredation squads shall undertake weekly combing of the vulnerable areas. The forest staff should collect intelligence about the illegal hooking and initiate action against the culprits.

III. **Secret Fund:** A secrete fund shall be placed with the DFO to be given to the informers of illegal electrical hooking.

IV. **Awareness Camp:** Awareness should be created among the villages affected by elephant depredation. It is therefore suggested to organize 5 awareness camps in Ranges. And celebrating and observing Elephant day in all ranges.

V. **Fodder Plantation In The Elephant Corridor Areas:** While taking up the plantation activities in the forest areas coming under elephant corridor of this Division, elephants fodder specie such as Mango, Kaitha, Bara, Kasi, Ghambar, Sissoo, Jamun, Panasa and any Ficus species and salia bamboo etc are to be planted on priority.

The following **Table 7.4** gives financial allotment for this elephant conservation.

Table 7.4- Financial Forecast- Elephant Conservation

Sl. No.	Item	Cost (in lakhs) Per annum	Cost (in lakhs) one time	Cost (in lakhs) for 10 years
1.	Employment of 2 daily wage workers for maintenance of solar electric fence for 12 months @Rs.150/- per day (for solar fencing and Elephant Proof Fence)	1.08		10.80
2.	Employment of 20 daily wage workers of the squad for 12 months @150/- per day & hired vehicle, POL expt., uniforms & equipments (2 squads @	18.0		180.0

	Rs. 9.0 lakhs)			
3.	Employment of 4 trackers for 12 months @Rs.150/- per day.2 trackers per squad @ Rs. 1.1 lakhs per squad (Hooking Trackers)	2.200		22.0
4.	Cost of fooding for trackers for 12 months @Rs.40/- per day.	0.292		2.92
5.	Cost of procuring crackers, torch lights, etc. for the squad.	1.00		10.0
6.	Construction of watch tower cum barrack at Jaganathprasad range and Tarasingi Range 2 nos @ Rs. 10.0 lakhs		20.0	20.0
7.	Cost of conducting 20 village camps @Rs.0.10 lakh per camp.	2.00		20.0
8.	Secret fund.	0.20		2.0
	Total outlay Per annum/one time expenditure / for 10 years	**24.772**	**20.0**	**267.72**

7.10.3 Maintaining Unique Habitats

7.10.3.1 Unique habitats provide special functions not provided by succession stages and special habitats. They are geomorphic in origin. These include the following habitats.

7.10.3.2 Caves: They are used by a variety of taxa. Large mammals like the leopard, bear and hyena use caves as shelter and for rearing cubs. Some caves are of significant visitor value. There are very few numbers of caves in the hilly tracts of Darpangia RF, Odinabadi RF, Ghogoda RF and Rambha RF. They can thus be important for porcupines, amphibians, reptiles, fishes and species of birds like the edible nest swiftlets. Several species of bats live in colonies inside caves. Caves need complete protection, even while being inside a worked area. It is crucial that, any live cave/den be given stringent protection. Inventory of available caves in various forest blocks should be taken up during this revised Plan period. They shall be entered in the Compartment History Forms.

7.10.3.3 Overhangs: When soft rock underlying hard rock weathers away, an arch is formed which serves as a shelter, as a substrate for bee hives (pollinators), nesting colonies for swallows etc. Such sites need to be protected. Survey of available overhangs in various forest blocks and entering them in Compartment Histories should be taken up during this revised Plan period. Rocky sheets are abundant at many of the reserve forests and the overhangs have to be located.

7.10.3.4 Dens: These are much smaller and distinct from caves, usually dug in soft rock or earth cuttings by animals such as wild dogs, hyena, wolves, foxes, porcupines, for the purpose of shelter

and breeding. When not occupied they can be used by a variety of taxa such as small mammals and reptiles. Porcupines and pythons are known to share the same underground chambers. Dens are subjected to human disturbance. Local inhabitants are known to smoke out porcupines for sport, smoke out and kill wolf cubs; or otherwise look for animals in dens. Dens need to be protected. Inventory of available dens in various forest blocks and mentioning them in Compartment Histories should be taken up during this revised Plan period.

7.10.3.5 Cliffs, Talus and Ledges: Sheer cliffs often have crevices and ledges, some in shade, some exposed to the sun thus providing a variety of microclimate. Ledges located high up serve as nesting platform for eagles (endangered) and vulture colonies (now critically endangered). Cliff tops are equally important for this purpose. Crevices are colonized by several species of bats. Beehives hang along overhangs. Several cliff dwelling birds like swallows, martins establish their nesting colonies along cliff faces. Plants, specific to rocky substrates grow along cliffs. The base may provide caves. Talus is an aggregate of loose rocks dislodged from time to time from cliff faces. They secrete space in between which provides thermally secure microhabitats to several species of small mammals and reptiles. The threats to cliff based micro habitats may come from honey collectors; from activities such as rock climbing. Talus often may be used as source for stone, road metal etc. These features need to be strictly protected. The availability of such unique habitats should be inventoried and mention of them in Compartment Histories should be taken up during this revised Plan period.

7.10.3.6 Large Bouldery Aggregates: These are normally found in drainages, especially in sections in proximity of headwaters. These are excellent habitat elements for bears, honey badger and some species of reptiles. On rocky hills wild bananas near grow which is an important food item for the bear besides species value. These are found at dry nala beds of the reserve forests. These are areas where disturbance needs to be completely controlled.

7.10.3.7 Sheet Rocks: These often have crevices which provide shelter to several species of small vertebrates. Lithophytic plants peculiar to rocky substrates grow along sheet rocks; in several species are noticed to grow only in the rocky spray zones of waterfalls. This habitat is vulnerable to road construction, development of hiking trails, and tourism infrastructure, as a source of income by collecting as stones and chips, therefore rocky sheets needs protection.

7.10.3.8 Earth Cuttings: These are important for species which dig dens. Near streams, kingfishers bore burrows into the banks for nesting. Significant banks/earth-cuttings need to be protected from activities such as road alignment etc.

7.10.3.9 Sandy Banks and Sand Pits: Depending on the character and extent these are important as nesting sites for fresh water vertebrates etc. Sand mining therefore needs to be strongly controlled, especially along the critical stretches where a survey has offered proof of such wildlife use. Dredging changes stream dynamics and may promote accelerated erosion. Likewise uncontrolled boulder collection from boulder river beds can have severe consequences. Such activity therefore, shall be appropriately controlled.

7.10.3.10 In summary, the unique habitats are vulnerable for a variety of reasons. Depending on the existing and anticipated situation, give appropriate protection/regulatory strategies to be followed for conservation of these habitats

7.11.4 Conservation of Black Buck

7.11.4.1 In Odisha, there are two important sites where the population of the rare and endangered species of Black Buck (*Antelopa cervicarpa*) is seen.

They are as follows:

1) Balukhand Wildlife Sanctuary of Puri Wildlife Forest Division of Puri District and

2) Balipadar-Bhetnoi area under Ghumsur South division of Ganjam district.

In the year 2012 for the first time, official reporting of black buck sighting was reported from Ghumsur North Division. The report stated that two herds comprising of 27 numbers of black buck were seen only in Jaganathprasad Range of the division.

7.11.4.2 Precise location of the sites of Jaganathprasad Range of Ghumsur North Division along with central GPS reading of the sites is given in **Table 7-5**.

Table 7-5 List of Black Buck sites along with GPS readings of Ghumsur North Division

Sl. No.	Name of the site	Latitude			Longitude		
		DD	MM	SS	DD	MM	SS
1	2	3			4		
1	Sadar Padar	19	54	58.4	84	40	06.9
2	Nuagaon Thakurani	19	54	39.6	84	36	54.4
3	Kebiri Basangatota	19	54	23.8	84	37	16.6
4	Nua Kamasar Babajimatha	19	59	56.3	84	52	04.6

5	Banatumba Padar	19	53	37.9	84	38	01.5
6	Sutumusar Padar	19	53	33.0	84	38	43.9
7	Tanarada Bridge Padaramala	19	53	04.2	84	36	08.6

Source: Field Data

7.11.4.3 For the first time since sighting of Black Buck in Ghumsur North Division, census operation was undertaken in the year 2015. The methodology adopted for the census operation is as follows:

I. Seven discreet teams were formed for the seven sites in Jaganathprasad Range for undertaking the single day long census operation. The operation is restricted to a single day to make it more accurate and to avoid double counting.

II. The methodology involved direct sighting by walking along a strip from which 100 meter long transects were demarcated by means of poles along which the team will travel and recorded the sightings in prescribed formats supplied earlier. Each of the transect were separated by a distance of 500 meter. Each successive transect were marked in opposite direction from the main strip line which means that if the first transect is to the left of the strip then the next transect is to the right of the strip.

The results of the census done recorded in terms of male, female and young site wise and unit wise is given in **Table 7-6**.

Table 7-6 Result of Black buck census of Ghumsur North Division done in the year 2015

Unit No.	Name of Site	Male	Female	Young	Total
1	**2**	**3**	**4**	**5**	**6**
I	Sadar Padar	14	8	0	**22**
II	Nuagaon Thakurani	0	0	0	**0**
III	Kebiri Basangatota	15	35	06	**56**
IV	Nua Kamasar Babajimatha	9	11	04	**24**
V	Banatumba Padar	12	13	05	**30**
VI	Sutumusar Padar	7	7	1	**15**
VII	Tanarada Bridge Padaramala	03	14	04	**21**
Total		**60**	**88**	**20**	**168**

7.11.4.4 Conservation Strategy

7.11.4.4.1. The major need of the hour is to preserve and initiate habitat improvement measures for the Black Buck population in complete cohesion and cooperation of the local people so as to

preserve their numbers and help in the proliferation of their kind by providing a safe and conducive environment especially for the Young ones. For that specific project proposals should be formulated which should included ample allocation for the following:

1) As these are the initial days of Black buck occupation of a new habitat in the division, wildlife experts in this field should be roped in and research and necessary studies should be carried out to find out the ways and means of bringing in habitat improvement, analyzing the carrying capacity of the habitat, assessing the present threats and forecasting the impending potential dangers to the population and planning mitigation strategies to counter such threats apprehended.

2) Creation of Black Buck management committee must be formed in Ghumsur North Division with proper representation of the local people of the villages and the forest field staff and to organize regular meetings to know their concerns over the black buck population and to address their issues and put in a synergistic effort for safeguarding the black bucks of the area.

3) Creation of mass awareness amongst the local people through various innovative ways like signages, street plays, wall paintings, Interpretation Centers etc. with involvement of the local representatives, NGO's, media and other village and panchayat level institutions.

4) Incentivizing the informers and villagers involved in the cause of protection of black bucks.

5) Formation of Black Buck protection squads provided with uniforms, vehicles and necessary gears to discharge their assigned duties ably.

6) Constructing rescue centre cum old age home at Lalsing Central nursery campus equipped with trained medical and tranquilizing teams for helping the young ones and the aged population.

7) Creation of permanent watch towers at strategic locations with dedicated staff armed with necessary gears to help in the census operations and to keep strict watch over the poachers.

8) Habitat improvement through creation of grasslands by undertaking plantation of suitable and palatable grass and other forage species and creation of mini artificial water holes and salt licks in RF area and private land.

9) Compensating the villagers by making compassionate grant payment to the crops damaged and to provide them hybrid planting materials and other alternate livelihood options and

arranging for health and veterinary camps and construction of multipurpose community centers in their villages.

10) Trying to extend some legal sanctity to the area inhabited by Black Buck for ensuring sustained efforts in its preservation of the species.

Proposed Budget for Implementing of Black Buck Conservation

Table-7.7 - Financial Forecast- Black Buck Conservation

Sl. No.	Item	Cost (in lakhs) per annum	Cost (in lakhs) one time	Cost (in lakhs) for 10 years
1.	Creation of 3 salt licks @Rs.30,000/- per salt lick.		0.90	0.9
2.	Annual maintenance of salt licks @Rs.2000/- per salt lick.	0.06		0.6
3.	Renovation of 5 Farm ponds @Rs.100,000/- per pond.		5.0	5.0
4.	Maintenance of pasture land of about 5 Ac. @Rs.5000/- per Ac.	0.25		2.5
5.	Awareness generation activities through conducting of meetings and distribution of prizes to the villages for conservation efforts.	0.20		2.0
6.	Contingency (might be of help in veterinary support)	0.05		0.5
7.	Black buck protection squad (1 Nos)/Month	0.08		9.6
8.	Construction of watch tower 1no		10.0	10.0
	Total outlay Per annum/one time expenditure. / for 10 years	**0.64**	**15.9**	**31.1**

7.11.5 Maintaining the Cultural Landscape

7.11.5.1 Sites of Pilgrimage: Deities of tribals are often located in ancient/old growth stands or groves and there are specific periods of pilgrimage. People follow several forest routes to get to the holy site. DFO needs to have full information on the average number of people, activities on the pilgrimage site and off site, travel routes, needs of pilgrims etc. From the time pilgrims enter the forest area to the time they exit, their movements and activities need to be regulated and extra protection efforts need to be invested. They would en-route need fuel wood, camping sites and any other demands they

place on resources. Rubbish dumping, illegal cutting, opportunistic poaching could be serious issues. Once issues are firmed up, specific strategies for protection and resource regulations should be prescribed by the DFO.

7.11.6 Other Prescriptions

7.11.6.1 The distribution of wildlife in different forest blocks shall be studied and their occurrence in different habitats in different seasons shall be estimated. Census of wild animals shall be done every alternate year in consultation with the Chief Wildlife Warden to even assess the prey-predator base; this will even help in further improving the management prescriptions.

7.11.6.2 Wildlife habitats of endangered species shall be identified and mapped.

7.11.6.3 Migration routes for wild animals shall be identified and preventive measures taken to protect and improve those corridors. The areas vulnerable to poaching shall be protected from all sorts of biotic interference.

7.11.6.4 The fire lines should be cleared and material removed should be dumped in such a way that it facilitates rodents, insects, jungle fowl and other birds to build their nests for safe breeding.

7.11.6.5 Cattle population in different areas shall be estimated and the carrying capacity of the forests and fodder enhancement measures shall be taken up keeping the requirements of cattle and wildlife in view.

7.11.7. Eco-Tourism: Ecotourism is a growing approach to conservation and development; it is still in the initial stage. Ecotourism intervention through local integration of existing VSS/EDC should be encouraged. Identified pockets of wild life and scenic beauty can be developed as eco-tourism centers. These centers should be developed with the active support of the local community who should be able to earn some livelihood through the influx of visitors. Visitor amenities and recreational facilities should be developed by submitting specific projects for the same. The potential sites for eco-tourism in the Division are:

- ✓ Daha dam site in Mujagada Range
- ✓ Russelkonda Dam, Bhanjanagar in Mujagada Range
- ✓ Sorisamuli dam site in Gallery RF

7.11.7.1 An interpretation/awareness centre should be constructed at suitable locations. Creating public awareness about forests, medicinal plants and wildlife through festival dramas shall be

encouraged. Trekking points/routes should be identified and designated. Creation of nature trails and bird watching shall be a part of the eco-tourism activity. Tourism activity can be started from October to mid February as climate of Bhanjanagar is bit of the harsher side during the summer season.

7.11.7.2 Generating awareness about the wildlife and its relevance to the well-being of mankind needs be given priority through different campaigns. In fact, the local people shall be actively involved in the process of habitat improvement and conservation through the concept of JFM. Local villagers are the treasure of information, which can be of immense help even in tracking down the poachers' vis-à-vis control of wildlife crime. Eco-development Committees shall have to be formed in Gallery Range, Tarsing Range, and Mujagada Range. Five EDC in each Range shall be the annual target for the forest areas lying in the buffer zone where wild animals are abundant. Using existing resources, long term conservation should be aimed. Local guides must be thoroughly well versed with wild life and local ecology. Research, training and development shall be a part of this component. The success measurement shall be reviewed by the Conservator of Forest (T) and Chief Wild Life Warden. The following criteria are set:

- ✓ Increase in wild life population
- ✓ Local people participation in conservation of wild life
- ✓ Reduction in poaching cases
- ✓ Integrated awareness among villagers
- ✓ Increase revenue for self sustenance through tourism.

Table 7-8 Financial Forecast- Eco-Tourism Centre

Sl.No.	Item	Cost (in lakhs) Per annum	Cost (in lakhs) one time	Cost (in lakhs) for 10 years
1.	Development of Children's park		30.0	30.0
2.	Provision of an overhead tank and a motor to pump water from a shallow well.		2.5	2.5
3.	Provision of electric connection/ Solar lighting		5.0	5.0
4.	Provision of fencing & landscaping		10.0	10.0
5.	Revolving fund for Eco tourism group (ETG)		5.0	5.0
6.	Internal furnishing of re-existing Interpretation Centre and		30.0	30.0

	Entrance Gate and Ticket counter at Purunabandha			
	Total outlay Per annum/one time expenditure / for 10 years		**82.5**	**82.5**

7.12 Wildlife Protection Measures

7.12.1 The immediate need is to collect and tabulate all available spatiotemporal information about incidence of wildlife crime including identity and modus operandi of the criminals. The second step is to analyze the information and prepare a strategy and action plan while third step is to carry out enforcement.

7.12.2 The staff deployed for anti-poaching operations shall be extremely alert, in good health with high motivation. They should be trained in handling of arms and ammunition and in proper identification of wildlife species and their parts. They should be properly armed and provided with VHF sets for communication. Satisfactory maintenance of the fixed and mobile VHF sets is a pre-requisite for efficient operation. The staff involved in the entire operation shall also be conversant with the basics of litigation and court procedure with regard to wildlife crime.

7.12.3 Further, the patrolling party/anti-poaching squads must be well acquainted with the entire terrain. Patrolling paths should be planned out in advance and such paths should not always follow the beaten tracks but should be varied on random choice or based on specific information. Proper dialogue with the local villagers during a patrol is important to gain vital information, and also to gain their trust. The patrol party must always try to obtain information that can be used to prevent further poaching in the area.

7.12.4 As information collection is vital for prevention and/or detection of wild life crime, both covert and overt information shall be gathered. The officer who is handling the full time informers and information inflow should ensure proper follow up of the said information. Decoy and undercover operations may also be adopted to arrest the offenders and seize the wildlife products being traded.

7.12.5 An aspect of concern is the lack of proper prosecution leading to very low conviction rate in wildlife cases. The success of protection efforts can not only be judged with regard to the number and nature of wildlife offence cases booked but also the effectiveness with which such offence cases are investigated and contested in the appropriate courts of law. In most cases the offenders booked in wildlife offence go out on bail and/or acquitted to commit the crime again. Very often, the accused escape due to technical flaws or perfunctory prosecution report or shoddy investigation. Hence,

appropriate training in wildlife crime investigation methods and techniques shall be imparted to adequate number of staff. It is vital that proper evidence is recorded at every stage of investigation and case records are meticulously built / maintained on daily basis. Moreover, the prosecution report shall be thoroughly scrutinized by the ACF/DFO before being filed in the court. Even, the cases shall be pursued regularly in the court so as to ensure greater rate of conviction. These measures will have long lasting effect even on the overall forest and wildlife protection in the entire Division as well.

7.12.6 Anti-poaching camp should be set up in vulnerable section of different ranges. Viz. Ramba, Baiballi, Mujagada, Kullada section of mujagada range, Kaliamba, Gangapur, Lathipada, Ragada sections of Central Range, Belaguntha, Gerada , JaganathPrasad section of Jaganathprasad Range, Ghogoda, Gayaganda, Tarasaingi section of Tarsingi range and Badangi , Tilisingi sections of Gallery Range where there is greater concentration of wildlife and poaching incidence do surface time and again. During the fire season these forest blocks should be given priority in protection from fire. Watch towers shall be constructed at suitable locations.

7.12.7 Inventory shall be prepared of all the gun licenses within 10 km radius of blocks rich in wildlife rich areas. This will help in better control over the poaching activities and otherwise also. This inventory should be regularly posted up to date by the Divisional Forest Officer, Ghumsur North division.

7.13 Miscellaneous Regulations

7.13.1 Awareness: The awareness for wildlife preservation may be created through celebration of wildlife week, competitions and debate among the school/college students. Even, publicity material shall be distributed and the benefits of wildlife conservation explained through electronic media. The legal provisions under the Wildlife (Protection) Act'1972 shall also be brought to the notice of all including the scope and extent of the compassionate amount for wildlife depredation.

7.13.2 Infrastructure for Communication and Training: To ensure better protection and to enhance their effectiveness, the field staff shall be provided with modern equipments including proper arms and ammunition. As fast and better communication is the key for protection of forests and wildlife, divisional headquarters, all the range headquarters, section headquarters, sensitive beats and check gates should be provided with VHF sets. More and more field staff shall be trained in wildlife management and in detection and investigation of wildlife crimes. The existing stations should be maintained and new locations at watchtowers and anti-poaching camps should be provided with VHF. One common training centre may be developed nearby division office.

7.13.3 Information Network and Records Keeping: A regular data base should be maintained at Divisional level comprising of details like

- schedule species found in the area,
- pictorial directory of all identified poachers to be prepared and circulated in the locality,
- list of traders in cattle and goatskins as well as tanneries;
- list of eating houses alleged to be serving bird/deer meat and
- Timely and proper documentation of all the incidences of man-animal conflicts including poaching.

7.13.3.1 Further, the DFO shall also submit half-yearly report to the authorities concerned with regard to steps taken by him to protect wildlife and to improve their habitat. He shall also report constraints faced by him in implementing the prescriptions of this Working Circle.

7.13.4 Wildlife Depredation: Depredation by wild animals is gradually increasing and the main reason for this conflict is shrinkage of their habitat and shortage of food. Animal depredation is a problem in the Division. There are few reports of killings and injury of the human beings damage to the crops in the Division. The details of depredation by different animals are discussed in the **Chapter 2B of Part- I**. The human killings injury and crop damage are on increasing trend as detailed in **Chapter 2B**. DFO should develop short term and long term measures to combat this problem. To mitigate miseries of people due to wild animals, the compassionate amount for crop damage, house damage, injuries and death, should be dealt promptly. Delay makes people lose faith in the forest department and they tend to take revengeful self-protection measures even by resorting to killing/poisoning of animals

7.13.5 Control of Grazing: The wildlife rich areas shall be closed for grazing. However, grazing shall be controlled as per the provisions of the Orissa Forest (Grazing of Cattle) Rules, 1980. The local people and the VSS may even be motivated to immunize their cattle which graze inside the forests.

7.13.6 Fire Protection Measures: Fire lines should be cleared and maintained regularly. As most of the forest fires are man-made, it can be prevented to a large extent by motivating and educating the local people. Adequate field staff should be stationed with necessary infrastructure in fire prone areas to control and suppress the fire menace during the summer season.

7.13.7 Incentives and Rewards: There shall be provision for rewards and incentives to the staff and public including the informers whose efforts lead to detection of wildlife crime and arrest of the offenders as per the circular of the Principal Chief Conservator of Forests, Odisha. Moreover, their

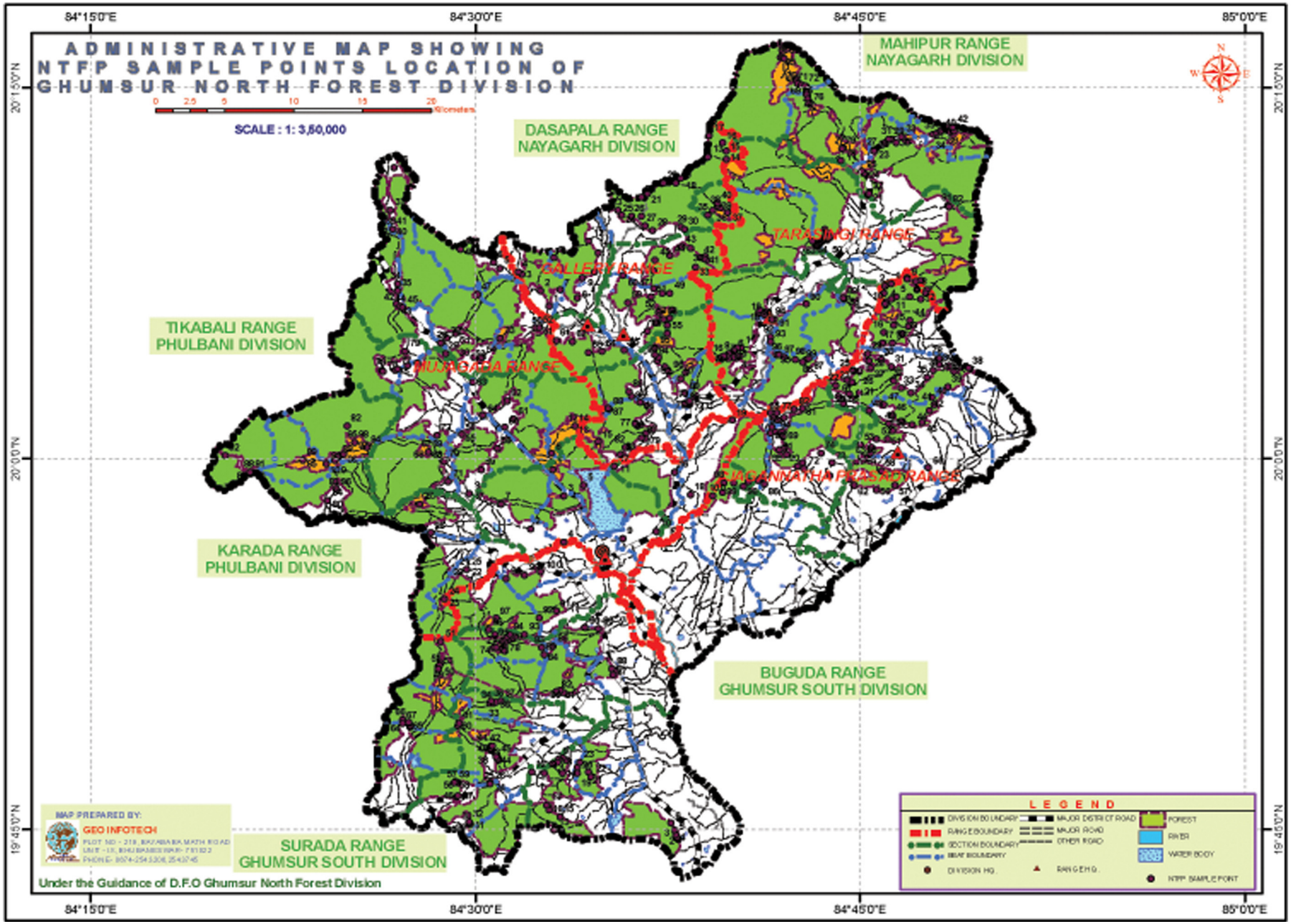
deeds shall also be given media publicity in the locality as well as recognition on the occasions like Wildlife Week and World Forestry Day.

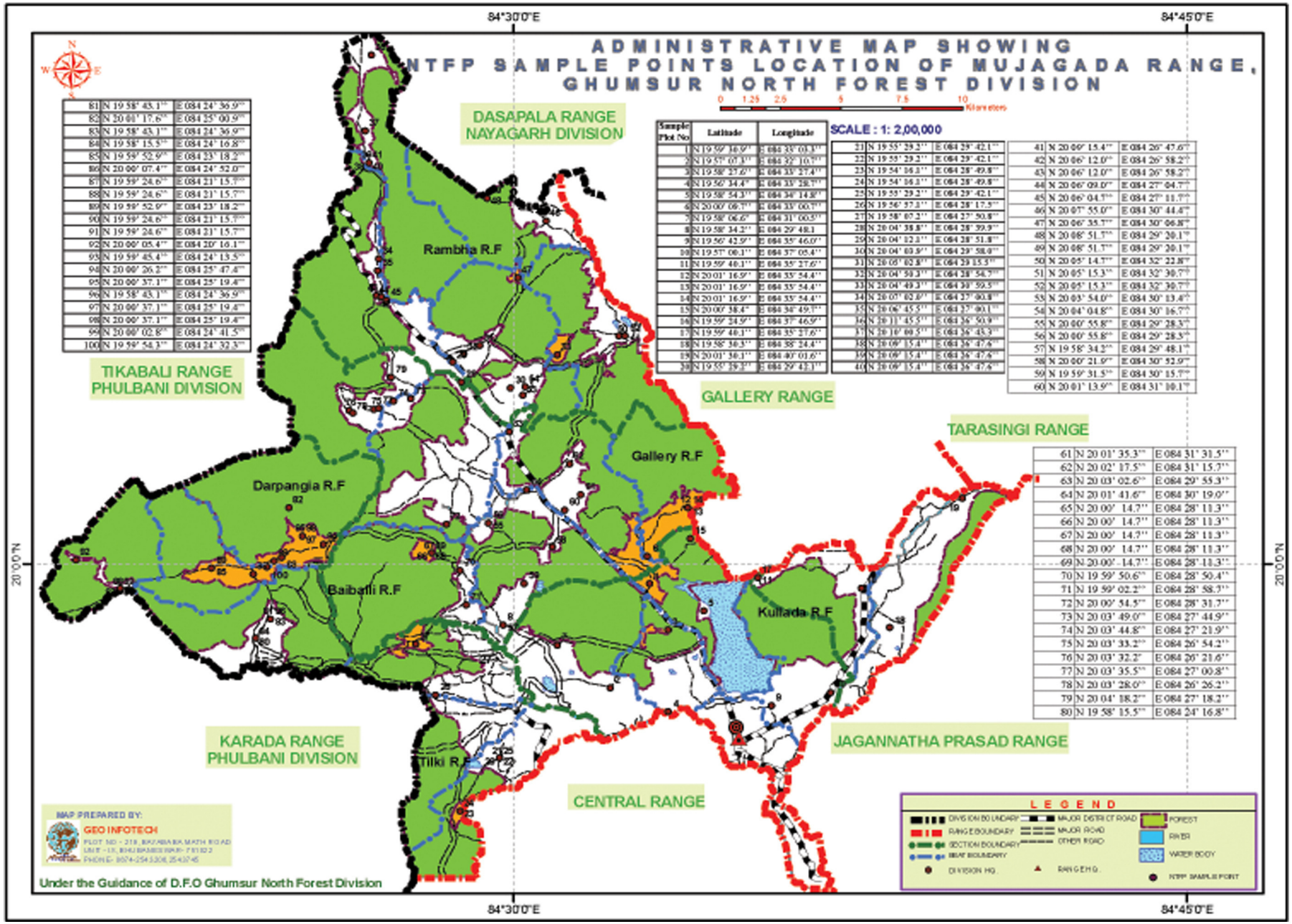
7.13.8 Rights And Concessions: Rights and concessions under this Working Circle shall be regulated in accordance with the provisions of the Orissa Forest Act,1972; the Wildlife (Protection) Act'1972; Rules made there under besides the Government policies in force.

7.14 Intermediate Revision and Cost Norms

7.14.1 No intermediate revision is anticipated. However, if so required, the Conservator of Forests (territorial) in consultation with the Conservator of Forests (Working Plans) will send a proposal for amendment of prescriptions to the competent authority for necessary approval.

7.14.2 The estimated cost for implementation of various prescriptions of this Working circle is given in **Chapter X of Part-II.**


ADMINISTRATIVE MAP SHOWING
NTFP SAMPLE POINTS LOCATION OF
GHUMSUR NORTH FOREST DIVISION
SCALE : 1: 3,50,000
0 2.5 5 10 15 20 Kilometers
84°15'0"E
84°30'0"E
84°45'0"E
85°0'0"E
20°15'0"N
20°0'0"N
19°45'0"N
MAHIPUR RANGE
NAYAGARH DIVISION
DASAPALA RANGE
NAYAGARH DIVISION
TARASINGI RANGE
GALLERY RANGE
TIKABALI RANGE
PHULBANI DIVISION
MUNIGUDA RANGE
JAGANNATHA PRASAD RANGE
KARADA RANGE
PHULBANI DIVISION
BUGUDA RANGE
GHUMSUR SOUTH DIVISION
SURADA RANGE
GHUMSUR SOUTH DIVISION
MAP PREPARED BY:
GEO INFOTECH
PLOT NO - 218, BAKHABAKA MATH ROAD
UNIT - 13, BHUBANESWAR- 751012
PHONE- 0674-2543308, 2543745
Under the Guidance of D.F.O Ghumsur North Forest Division
LEGEND
DIVISION BOUNDARY
RANGE BOUNDARY
SECTION BOUNDARY
BEAT BOUNDARY
DIVISION HQ.
RANGE HQ.
MAJOR DISTRICT ROAD
MAJOR ROAD
OTHER ROAD
FOREST
RIVER
WATER BODY
NTFP SAMPLE POINT



Sample Plot No	Latitude	Longitude
1	N 19°59' 16.9''	E 084°33' 03.3''
2	N 19°57' 07.3''	E 084°32' 10.7''
3	N 19°58' 27.6''	E 084°33' 27.4''
4	N 19°56' 34.4''	E 084°33' 28.1''
5	N 19°58' 54.3''	E 084°34' 14.8''
6	N 20°00' 09.7''	E 084°33' 00.1''
7	N 19°58' 06.6''	E 084°31' 00.5''
8	N 19°58' 34.2''	E 084°29' 48.1
9	N 19°56' 42.9''	E 084°35' 46.0''
10	N 19°57' 06.1''	E 084°37' 05.4''
11	N 19°59' 40.1''	E 084°35' 27.6''
12	N 20°01' 16.9''	E 084°35' 54.4''
13	N 20°01' 16.9''	E 084°35' 54.4''
14	N 20°01' 16.9''	E 084°35' 54.4''
15	N 20°00' 38.4''	E 084°34' 49.7''
16	N 19°59' 24.9''	E 084°37' 46.9''
17	N 19°59' 40.1''	E 084°35' 27.6''
18	N 19°58' 30.3''	E 084°35' 24.4''
19	N 20°01' 36.1''	E 084°40' 01.6''
20	N 19°55' 29.2''	E 084°29' 42.1''

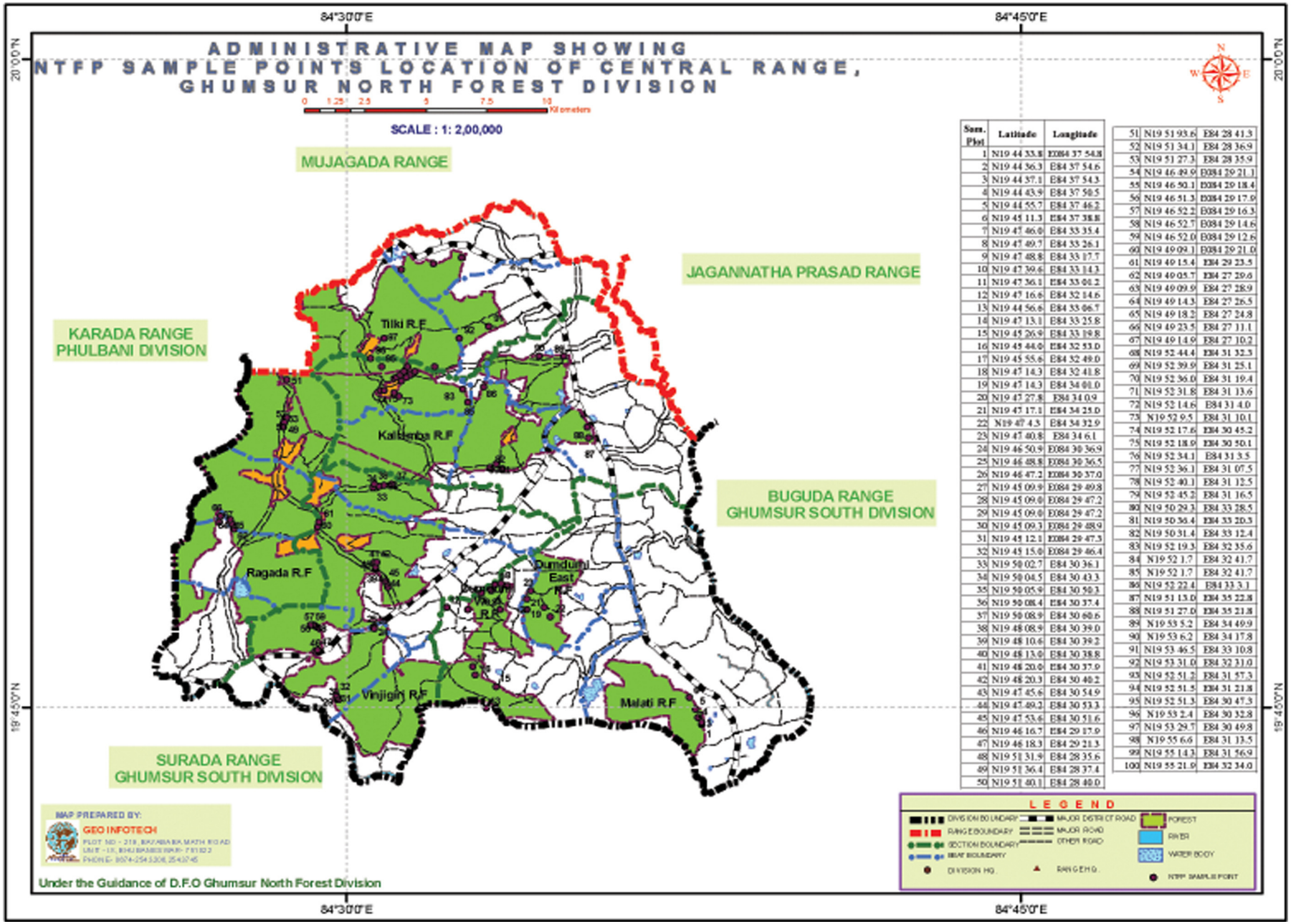
21	N 19°55' 29.2''	E 084°29' 42.1''
22	N 19°55' 29.2''	E 084°29' 42.1''
23	N 19°54' 06.1''	E 084°28' 49.8''
24	N 19°54' 06.1''	E 084°28' 49.8''
25	N 19°55' 29.2''	E 084°29' 42.1''
26	N 19°56' 57.1''	E 084°28' 17.5''
27	N 19°58' 07.2''	E 084°27' 50.8''
28	N 20°04' 38.8''	E 084°28' 39.9''
29	N 20°04' 12.1''	E 084°28' 51.8''
30	N 20°04' 03.9''	E 084°29' 58.0''
31	N 20°05' 02.8''	E 084°29' 15.5''
32	N 20°04' 59.3''	E 084°28' 54.7''
33	N 20°04' 49.3''	E 084°28' 59.5''
34	N 20°07' 02.6''	E 084°27' 00.8''
35	N 20°06' 45.5''	E 084°27' 00.1''
36	N 20°11' 45.5''	E 084°26' 50.9''
37	N 20°10' 00.5''	E 084°26' 43.3''
38	N 20°09' 15.4''	E 084°26' 47.6''
39	N 20°09' 15.4''	E 084°26' 47.6''
40	N 20°09' 15.4''	E 084°26' 47.6''

41	N 20°09' 15.4''	E 084°26' 47.6''
42	N 20°06' 12.0''	E 084°26' 58.2''
43	N 20°06' 12.0''	E 084°26' 58.2''
44	N 20°06' 09.0''	E 084°27' 04.7''
45	N 20°06' 04.7''	E 084°27' 11.7''
46	N 20°07' 55.0''	E 084°30' 44.4''
47	N 20°06' 35.7''	E 084°30' 06.8''
48	N 20°06' 51.7''	E 084°29' 20.1''
49	N 20°06' 51.7''	E 084°29' 20.1''
50	N 20°05' 14.7''	E 084°32' 22.8''
51	N 20°05' 15.3''	E 084°32' 30.7''
52	N 20°05' 15.3''	E 084°32' 30.7''
53	N 20°03' 54.0''	E 084°30' 13.4''
54	N 20°04' 04.8''	E 084°30' 16.7''
55	N 20°00' 55.8''	E 084°29' 28.3''
56	N 20°00' 55.8''	E 084°29' 28.3''
57	N 19°58' 34.2''	E 084°29' 48.1''
58	N 20°00' 21.9''	E 084°30' 52.9''
59	N 19°59' 31.5''	E 084°30' 15.7''
60	N 20°01' 13.9''	E 084°31' 10.1''

61	N 20°01' 35.3''	E 084°31' 31.5''
62	N 20°02' 17.5''	E 084°31' 15.7''
63	N 20°03' 02.6''	E 084°29' 55.3''
64	N 20°01' 41.6''	E 084°30' 19.0''
65	N 20°00' 14.7''	E 084°28' 11.3''
66	N 20°00' 14.7''	E 084°28' 11.3''
67	N 20°00' 14.7''	E 084°28' 11.3''
68	N 20°00' 14.7''	E 084°28' 11.3''
69	N 20°00' 14.7''	E 084°28' 11.3''
70	N 19°59' 50.6''	E 084°28' 50.4''
71	N 19°59' 02.2''	E 084°28' 58.7''
72	N 20°00' 54.5''	E 084°28' 31.7''
73	N 20°03' 49.0''	E 084°27' 44.9''
74	N 20°03' 44.8''	E 084°27' 21.9''
75	N 20°03' 33.2''	E 084°26' 54.2''
76	N 20°03' 32.2''	E 084°26' 21.6''
77	N 20°03' 35.5''	E 084°27' 00.8''
78	N 20°03' 28.0''	E 084°26' 26.2''
79	N 20°04' 18.2''	E 084°27' 18.2''
80	N 19°58' 15.5''	E 084°24' 16.8''

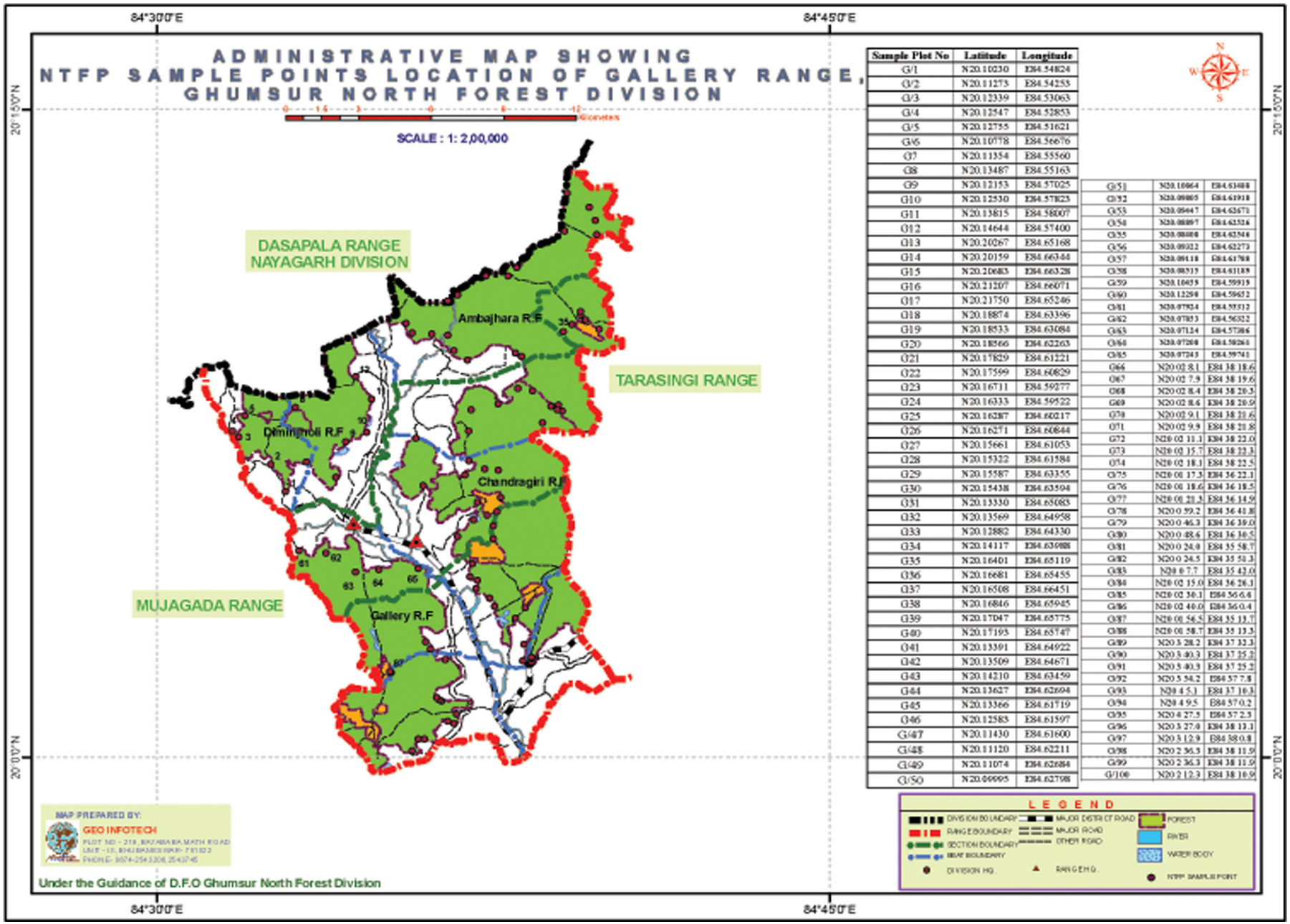
81	N 19°58' 43.1''	E 084°24' 36.9''
82	N 20°01' 17.6''	E 084°25' 00.9''
83	N 19°58' 43.1''	E 084°24' 36.9''
84	N 19°58' 15.5''	E 084°24' 16.8''
85	N 19°59' 52.9''	E 084°23' 18.2''
86	N 20°00' 07.4''	E 084°24' 52.0''
87	N 19°59' 24.6''	E 084°23' 15.7''
88	N 19°59' 24.6''	E 084°23' 15.7''
89	N 19°59' 52.9''	E 084°23' 18.2''
90	N 19°59' 24.6''	E 084°23' 15.7''
91	N 19°59' 24.6''	E 084°23' 15.7''
92	N 20°00' 05.4''	E 084°25' 16.1''
93	N 19°59' 45.4''	E 084°24' 15.5''
94	N 20°00' 26.2''	E 084°25' 47.4''
95	N 20°00' 37.1''	E 084°25' 19.4''
96	N 19°58' 43.1''	E 084°24' 36.9''
97	N 20°00' 37.1''	E 084°25' 19.4''
98	N 20°00' 37.1''	E 084°25' 19.4''
99	N 20°00' 02.8''	E 084°24' 41.5''
100	N 19°59' 58.3''	E 084°24' 32.3''

ADMINISTRATIVE MAP SHOWING NTFP SAMPLE POINTS LOCATION OF CENTRAL RANGE, GHUMSUR NORTH FOREST DIVISION



Sam. Plot	Latitude	Longitude
1	N19 44 33.8	E084 37 54.8
2	N19 44 36.3	E84 37 54.6
3	N19 44 37.1	E84 37 54.3
4	N19 44 43.9	E84 37 50.5
5	N19 44 55.7	E84 37 46.2
6	N19 45 11.3	E84 37 38.8
7	N19 47 46.0	E84 33 35.4
8	N19 47 49.7	E84 33 26.1
9	N19 47 48.8	E84 33 17.7
10	N19 47 39.6	E84 33 14.3
11	N19 47 36.1	E84 33 01.2
12	N19 47 16.6	E84 32 14.6
13	N19 44 56.6	E84 33 06.7
14	N19 47 13.1	E84 33 25.8
15	N19 45 26.9	E84 33 19.8
16	N19 45 44.0	E84 32 53.0
17	N19 45 55.6	E84 32 49.0
18	N19 47 14.3	E84 32 41.8
19	N19 47 14.3	E84 34 01.0
20	N19 47 27.8	E84 34 0.9
21	N19 47 17.1	E84 34 25.0
22	N19 47 4.3	E84 34 32.9
23	N19 47 40.8	E84 34 6.1
24	N19 46 50.9	E084 30 36.9
25	N19 46 48.8	E084 30 36.5
26	N19 46 47.2	E084 30 37.0
27	N19 45 09.9	E084 29 49.8
28	N19 45 09.0	E084 29 47.2
29	N19 45 09.0	E084 29 47.2
30	N19 45 09.3	E084 29 48.9
31	N19 45 12.1	E084 29 47.3
32	N19 45 15.0	E084 29 46.4
33	N19 50 02.7	E84 30 36.1
34	N19 50 04.5	E84 30 43.3
35	N19 50 05.9	E84 30 50.3
36	N19 50 08.4	E84 30 37.4
37	N19 50 08.9	E84 30 60.6
38	N19 48 08.9	E84 30 39.0
39	N19 48 10.6	E84 30 39.2
40	N19 48 13.0	E84 30 38.8
41	N19 48 20.0	E84 30 37.9
42	N19 48 20.3	E84 30 40.2
43	N19 47 45.6	E84 30 54.9
44	N19 47 49.2	E84 30 53.3
45	N19 47 53.6	E84 30 51.6
46	N19 46 16.7	E84 29 17.9
47	N19 46 18.3	E84 29 21.3
48	N19 51 31.9	E84 28 35.6
49	N19 51 36.4	E84 28 37.4
50	N19 51 40.1	E84 28 40.0
51	N19 51 93.6	E84 28 41.3
52	N19 51 34.1	E84 28 36.9
53	N19 51 27.3	E84 28 35.9
54	N19 46 49.9	E084 29 21.1
55	N19 46 50.1	E084 29 18.4
56	N19 46 51.3	E084 29 17.9
57	N19 46 52.2	E084 29 16.3
58	N19 46 52.7	E084 29 14.6
59	N19 46 52.0	E084 29 12.6
60	N19 49 09.1	E084 29 21.0
61	N19 49 15.4	E84 29 23.5
62	N19 49 05.7	E84 27 29.6
63	N19 49 09.9	E84 27 28.9
64	N19 49 14.3	E84 27 26.5
65	N19 49 18.2	E84 27 24.8
66	N19 49 23.5	E84 27 11.1
67	N19 49 14.9	E84 27 10.2
68	N19 52 44.4	E84 31 32.3
69	N19 52 39.9	E84 31 25.1
70	N19 52 36.0	E84 31 19.4
71	N19 52 31.8	E84 31 13.6
72	N19 52 14.6	E84 31 4.0
73	N19 52 9.5	E84 31 10.1
74	N19 52 17.6	E84 30 45.2
75	N19 52 18.9	E84 30 50.1
76	N19 52 34.1	E84 31 5.5
77	N19 52 36.1	E84 31 07.5
78	N19 52 40.1	E84 31 12.5
79	N19 52 45.2	E84 31 16.5
80	N19 50 29.3	E84 33 28.5
81	N19 50 36.4	E84 33 20.3
82	N19 50 31.4	E84 33 12.4
83	N19 52 19.3	E84 32 35.6
84	N19 52 1.7	E84 32 41.7
85	N19 52 1.7	E84 32 41.7
86	N19 52 22.4	E84 33 3.1
87	N19 51 13.0	E84 35 22.8
88	N19 51 27.0	E84 35 21.8
89	N19 53 5.2	E84 34 49.9
90	N19 53 6.2	E84 34 17.8
91	N19 53 46.5	E84 33 10.8
92	N19 53 31.0	E84 32 31.0
93	N19 52 51.2	E84 31 57.3
94	N19 52 51.5	E84 31 21.8
95	N19 52 51.3	E84 30 47.3
96	N19 53 2.4	E84 30 32.8
97	N19 53 29.7	E84 30 49.8
98	N19 55 6.6	E84 31 13.5
99	N19 55 14.3	E84 31 56.9
100	N19 55 21.9	E84 32 34.0

ADMINISTRATIVE MAP SHOWING NTFP SAMPLE POINTS LOCATION OF GALLERY RANGE, GHUMSUR NORTH FOREST DIVISION



Sample Plot No	Latitude	Longitude
G/1	N20.10230	E84.54824
G/2	N20.11273	E84.54253
G/3	N20.12339	E84.53063
G/4	N20.12547	E84.52853
G/5	N20.12755	E84.51621
G/6	N20.10778	E84.56676
G/7	N20.11354	E84.55560
G/8	N20.13487	E84.55163
G/9	N20.12153	E84.57025
G/10	N20.12530	E84.57823
G/11	N20.13815	E84.58007
G/12	N20.14644	E84.57400
G/13	N20.20267	E84.65168
G/14	N20.20159	E84.66344
G/15	N20.20683	E84.66328
G/16	N20.21207	E84.66071
G/17	N20.21750	E84.65246
G/18	N20.18874	E84.63396
G/19	N20.18533	E84.63084
G/20	N20.18566	E84.62263
G/21	N20.17829	E84.61221
G/22	N20.17599	E84.60829
G/23	N20.16711	E84.59277
G/24	N20.16333	E84.59522
G/25	N20.16287	E84.60217
G/26	N20.16271	E84.60844
G/27	N20.15661	E84.61053
G/28	N20.15322	E84.61584
G/29	N20.15587	E84.63355
G/30	N20.15438	E84.63594
G/31	N20.13330	E84.65083
G/32	N20.13569	E84.64958
G/33	N20.12882	E84.64330
G/34	N20.14117	E84.63988
G/35	N20.16401	E84.65119
G/36	N20.16681	E84.65455
G/37	N20.16508	E84.66451
G/38	N20.16846	E84.65945
G/39	N20.17047	E84.65775
G/40	N20.17193	E84.65747
G/41	N20.13391	E84.64922
G/42	N20.13509	E84.64671
G/43	N20.14210	E84.63459
G/44	N20.13627	E84.62694
G/45	N20.13366	E84.61719
G/46	N20.12583	E84.61597
G/47	N20.11430	E84.61600
G/48	N20.11120	E84.62211
G/49	N20.11074	E84.62684
G/50	N20.09995	E84.62798
G/51	N20.10064	E84.63488
G/52	N20.09805	E84.63918
G/53	N20.09647	E84.63671
G/54	N20.08897	E84.63526
G/55	N20.08488	E84.62544
G/56	N20.09322	E84.62273
G/57	N20.09118	E84.61788
G/58	N20.08513	E84.61189
G/59	N20.10455	E84.59935
G/60	N20.12258	E84.59652
G/61	N20.07924	E84.55512
G/62	N20.07853	E84.56322
G/63	N20.07124	E84.57086
G/64	N20.07268	E84.58261
G/65	N20.07243	E84.59741
G/66	N20 02 8.1	E84 38 18.6
G/67	N20 02 7.9	E84 38 19.6
G/68	N20 02 8.4	E84 38 20.3
G/69	N20 02 8.6	E84 38 20.9
G/70	N20 02 9.1	E84 38 21.6
G/71	N20 02 9.9	E84 38 21.8
G/72	N20 02 11.1	E84 38 22.0
G/73	N20 02 15.7	E84 38 22.3
G/74	N20 02 18.1	E84 38 22.5
G/75	N20 01 17.3	E84 36 22.1
G/76	N20 01 18.6	E84 36 18.5
G/77	N20 01 21.3	E84 36 14.9
G/78	N20 0 59.2	E84 36 41.8
G/79	N20 0 46.3	E84 36 39.0
G/80	N20 0 48.6	E84 36 36.5
G/81	N20 0 24.0	E84 35 58.7
G/82	N20 0 24.5	E84 35 50.3
G/83	N20 0 7.7	E84 35 42.0
G/84	N20 02 15.0	E84 36 26.1
G/85	N20 02 30.1	E84 36 6.6
G/86	N20 02 40.0	E84 36 0.4
G/87	N20 01 56.5	E84 35 13.7
G/88	N20 01 58.7	E84 35 13.3
G/89	N20 3 28.2	E84 37 32.3
G/90	N20 3 40.3	E84 37 25.2
G/91	N20 5 40.3	E84 37 25.2
G/92	N20 5 54.2	E84 37 7.8
G/93	N20 4 5.1	E84 37 10.3
G/94	N20 4 9.5	E84 37 0.2
G/95	N20 4 27.5	E84 37 2.3
G/96	N20 3 27.8	E84 38 13.1
G/97	N20 3 12.9	E84 38 0.8
G/98	N20 2 36.5	E84 38 11.9
G/99	N20 2 36.3	E84 38 11.9
G/100	N20 2 12.3	E84 38 10.9

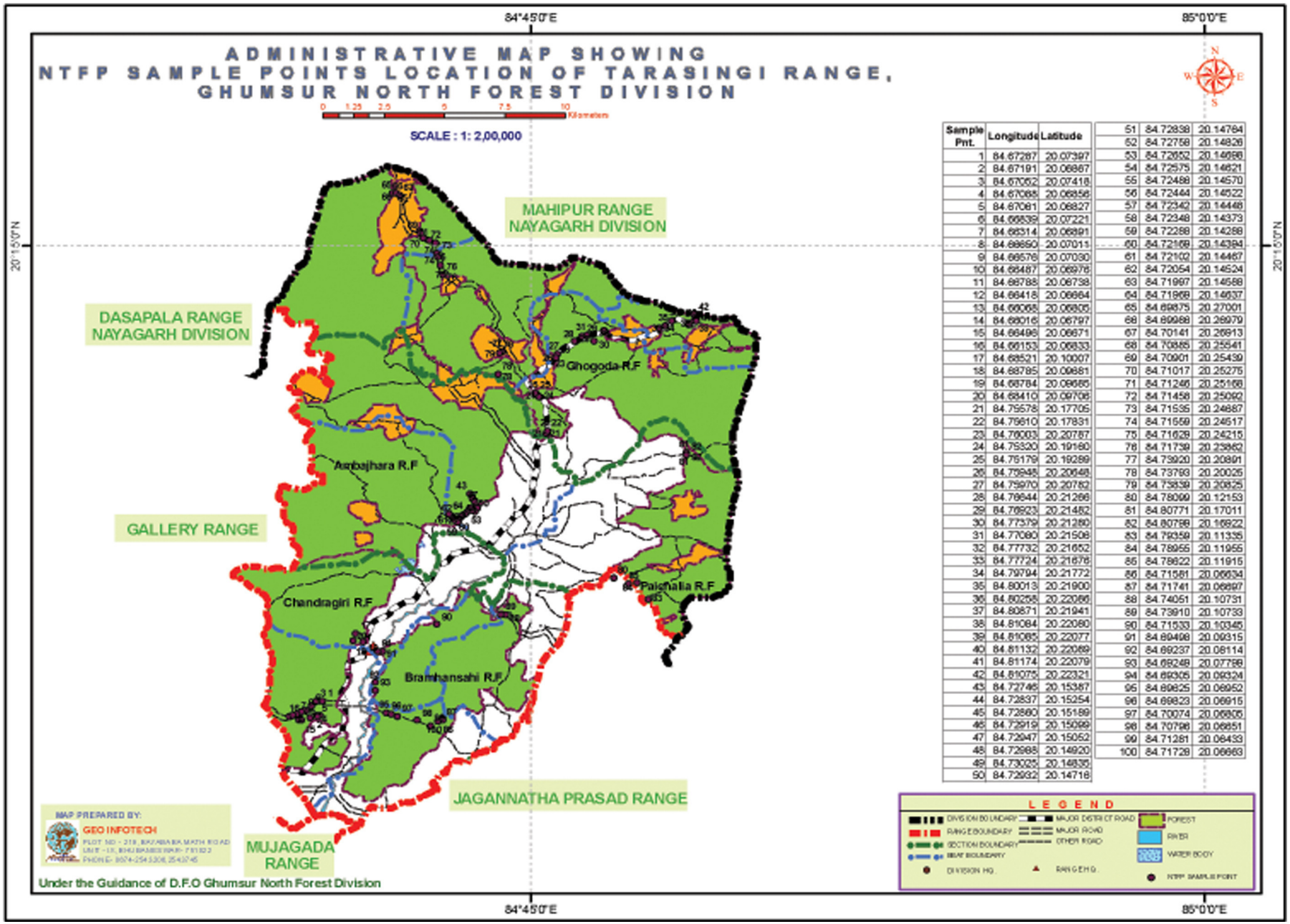
LEGEND

DIVISION BOUNDARY
RANGE BOUNDARY
SECTION BOUNDARY
BEAT BOUNDARY
DIVISION HQ.
RANGE H.Q.
MAJOR DISTRICT ROAD
MAJOR ROAD
OTHER ROAD
FOREST
RIVER
WATER BODY
NTFP SAMPLE POINT

MAP PREPARED BY:
GEO INFOTECH
PLOT NO - 218, BAYABAKA MATH ROAD
UNIT - 10, BHUBANESWAR- 751022
PHONE- 0674-2543308, 2543745

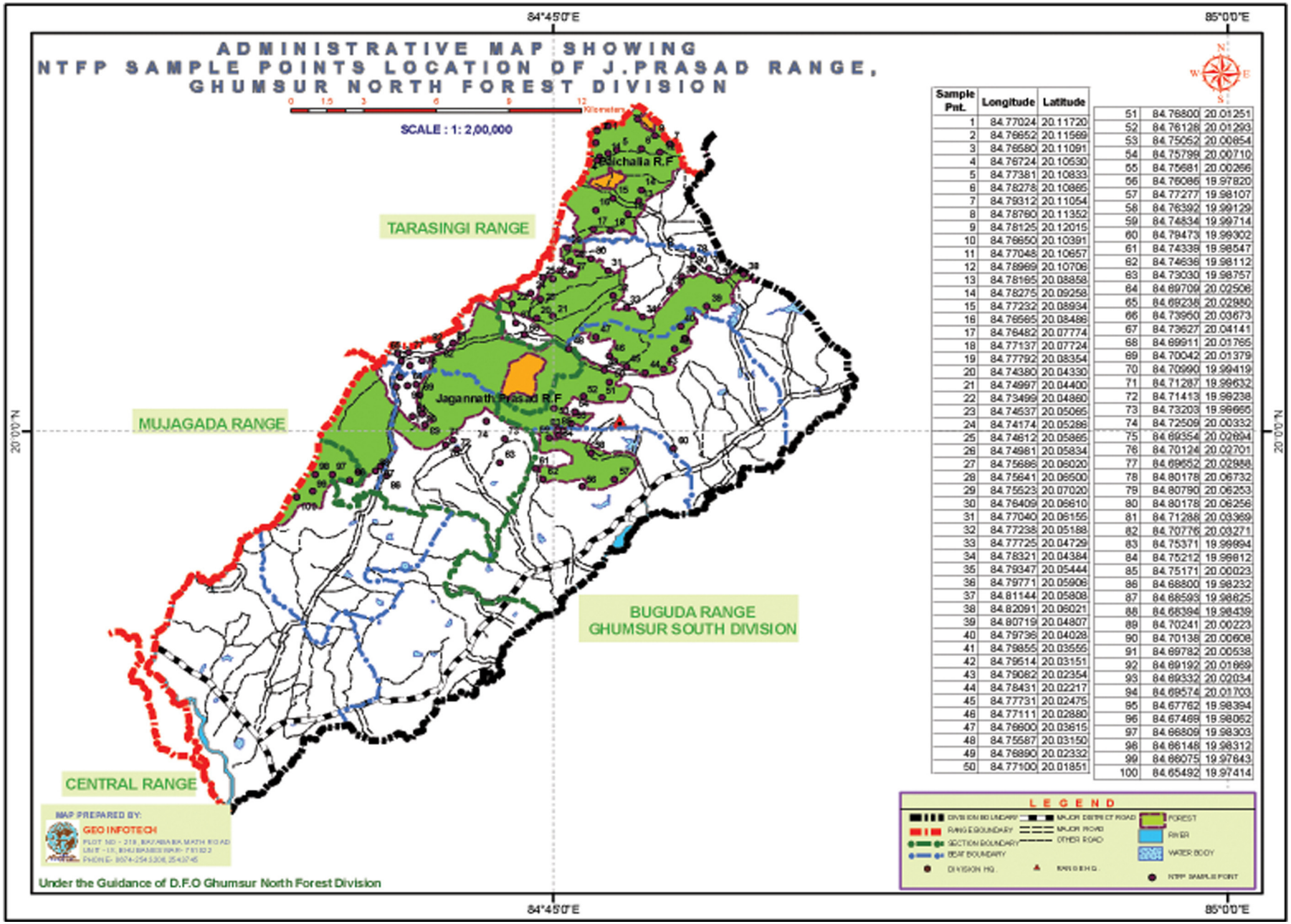
Under the Guidance of D.F.O Ghumsur North Forest Division

ADMINISTRATIVE MAP SHOWING NTFP SAMPLE POINTS LOCATION OF TARASINGI RANGE, GHUMSUR NORTH FOREST DIVISION



Sample Pnt.	Longitude	Latitude
1	84.67287	20.07397
2	84.67191	20.06867
3	84.67052	20.07418
4	84.67065	20.06856
5	84.67061	20.06827
6	84.66839	20.07221
7	84.66514	20.06891
8	84.66660	20.07011
9	84.66576	20.07030
10	84.66467	20.06976
11	84.66788	20.06738
12	84.66418	20.06664
13	84.66068	20.06805
14	84.66016	20.06797
15	84.66496	20.06671
16	84.66153	20.06833
17	84.68521	20.10007
18	84.68785	20.09881
19	84.68784	20.09666
20	84.68410	20.09706
21	84.79578	20.17705
22	84.79610	20.17831
23	84.79003	20.20787
24	84.78320	20.19160
25	84.76179	20.19289
26	84.75948	20.20646
27	84.75970	20.20782
28	84.78644	20.21266
29	84.76923	20.21482
30	84.77379	20.21280
31	84.77080	20.21508
32	84.77732	20.21652
33	84.77724	20.21676
34	84.79794	20.21772
35	84.80013	20.21900
36	84.80258	20.22066
37	84.80871	20.21941
38	84.81084	20.22080
39	84.81085	20.22077
40	84.81132	20.22069
41	84.81174	20.22079
42	84.81075	20.22321
43	84.72746	20.15387
44	84.72837	20.15254
45	84.72860	20.15189
46	84.72919	20.15099
47	84.72947	20.15052
48	84.72988	20.14920
49	84.73025	20.14835
50	84.72932	20.14718
51	84.72839	20.14764
52	84.72758	20.14826
53	84.72652	20.14696
54	84.72575	20.14621
55	84.72488	20.14570
56	84.72444	20.14522
57	84.72342	20.14446
58	84.72348	20.14373
59	84.72288	20.14288
60	84.72168	20.14394
61	84.72102	20.14467
62	84.72054	20.14524
63	84.71997	20.14588
64	84.71968	20.14637
65	84.69875	20.27001
66	84.69988	20.26979
67	84.70141	20.26913
68	84.70885	20.25541
69	84.70901	20.25459
70	84.71017	20.25275
71	84.71246	20.25168
72	84.71458	20.25092
73	84.71595	20.24887
74	84.71559	20.24517
75	84.71629	20.24215
76	84.71739	20.23962
77	84.73920	20.20891
78	84.73769	20.20025
79	84.73839	20.20025
80	84.78099	20.12153
81	84.80771	20.17011
82	84.80768	20.16922
83	84.79359	20.11335
84	84.78955	20.11955
85	84.78822	20.11915
86	84.71581	20.06634
87	84.71741	20.06897
88	84.74051	20.10731
89	84.73910	20.10733
90	84.71533	20.10345
91	84.69498	20.09315
92	84.69237	20.08114
93	84.69248	20.07758
94	84.69305	20.09324
95	84.69825	20.06952
96	84.69823	20.06915
97	84.70074	20.06905
98	84.70796	20.06851
99	84.71281	20.08433
100	84.71729	20.06663

ADMINISTRATIVE MAP SHOWING NTFP SAMPLE POINTS LOCATION OF J.PRASAD RANGE, GHUMSUR NORTH FOREST DIVISION



Sample Pnt.	Longitude	Latitude
1	84.77024	20.11720
2	84.76852	20.11569
3	84.76580	20.11091
4	84.76724	20.10530
5	84.77381	20.10833
6	84.78278	20.10865
7	84.79312	20.11054
8	84.78760	20.11352
9	84.78125	20.12015
10	84.76650	20.10391
11	84.77048	20.10657
12	84.78969	20.10706
13	84.78165	20.08858
14	84.78275	20.09258
15	84.77232	20.08934
16	84.76565	20.08486
17	84.76482	20.07774
18	84.77137	20.07724
19	84.77792	20.08354
20	84.74380	20.04330
21	84.74997	20.04400
22	84.73499	20.04860
23	84.74537	20.05065
24	84.74174	20.05288
25	84.74612	20.05865
26	84.74981	20.05834
27	84.75686	20.06020
28	84.75641	20.06500
29	84.75523	20.07020
30	84.76409	20.06610
31	84.77040	20.06155
32	84.77238	20.05188
33	84.77725	20.04729
34	84.78321	20.04384
35	84.79347	20.05444
36	84.79771	20.05908
37	84.81144	20.05808
38	84.82091	20.06021
39	84.80719	20.04807
40	84.79736	20.04028
41	84.79855	20.03555
42	84.79514	20.03151
43	84.79082	20.02354
44	84.78431	20.02217
45	84.77731	20.02475
46	84.77111	20.02880
47	84.76600	20.03615
48	84.75587	20.03150
49	84.76890	20.02332
50	84.77100	20.01851
51	84.76800	20.01251
52	84.76128	20.01293
53	84.75052	20.00854
54	84.75799	20.00710
55	84.75681	20.00266
56	84.76086	19.97820
57	84.77277	19.98107
58	84.76392	19.99129
59	84.74834	19.99714
60	84.79473	19.99302
61	84.74338	19.98547
62	84.74636	19.98112
63	84.73030	19.98757
64	84.69709	20.02506
65	84.69238	20.02980
66	84.73960	20.03673
67	84.73627	20.04141
68	84.69911	20.01765
69	84.70042	20.01379
70	84.70990	19.99419
71	84.71287	19.98632
72	84.71413	19.98238
73	84.73203	19.98665
74	84.72509	20.00332
75	84.69354	20.02694
76	84.70124	20.02701
77	84.69652	20.02988
78	84.80178	20.06732
79	84.80790	20.06253
80	84.80178	20.06256
81	84.71288	20.03969
82	84.70776	20.03271
83	84.75371	19.99894
84	84.75212	19.99812
85	84.75171	20.00023
86	84.68800	19.98232
87	84.68593	19.98825
88	84.68394	19.98439
89	84.70241	20.00223
90	84.70138	20.00608
91	84.69782	20.00538
92	84.69192	20.01869
93	84.69332	20.02034
94	84.68574	20.01703
95	84.67762	19.98394
96	84.67468	19.98052
97	84.66809	19.98303
98	84.66148	19.98312
99	84.66075	19.97843
100	84.65492	19.97414

CHAPTER - VIII

NON-TIMBER FOREST PRODUCE (OVER-LAPPING)

WORKING CIRCLE

8.1 General Constitution

8.1.1 The forests of Ghumsur North Division contain a large number of species which yield varieties of non-timber forest produce (NTFP) e.g, flowers, fruits, seeds, tubers, roots, leaves bark and gums etc. Though such resources available, only a very few items are actually tapped by the local population. The collection of such NTFP is mostly done by the local villagers who live in and around the fringe areas of the forests. So, it actually cannot be stated that there is a lot of dependence of the people on the forests for NTFP as such. The people living in and around these forests usually collect these products primarily for their own consumption and very little for sale to add to their earnings. Therefore, NTFP looking into the potentiality that can be harvested can form as a crucial component in generating alternative income source and which can go a long way in securing and enhancing their livelihood options.

8.1.2 In the last decade the demand for organic products to substitute for their inorganic counterparts has increased geometrically for which the necessity of NTFP's as an alternate source of raw material for many industries like cosmetics, dyes, ayurvedic drugs and confectionary has also increased in many fold. This huge demand for a few NTFPs has resulted in overwhelming use of unscientific, unsustainable and destructive exploitation practices for collection of resources by the primary collectors which is abetted and primed by the traders and middlemen. Continued exploitation in this manner will endanger the resource itself. Over exploitation is further aggravated by unabated and excessive forms of biotic and anthropogenic pressures like grazing, illegal felling of trees, setting fire to forest for diverse reasons, unwanted invasion of weeds in open, degraded and denuded areas which in many cases are leading to loss of biodiversity owing to poor natural regeneration of delicate species in the forest.

The list of some common NTFP species available in the Division and their uses are presented in **Table 8.1**

TABLE- 8.1 Common NTFP Species Of Ghumsur North Division And Their Uses							
Sl No	**Trade Name of NTFP**	**Botanical Name**	**English Name**	**Local Name**	**Parts used**	**Uses**	**Collection period**
1	Tamarind, deseeded Tamarind, Tamarind seeds	*Tamarindus indica* Linn	Tamarind	Tentuli	Fruits, Pulp and Seeds	Used in food preparation. Pulp is principal souring agent for food preparation due to its acidic property, carminative, laxative Tamarind Kernel Powder (TKP) is used as an adhesive in book binding, card board manufacture. The fatty oil from seed used in paint & varnishes.	March, April
2	Mahua Flower Mahua seed	*Madhuca indica* Gmel	Mowra Butter Tree, Mahua Tree	Mahul	Flower Seed	Used in preparation of liquor & vinegar. Seed is used for extraction of oil	March, April, June
3	Hill Broom	*Thysanolaena maxima* (Ruxb) Kuntze	Broom Grass, Tiger Grass	Phul Jhadu	Inflorescence	Used for making broom	December, January
4	Thorn Broom Jhadu or Ghoda Lanji	*Aristida setacea* Retz	Thorn Broom	Khadi, Khadika grass Kanta Jhadu	Culms	Culms used for making brooms & brushes.	January, February
5	Broom Grass	*Arundinella setosa* Trin	Broom grass	Jhadu Ghas	Grass	Grass used for making brooms	January-February
6	Kochila seeds	*Strychnos nux-vomica* Linn	Nux-vomica,	Kochila	Seeds	Used in manufacturing	December-January

			Snake wood			Ayurvedic medicines for rheumatism and nervous disorders. The active ingredient strychnine is used for destroying stray dogs, rats, mice of vermin.	
7	Harida	*Terminalia chebula* Retz	Chebulic myrobalan	Harida, Harda	Fruit rind	Laxative, tonic, stomachic. Used in preparation of Ayurvedic medicines. As an important tanning material for its richness of tannin.	January-March, Bal-Harida is collected during October
8	Bahada	*Terminalia bellirica* Roxb	Belliric myrobalan	Bahada	Fruit rind	For manufacturing of Ayurvedic medicines used as tonic and laxative & other ailments Seed kernels yield oil used as hair oil & for soap manufacture. Fruit rind used as tanning material. Also used in preparation of food items.	December, January
9	Amla	*Emblica officinalis* Gaertn	Emblic myrobalan, Indian goose berry	Aonla	Fruit rind	Used in preparation of Ayurvedic medicines as	December-January

						tonic, laxative, diuretic and other ailments. Very rich with Vitamin 'C'. Used as hair dye & hair oil. Also used as tanning material.	
10	Ritha Fruit	*Sapindus emarginata* Vahl	Soap –nut Tree	Ritha	Fruit	Used for soap manufacture, Hard black shell of the seed yields a black dye.	November December
11	Bhalia fruit	*Semecarpus anacardium* Linn	Marking Nut Tree, Oriental cashew	Bhalia	Fruit	Pericarp is used for marking linen, ink. The vesicant juice from the fruit known in the trade as Bhilwan shell liquid (BSL) is processed to non-vesicating solid resins which are used as bases for manufacture of varnishes, paint enamels, insulating electrical materials, Kernels yield an oil used as wood preservative & lubricant for wooden axles of carts.	November December

12	Clearing Nut	*Strychnos potatorum* Linnf	Clearing nut tree	Nirmala, Nirmali, Kaya, Kataka	Seeds	Seeds used as tonic, stomachic, emetic, diuretic & for cleaning dirt from water.	January - March
13	Honey	Product of honey bees	Honey	-	Honey	Used in preparation of Ayurvedic medicines. It is a food supplement commonly used in every household.	October, June
14	Siali leaf	*Bauhinia Vahlii* Wight & Arn	-	Siali	Leaves	Used for preparing leaf plate.	October-December, April to June
15	Sabai grass	*Eulaliopsis binnata* (Retz) Hubbard	Sabai Grass	Sabai	Grass	Used for making ropes, mats and paper manufacture	December, January
16	Mango Fruit, Kernel	*Mangifera indica* Linn	Mango	Amba	Kernel	Used as food & feed at the time of scarcity. It contains amino acids and has an astringent taste & anthelmintic property.	May, June
17	Khar Grass(Chhana Ghas) Daba Chhara, Thatch Grass	*Imperata cylindrica* (L) Raeusch,	Thatch Grass	Chhan Grass, Daba Chhan	Grass	Grass used for ropes, brushes, mats, basket, bags & packing material. Used in mixture with long fibred paper pulp.	December, February

						Also used for thatching of roof.	
18	(Simuli Tula) Simul cotton	*Bombax ceiba* Linn	Silk cotton Tree	Simuli, Simel	Cotton	Used for preparing cotton & cotton products	March-April
19	Palua (Tikhur)	*Curcuma angustifolia* Roxb	East Indian Arrowroot	Palua	Tubers	Tubers yield easily digestible starch. Used as food commodity.	January, February
20	(Dhatuki phul) Dhatuki flower	*Wood fordia fruiticosa* Kurz	Fire flame bush(Shiranjiea)	Dhatuki, Dhatki.	Flowers	Used in preparation of Ayurvedic medicines specially asavaas & aristaas. Flowers yield red dye. Also contains tannin. It is astringent & stimulant.	February, March
21	Putrani	*Pygmaeopremna herbacea (Roxb.) Bold*	-	Putrani,	Roots	Roots used in Asthma, Rheumatism & Dropsy.	December-January
22	Shikakai	*Acacia sinuate* (lour) Merr	-	Shikakai Ban ritha	Pods	Pods used as a detergent. It is commonly used for hair washing & soap manufacture.	February, March
23	Jungle Jada (Jatropha)	*Jatropha curcas* Linn	Physic Nut, Purging Nut	Jungle jada, Jahaji gaba, Baigaba	Seeds	Seed oil used for production of bio-diesel, manufacturing candles, soaps, varmishes, lubricants. It is	December, January

						powerful purgative, illumination	
24	Palas seeds	*Butea monosperma* (Lam) Kuntze	Flame of the forest/Bastard Teak	Palsa, Palas	Seeds	Used as anthelmintic	May, June
25	Siali seeds	*Bauhiniu vahlii* wight & Arn	-	Siali	Seeds	Seeds eaten raw or fried when ripe they taste like Cashew nuts.	February, March
26	Indrajava	*Holarrhena pubescens* (Buch-Ham) wallex G.Don	Kurchi, Conessi bark tree	Kure	Seeds	Used in preparation for Ayurvedic medicines for dysentery, intestinal worms, stomach disorders.	December-February
27	Gila	*Caesalpinia boduc(L)* Roxb	Fever nut, Bonduc Nut	Gilo	Seeds	Antipyretic. Seeds yield a fatty oil used as cosmetics. Seeds used for manufacturing Ayurvedic medicine for malaria.	January-March
28	Bena Cher	*Vetiveria zizanioides*(Linn)Nash	Vetiver, Khas-khas, Khus-khus	Bena	Roots	Roots yield essential oil called vetiver oil used in perfumery & cosmetics. It is also used in colic, flatulence. Roots are used for door & windows screens for	December-February

						cooling in the summer. Used for basket & mat making. Dried grass is used for brooms & thatching.	
29	Banahaldi	*Curcuma aromatica* Salisb	Wild Turmeric, Yellow zedoary	Vanhaldi	Rhizome	Rhizome used for bruises and sprains. In medicine it is used as an aromatic adjunct but not as a condiment.	January-February
30	Bana kolath, Kolathia, Sharapunkha	*Tephrosia purpurea*(L) pers	Wild Indigo, Purple tephrosia	Ban Kolath, Kolthia, Sharapun-kha	Roots & Seeds	Used as insecticide, laxative, diuretic, dyspepsia, rheumatism, elephantiasis, asthma, scabies, Piles. Plant used as green manure.	October to June
31	Gaba	*Ricinus* communis L	Castor	Jada	Seeds	Seeds yield caster oil used as a cathartic, lubricants, illumination, hair oil, soap making and typewriter ink.	Most part of the year
32	Basil	*Hyptis suaveo* lens(L) poit	-	Van Tulsi, Ganga Tulsi, Jungle Tulsi	Seeds	Seeds yield fatty oil, which is anti microbial.	December, January
33	Talmakhana Seeds, Koilekha seeds	*Hygrophylla auriculata*(Schum) Heine	-	Koilekha & Talmakh	Seeds	Used in manufacturing Ayurvedic	January, February

				ana Kikri Kanta		medicines for arthritis. tonic and other ailments. It has aphrodisiac property.	
34	Baidanka Seeds	*Mucuna pruriens* (L) DC	Cowhage, Common cow itch	Bai-khujen, Baidanka	Seeds	Seeds used as nervine tonic, aphrodisiac, anthelmintic. The active ingredient L-DOPA used for Parkinsonism.	January, April
35	Baghanakhi seeds	*Martynia annua* Linn	Tiger claw, Devel's claw	Bagh nakhi	Seeds	Anti-inflammatory Seeds yield oil.	December, January
36	Kamala gundi fruit	*Mallotus philippensis* (lam)muel-Arg	Kamala Tree, Monkey face Tree	Kamala gundi	Fruits	Glandular hairs from fruits yield a dye called Kamala powder. Seeds yield a fatty oil used in paints & varnishes. Seeds are also anthelmintic	February, March
37	Landa Baguli	*Ocimum canum* Sims	Hoary Basil	Landa Baguli, Ghoda Tulsi	Seeds	Seed oil used in soaps and cosmetics. Seeds are diuretic & tonic and used in preparation of a cooling drink.	February, March
38	Bela	*Aegle marmelos*(L) corr	Bael Tree	Bael	Fruits	Unripe or half ripe fruit pulp used for Ayurvedic medicines used as digestive, stomachic and	March, April

						laxative. Gummy substance around seeds used as adhesive for paint and watercolour paint.	
39	Bhuin Neem	*Andrographis paniculata* (Burmf) wak.ex Nees	Creat, King of Bitters	Bhuin Neem	All parts	It is bitter tonic for liver and fefrifuge & anthelmintic. Used in preparation of Ayurvedic medicines.	October-December
40	Khajuripati,Ban-khajuri,Bhuin-Khajuri, Kan-Khajuri	*Phoenix acualis* Buch Ham ex-Roxb	-	Ban-khajuri, Bhuin-khajuri, Kan-kajuri	Leaves	Leaves used for thatching & making mats, brooms ropes etc.	December, January
41	Rohini fruit	*Soymida febrifuga*(Roxb) A-juss	Indian Red wood, Bastard cidar	Rohini	Fruits	Used for preparation of ornamental & artistic materials.	May, June
42	Bhursunga Leaves	*Murraya koenigi* (L)Spreng	Curry leaf tree	Bhur sunga, Bhir sunga	Leaves	Used as a flavouring agent for preparation of food. It is also a common condiment. Essential oil used for soap perfume.	October to June
43	Rasna root	*Vanda tessellata* (Roxb) Hook ex G.don	-	Rasna	Roots	Roots used in manufacturing Ayurvedic medicines for	June

						rheumatism, inflammation, nervous disorders and liver tonic.	
44	Phanphana fruit	*Oroxylum* indicum (L) vent.	Indian Trumpet flower, Midnight Horror	Phana phana, Phaphen, Phanphania	Fruits	Used for preparation of ornamental articles. Tender fruits are stomachic and expectorant. Seeds used as purgative.	February, March
45	Siddha fruits	*Lagerstroemia parviflora* Roxb	-	Sihina, Sidha	Fruits	Used in making ornamental articles.	November, December
46	Satabari	*Asparagus racemosus* Willd	Asparagus	Satabari, Debadhun	Roots	Used as tonic, galactagogue, nervous & rheumatic complaints.	February-March
47	Katha Lai	*Pentapetes phoenicea* Linn	-	Kathlai, Satghodia, Puipathria	Capsule	Mucilaginous capsule used for disease of bowels & as an emolient.	November, December
48	Atundi Lai	*Combretum roxburghii* Spreng	-	Atundi, Denulaha, Kandher	Creeper	Used for basket making	October, June
49	Khelua lai Suama lai	*Ichnocarpus frutescens*(L) R.Br	-	Thapa laha sunani	Branches	Used for fishing nets and basket making	October, June
50	Suam Loi	*Ichnocarpus frutescens* (L) R.Br	-	Suam Noi, Khetua Noi, Thapa laha	Roots	Roots used as tonic, diuretic for fever dyspepsia, diabetes etc.	December, January
51	Eksira fruit	*Schrebera swietenioides* Roxb.	Weavers Beam Tree	Makha	Fruit	Fruit used as medicine for hydrocele.	February, March
5	Katha chhatu	Mushroom grown	-	Katha	Mushroom	It is edible	October

2		on fallen branches- *Polyporous* species		Chhatu		mushroom	
53	Mat reed, Sapa mashina grass	*Typha angustata* Bory & Chaub	Cat's Tail, Lesser Indian Reedmace	Sapa mashina ghas	Leaves & stems	Used for thatching, screens, mats, ropes, stuffing, fishing nets etc.	December, February
54	Ananta Mula	*Hemidesmus indicus* (L) R,Br	Indian Sarsaparilla	Auanta more, Sugandhi Baskhapri	Roots	Used in preparation of Ayurvedic medicines for skin disease, impurity of blood, diuretic, rhematism, Urinary diseases.	February-March
55	Antia rope	*Heticteres isora* linn	East Indian screw Tree	Modi-modika, Kukur-bichhia	Bark	Bark yields fibre used for cordage Stem bark is also used as expectorant, astringent & antigalactagogue, diarrhoea & dysentery.	February, March
56	Nageswar Flower	*Mesua ferrea* Linn	Mesua Tree, Iron wood	Nageswar	Flower	Flower used in manufacturing Ayurvedic medicines for gynaecological disorders, dysentery, anaemia, expectorant, stoma chic, rheumatism, anthelmintic etc.	March-June

57	Mankad Kendu	*Diospyros malabarica* (Desr)Kostel	Goub persimmon	Makad Kendu	Fruits	Ripe fruit edible. Raw fruits contain tannin. Pulped fruits used as preservatives for fishing nets.	March, April
58	Kusum seeds	*Schleichera oleosa* (lour) Oken	Lac tree, Macassar oil Tree, Ceylon oak	Kusum	Seeds	Seeds yield fatty oil called Macassar oil used for hairdressing, culinary, lighting purposes, lubricant for machinery and skin disease and rheumatism.	June
59	Karanj Seeds	*Pongamia pinnata*(L) Pierre	Pongam oil Tree, Indian beech, Karanj	Karanj	Seeds	Fatty oil suitable for bio-diesel production, used in tanning industry, Preparation of soaps & candles, lubricant for engines, It is applied on skin disease. Cakes used as manure and bio-pesticide.	March-April
60	Neem Seeds	*Azadirachta indica* A.Juss	Neem Tree, Margosa Tree	Neem, Lim, Limba	Seeds	Neem seed oil used as bio-pesticide, fungicide and for soap making. It is also a suitable	May, June

						species for bio-diesel production. Oil used for skin disease. Neem seed kernel used in preparation of Ayurvedic medicine. Cake used as manure and bi0-pesticide.	
61	Char Seeds	*Buchanania Lanzan* Spreng	Almondette Tree, Cheronjee	Char, Chahanr	Seeds	Seed kernel eaten, nutritious & palatable. It is a substitute of Almond in confectionery. Fatty oil from seed substituted for olive and almond oil and used for glandular swellings of the neck.	April, May
62	Chakunda seeds	*Cassia tora* Linn	Ring-worm plant	Chakunda	Seeds	Seeds used as substitute for coffee and as a mordant in dyeing. Leaves and seeds also used in skin disease specially ring worm and scabies etc.	November, December
63	Babul seeds	*Acacia nilotica* (L) Willd	Babul Tree	Bamur	Seeds	Pods contain tannin. Seeds yield fatty oil.	March, April

						Seeds used as cattle feed. Pods used in Urino-genital disorders.	
64	(Vidanga) Baribiranga seeds	*Embelia ribes* Brumf	-	Vidanga	Seeds	Used as stoma chic, anthelmintic, tonic, astringent, Dried fruits used as adulterant of black pepper. Fruits used in preparation of Ayurvedic medicines.	October, November
65	Sal seeds	*Shorea robusta* Gaertnf.	Sal Tree	Rengal, Sargi, Sal	Seeds	Seeds yield a fatty oil called Sal butter used for cooking, lighting and as an adulterant of Ghee, used for manufacture of chocolate, Cake used as cattle and poultry feed.	May June

8.2 Out of the above stated NTFP species, some of the important species are described in detail narrating the collection, value addition, processing and marketing etc. as under.

8.2.1 Sal Seed and leaves

8.2.1.1 Sal (*Shorea robusta*) is the major species of the Division, its multiple uses justify a description on collection of its seeds and leaves. The tree can grow up to the height of 45 meters. It sheds leaves in late winter and foliage is renewed by March when it flowers. It is semi- evergreen in these areas. The fruit matures by May-June. The tree is a light demander.

8.2.1.2 Seed Though commercial use of Sal seed has picked up during the last two to three decades, the extraction of oil from it for domestic consumption has been in practice since long. Now, it has found many alternative uses in soap making, manufacture of Vanaspati, Sweets, and Chocolates etc. Sal seeds are raked from the forest floor along with litter and humus. During the process of raking, all previous year seedlings are either killed or their root systems damaged. The removal of litter and humus exposes the soil and dries up the moisture which in turn kills the micro flora and fauna. Sal growth which is dependent on mycorrhiza is adversely effected. It is therefore necessary that limited area of Sal forest should be worked out at a time.

8.2.1.3 Further, some quantity of the seeds should be left on the forest floor to facilitate natural regeneration. Moreover, no collection shall be allowed beyond 15th June. To check this aspect, even all the purchase may be permitted till this date only so as to ensure proper implementation of the above mentioned restriction.

8.2.1.4 Another point that needs consideration is the proper drying of the seeds after collection. If moisture content is not regulated, it becomes susceptible to fungal infection. Though it can be checked through application of fungicides, the care should be taken to ensure timely purchase of seeds by the trader so that primary collectors do not suffer loss due to such damage. Moreover, less time of storage, otherwise also ensures a quality and would fetch a better price.

8.2.2 Sal Leaves

8.2.2.1 Though the use of Sal leaves for making cup and plates is an age old practice in tribal areas, it has now become a commercial activity with the introduction of mechanical press and molding machines. The leaves are even used for making pika (Bidi like country cigarette) though not for commercial purpose. Its other uses are as wrapper for food, betel etc.

8.2.2.2 The fresh leaves appear in March after defoliation. The tree coppices well particularly near the ground level, the advantage of which is taken by the leaf puckers. Better quality leaves are available to them at a convenient height from these coppice shoot. However, collection of tender leaves from such coppice shoots has harmful effects on the growth of plants. Hence, collection should not be allowed during March to May and even in the rainy season.

8.2.2.3 The ideal time for collection is between September to January. Further, total sweeping of the plants for collection of leaves should be discouraged. The limit should be fixed for extraction of leaves and in any case it shall not be more than two quintal per ha of forest area. It is better if collection is done through VSS; and the Forest department jointly with organizations like TDCC and TRIFED may

organize training camps to impart knowledge of sustainable collection practices to the primary collectors

8.2.3 Amla- *Phyllanthus emblica* (L.)

Family-Euphorbiaceae

8.2.3.1 Amla occupies an esteemed place in Ayurveda and the tree itself is regarded sacred in the Hindu culture and religion. It is a moderate sized deciduous tree attaining 62 to 75 cm. in girth and 10 to 12 meter in height. Fruit is greenish when tender and yellow or pink when ripe and about 1.8 - 2.5 cm. in diameter. The fruit is of great medicinal value. It is one of the richest sources of Vitamin-C. The fresh fruit is refrigerant, tonic, antiscorbutic, diuretic and laxative. It is used in fevers, vomiting, indigestion, habitual constipation and other digestion troubles. The dried fruit is a good astringent and blood purifier. The infusion of seeds is useful for eyewash in ophthalmic diseases.

8.2.3.2 Best time for collection of fruits of Amla is said to be the month of Chaitra (March) when it is matured and ripe. The fruits are either carefully plucked using long poles / bamboos with a hook. Cutting of branches for collection of fruits is prohibited. Fresh Amla is delivered at the pharmaceutical industries for preparation of Chavanpra's within 48 hours of collection.

8.2.4 Bahada- Belleric myrobalan (Terminalia bellirica, Gaertn.)
Family-Combretaceae

8.2.4.1 Bahada is the fruit of *Terminalia bellirica*, a large deciduous tree attaining a height of 40 meters and a girth of 3 meters or more. Bark ashy-grey with many small longitudinal cracks, leaves are 7.5-20 cm. long broadly elliptic or obviate, clustered at the ends of the branches, green in colour. The single seeded fruit is ovoid or globix, fleshy about 1.8 cm in diameter with a grey velvety covering. It ripens in December – January. A ten year old tree yield 15 to 20 kg bahada annually.

8.2.4.2 Bahada is one component of "Trifala" and occupies a significant position in "Ayurveda". The half ripe dry fruit is used as an astringent. It is also given in piles, dropsy, diarrhoea, leprosy and headache. The fruit is also used in leather industry for tanning. The kernels are used for hair oil and bahada powder for preparation of liquor in Tamilnadu.

8.2.4.3 Best time for collection of Bahada is December-January. Cutting of branches for collection of fruits is prohibited. After collection it is sun dried for 7 to 10 days otherwise it may decompose. Processed Bahada should be stored in a dry place after packing in gunny bags.

8.2.5 Harida-*Terminalia chebula* (Retz.)
Family-Combretaceae

8.2.5.1 From time immemorial, Harida is considered as an indispensable ingredient in many Ayurvedic medicines. It is the fruit of a small or moderate sized deciduous tree attaining a height of 15 to 20 meter and girth of 1.5 to 1.8 meter. The fruit ripens from January to March. The fruit is the Chebulic myrobalan of commerce. It is an efficacious laxative, astringent, stomachic, tonic and alterative. The fruit pulp is given in chronic diarrhea, dysentery, asthma, urinary disorder, vomiting, enlarged spleen and lever etc.

8.2.6 Siali- *Bauhinia vahlii* (Siali leaves)

Family-Caesalpiniaceae

8.2.6.1 Siali is a huge climber, so immense that the mature climber can exert much pressure on the host trees and more times the latter collapse under its load. This species is available on the uphills and less with plain areas.. Siali leaves have been used by some tribal communities as a thatching materials for their small holds. Commercial use of this leaves is in the form of packing materials (when loose) as well as in the form of caps (Dana) and plates (Khali).

8.2.6.2 Siali leaves are available between the month of October and February both in terms of quality and quantity. The lean period is during March to 15th April. Leaves are also collected during 15th April to 30th June. Leaves are collected by the primary collectors by plucking the leaves. It is very often noticed that the male collector's lose patience in plucking the leaves one by one and instead cut down the climbers but the women collectors are usually careful and they pluck the leaves of requisite size and thickness leaving the immature and old leaves on the climber itself.

8.2.7 Char- *Buchanania lanzan, Spreng*. (Char seed)

Family-Anacardiaceae

8.2.7.1 A small or moderate sized deciduous tree, seldom exceeding 60 cm. in girth with a straight trunk and a rough dark grey or black bark. The fruit of Char is considered as poor man's grape. The fruit is eaten by the tribes. It is also used as medicine. Char seed is also used in sweets, biscuits, cake etc. The oil of Char seed is used as medicine for skin disease. One ten-year-old tree yields 20 to 25 kg seeds annually.

8.2.7.2 The ripe fruit is collected by plucking from the trees by using a long bamboo with hook or by collecting fallen fruits from the ground. The fruit pulp is removed by rubbing with sand after they are kept in warm water over night. Then seeds are dried. The collected seeds are grinded to get the kernels by using Chaki. In the traditional method of processing, kernels are damaged very often. To

overcome the problem, electric driven decorticators are used to get good result. Big sized and unbroken kernels fetch good money.

8.2.8 Mahua-*Madhuca indica*, *Gmel*. (Mahul)

Family-Sapotaceae

8.2.8.1 Mahua (called Mahul in Oriya) is the flower of Madhuca indica, a tree also named after its flower. It is a large deciduous tree with a dense rounded crown spreading branches and a short bole often 1.8 meter in girth and sometimes more. The flowers and seeds are the most important product of tree which are widely used as below: -

8.2.8.2 ***Mahua Flower***

8.2.8.2.1 Mahua flowers are rich in sugar being widely used as an article of food specially by the jungle tribes. They are eaten fresh but are usually cooked with rice and eaten after they have been dried in the sun that helps the tribe during famine. But the most popular use of Mahua is in liquor making. The distilled liquor thus prepared is known as Mohuli and in stronger in its effect than that made from fermented rice.

8.2.8.2.2 During March and April, the cream coloured corollas of Mahua fall on the ground by themselves after their moulting on the tree. The primary collectors clean the ground under the tree to get Mahua flower free from unwanted materials like leaf, grass etc. The collection season lasts for 3 to 4 weeks maximum. The primary collectors often set fire to leaves and grasses underneath the tree. This practice should be stopped and awareness be created not to set fire as such as fire offence spreads to the other forest areas.

8.2.8.3 ***Mahua Seeds***

8.2.8.3.1 The seeds yield greenish yellow oil. Mahua oil is used mainly in the manufacture of laundry soap. It is also used for cooking purpose in some rural areas, for candle manufacturing, as batching oil in jute industry and as raw materials for the production of stearic acid. It has emollient properties and is used in skin diseases, rheumatism and headache.

8.3 Character of Vegetation

8.3.1 The composition and diversity of the forests, allotted to this Working Circle, have been already discussed in **Chapter-2A** of this revised Plan. Moreover, all the blocks allotted to this overlapping circle have rich NTFPs. Few items are briefly described under.

8.3.2 The major NTFP items available in the Division are given in the **Chapter-3 of Part I**, including the same sampling survey of the medicinal plants. It is reiterated here that the principal NTFP products of the division **are Siali leaf and Siali fibre, Sal seed and Sal leaf, Wild Honey, Car seed, Mahua and Myrobalans.** There is general decline in the productivity of the NTFP items therefore remedial measures should be dealt in priority.

8.4 Special Objectives of Management

8.4.1 The Special objectives of management of this working circle are as follows:

I. To regulate scientific method of sustainable collection, extraction and utilization of various NTFPs.
II. To protect the NTFP trees and to promote their regeneration
III. To develop and extend skills to the local people including the tribal for sustainable collection, value addition and marketing of various NTFPs so as to create employment opportunities and to enhance their livelihood options.
IV. To involve more and more people in protection, conservation and proliferation of NTFP yielding species through formation of strong and progressive Vana Sanrakhana Samities and by obtaining the technical inputs from sources like the State Medicinal Plant Board (SMPB) for achieving In-situ and Ex-situ Conservation of germplasm.
V. To create local NTFP based small scale industries.

8.5 Area and Allotment

8.5.1 All the forest blocks, included in the Plan have been allotted to this Overlapping Working Circle. The total working plan area is included in this working circle. Since this Working Circle overlaps the entire plan area details of area allotment to this circle has not been furnished. However, the details of area range wise allotted to this Working Circle have already been provided in **Chapter-I of Part II.**

8.6. Silvicultural System

8.6.1. No silvicultural system is prescribed. The major objective is to protect the NTFPs species. The regeneration of these species should be encouraged.

8.7 Collection Cycle

8.7.1. The cycle of collection for all the NTFPs shall be one year.

8.8 Legal Position

8.8.1 It was contemplated by the Govt. that the local population leaving in and around the forests areas are heavily dependent on the forest and its resources for their daily livelihood. But due to the strict transit permit regime of the forest department, their rights and concessions admitted and the

other requirements that they obtain for the forest on daily basis was getting curtailed and marginalized. Hence, it was decided to enforce a policy on procurement and trade of non timber forest produce keeping in view the provisions of The Panchayat (Extension to Schedule Areas) Act-1996.

8.8.2 Accordingly some of the NTFP items were removed from the list and were placed under a separate list call the Minor Forest produce (MFP) items. These items were made free from the transit permit regime whether they were collected from within or from outside the reserve forests. The people were free to collect those items, process them and use them either for their domestic consumption or for trade to earn their livelihood. Here the grampanchayats were given a key role to play.

8.9. Marketing and trading of NTFP

8.9.1 A new scheme for implementation of minimum support price (M.S.P) for 10 numbers of MFP items under central sponsored scheme co-terminus with the twelfth five year plan has been rolled out by the Ministry of tribal affairs, Govt. of India in which the Govt fixed the minimum support price for 10 MFP items in two phases vide letter No. F.No. 19/1/2014-CP&R dated 24.01.2014 and 24.02.2014.

8.9.2 For operationalisation of the scheme, in the state, the S.T and S.C Development Department, Govt. of Odisha brought out a notification vide letter No. 15725/SSD dated 04.06.2014 wherein it was deiced that the S.T & S.C Department would act as the state nodal department, Tribal development Co-operative Corporation of Odisha, Limited (TDCCOL) would act as the state procurement agency for those NTFP items for which the MSP had been fixed by Govt. of India and Odisha Forest Development Corporation (OFDC) would act as the State procurement Agency for Kendu leaves and Bamboo.

8.9.3 The list of 10 MFP items and their minimum support prices said is given in **Table 8-2**, the other two items being Kendu leaf and Bamboo. **Table 8-3** shows the Range wise availability of these 10 MFP items of the division.

Table 8-2 List of minimum support price of Minor Forest Produce available in the district of Ganjam

Sl. No.	Name of the MFP item	Price/Kg in Rs.
1	Mahua seed	32
2	Wild honey	132
3	Lac-Kusumi	290
	Lac-Ranginee	210
4	Karanj seed	21
5	Sal seed	10
6	Sal leaves	21

7	Chiranjee Pod with seed	100
8	Harida	11
9	Seeded Tamarind	22
10	Gum Karaya (Grade-III)	108

Table 8-3 Range wise availability of these 10 MFP items in Ghumsur North Division

Range	Karanj Seed	Mahua seed	Sal	Sal	Lac	Chiranji pod	Wild Honey	Hari da	Tamarin d	Gum
Mujaga	No	Yes	Yes	Ye	Yes	No	Yes	Yes	Yes	No
Central	No	Yes	Yes	Ye	No	No	No	Yes	Yes	Yes
Gallery	No	Yes	Yes	Ye	No	No	No	Yes	Yes	Yes
Jaganat	No	Yes	Yes	No	No	No	No	No	No	No
Tarsing	No	Yes	Yes	Ye	No	No	Yes	No	Yes	Yes

This scheme envisages-

i) Marketing of non nationalized/ non monopolized MFP items.

ii) Development of value chain through minimum support price and

iii) Social safety for MFP gatherers who are primarily Schedule Tribes.

8.9.4 Tribal development Cooperative Corporation of Odisha Limited, Bhubaneswar (TDCCOL) has been declared as the State Procurement Agency (SPA) for these ten items except Kendu leaves and bamboo by the Govt. Interested Primary Procurement Agency (PPA) has to apply to the concerned Gram panchayat.

8.9.5 Out of them one has to be finalized by the Gram panchayat to procure the MFP itmes at MSP, based on their experience in procurement of MFP, experience of implementation of Govt. programme and schemes, storage potential, whether blacklisted by Govt. or not and their transaction potential.

8.9.6 District level co-ordination committee (DLCC) has to vet the name of the PPA against the GP and send it to TDCC. TDCC then will notify the name of the PPA and enter into an agreement with the PPA. The TDCC would lift the material from the PPAs at MSP and provide them 2% incentive of the total procurement value as its commission.

8.9.7 The detailed framework for selection of PPA for procuring minor forest produces at the community level as an agent of TDCCOL under the scheme is given. Accordingly 28 nos. of Gram panchayats hailing from 8 different blocks of Ganjam district have been identified as the potential

MFP source areas out of which 8 such GPs from three blocks fall within the jurisdiction of Ghumsur North Division. They are enlisted in **Table 8-4** as follows-

Table 8-4 Block wise List of potential Gram Panchayats along with possible Minor Forest Produce items of Ghumsur North Division

Sl. No.	Name of the Block	Name of the G.P	Possible MFP
1	Jaganathprasad	Rudhapadar	Sal Seed
			Sal leaves
			Jhuna
			Wild Honey
			Harida
			Bahada
2	Bhanjanagar	Brahmanapadar	Siali leaves
3		Domuhani	
4		Baibali	Jhuna
5		Dadaralunda	Wild Honey
6	Sorada	Lathipada	Siali leaves
7		Kulangi	
8		Palakatu	Tamarind

8.10 Analysis and Valuation Of Crop

8.10.1 Sample enumeration data of NTFP in the field and A systematic inventory study done in the year 2011-12, 2012-13 and during the working plans exercises has used to assess the potentiality vis-à-vis the availability of various NTFPs and further ascertain impact of collection of such NTFPs on sustainability of the forest. However, an attempt has been made while carrying out the forest resource survey of the Division to assess and estimate the availability of NTFPs. Though such estimation does not indicate about sustainability of extraction but it, certainly gives an idea about their availability in the Division. In this study 100 different points in each of the five Ranges were taken across canopy density classes and studies were undertaken.

8.10.2 Methodology Adopted For Inventorisation Of NTFP

8.10.2.1 The N.T.F.P inventorization was conducted at as per **"Manual for NTFP inventory at range level"** developed by the PCCF Odisha and accordingly identification of "Integrated Primary Sampling Unit" (IPSU). The IPSU has been selected and delineated in map as well as field taking geo- co-ordinates of the market place as well as the villages. The survey area are conceptuated integrating-

I. The Forest patch under inventorization,

II. The villages adjoining traditionally engaged in collection, consumption and marketing of NTFP who are the stake holder of the management of NTFP resources

III. The market where the NTFP items are sold by the primary collectors and the rate at which it is sold and return earned by the people.

8.10.2.2 Survey Area Stratification

8.10.2.2.1 The Forest patches irrespective of legal status i.e. RF, Village Forest have been taken depending upon strata and substrata like dense forest, thin forest, pure crop and mixed crop. The data have been collected in predestined field forms.

8.10.2.3 Formation of Crew Member for Inventory

8.10.2.3.1 The crew members for inventory have been selected as follows.

i) Foresters/ literate Forest Guards as head of team.

ii) Local literate youth as crew leader.

iii) Another local person to assist the field works like measurement etc.

iv) One local Vaidya or traditional healer for identification of important medicinal plants.

v) One camp assistant

8.10.2.4 Capacity Building Local Villagers/ Crew Members

8.10.2.4.1 Two training camps each were organized in all the five Ranges for the crew members and villagers about inventory work on NTFP by the Range Officer. The villagers were made aware about management NTFP resources within the principle of current Working Plan. The crew members in three groups have been provided with requisite equipments as per guideline and have been provide with hired conveyance to travel the distant points.

8.10.2.5 Laying Of Sample Plots and Recording Of Data in Data Forms

8.10.2.5.1 The sample plots are laid on the field depending upon the strata and uniformity in crop conditions. In slopes this is laid across the contour. The Sample point G.P.S co-ordinate taken recorded in appropriate place of data form and the Sample plot number was written in white paint on the tree present in sample plot.

8.10.2.5.1 The plots of size 10mt x 100mt are delineated in field by rope of above standard indicating marks at 10mt interval so that 10 no. of subplots of 10mt x 10mt is clearly perceived by the crew while doing enumeration work.

8.10.2.5.2 The data collection forms are predesigned by the State Forest HQrs and the details of requirement of data are as follows.

Form No. 1: - In this form the physical description like topography soil, Forest type, density of crop, incidence of grazing, fire and presence of wildlife are recorded by the crew members carefully.

Form No. 2: - All the trees having 30cm g.b.h. having woody stem and unbroken apical growth are measured and entered species wise coming inside subplot 1 to 10 except subplot 3 and 7 and abstract of plot 1 to 10 (except 3& 7) are tabulated.

Form No. 3: - The species wise girth, height and diameter of canopy are recorded for subplots 3 and 7. The abstracted was also tabulated.

Form No. 4 : - Enumeration herbs in subplot 3 and 7 were made in a patch of size 2mt x 2mt in the sub plots species wise. The abstract of no. of herbs observed were made in the format.

Form No. 5 : - Enumeration of shrub were made in subplot 3 and 7 in a patch of size 5mt x 5mt and the results were recorded in form no. 5 and the abstract of both subplot was tabulated.

Form No. 6: - Enumeration of climber was made in subplot 3 and 7 in a patch of size 5mt x 5mt. The abstract of both the subplots tabulated at the end.

Form No. 7: - Enumeration of regeneration of different species in 3 different height class in subplot 3 and 7 were recorded in a patch of size 2mt x 2mt. The abstract of species wise regeneration was tabulated at the end.

Form No. 8: - The coppice growth of different species in subplot 3 and 7 are recorded species wise and the abstract of subplots are tabulated at the end.

Form No. 9: - The sample house hold survey of the villagers of adjoining villages of the sample plots was made by direct interaction to collect data on collection, consumption and marketing of different NTFP items. The nearby market was also studies by contacting data from the local traders about of collection price paid to primary collector and price at secondary market. The information collected is entered in form no. 9 product wise.

8.11 Statistical Analysis

8.11.1 The collected data on different aspects of NTFPs species as prescribed in Methodology have been furnished in the following chapter for easier comprehension. These aspects include list of enumerated flora followed by data on enumeration of trees, shrubs, herbs, climbers and their regeneration vis-a vis their pictorial representation in bar diagrams. Nevertheless local household survey informations are collected concerning to NTFP collection, consumption and marketing which has been analyzed to assess the status of NTFP in broadening the livelihood basket of the poorest of the poor.

8.11.2 Apart from this, the Bio-diversity indices of sample areas have been calculated based on species richness and evenness using Simpson's Index and Shannon Index in order to justify the Bio-diversity richness of the surveyed Forest area of all the Ranges.

8.11.3 SIMPSON'S DIVERSITY INDEX

8.11.3.1 The term 'Simpson's Diversity Index' can actually refer to any one of 3 closely related indices. Simpson's Index (D) measures the probability that two individuals randomly selected from a sample will belong to the same species (or some category other than species). There are two versions of the formula for calculating D.

$D = \Sigma (n / N)^2$	$D = \frac{\Sigma\, n(n-1)}{N(N-1)}$
n = the total number of individuals of a particular species N = the total number of organisms of all species	

The value of D ranges between 0 and 1

8.11.3.2 With this index, 0 represents infinite diversity and 1 no diversity. That is, the bigger the value of D, the lower the diversity. This is neither intuitive nor logical, so to get over this problem, D is often subtracted from 1 to give:

Simpson's Index of Diversity = 1 - D

8.11.3.3 The value of this index also ranges between 0 and 1. But now, the greater the value, the greater the sample diversity. This makes more sense. In this case, the index represents the probability that two individuals randomly selected from a sample will belong to different species.

8.11.3.4 Another way of overcoming the problem of the counter-intuitive nature of Simpson's Index is to take the reciprocal of the Index:

Simpson's Reciprocal Index = 1 / D

8.11.3.5 The value of this index starts with 1 as the lowest possible figure. This figure would represent a community containing only one species. The higher the value, the greater the diversity. The maximum value is the number of species (or other category being used) in the sample. For example if there are five species in the sample, then the maximum value is 5

8.11.4 SHANNON DIVERSITY INDEX

$$H = \sum_{i=1}^{s} - (P_i * \ln P_i)$$

where:

H = the Shannon diversity index
P_i = fraction of the entire population made up of species i
S = numbers of species enumerated
$\sum$ = sum from species 1 to species S

Note: The power to which the base e (e = 2.718281828.....) must be raised to obtain a number is called the natural logarithm (ln) of the number.

8.11.4.1 High values of H would be representative of more diverse communities. A community with only one species would have an H value of 0 because P_i would equal 1 and be multiplied by ln P_i which would equal to zero. If the species are evenly distributed then the H value would be high. So the H value allows us to know not only the number of species but how the abundance of the species is distributed among all the species in the community. All the above four indices are used in Biodiversity estimation of all five Ranges of the Division.

8.12 RESULTS OF THE NTFP INVENTORY STUDY

8.12.1 Inventory data From the study conducted it was revealed that the forests are Sal dominated with Kendu (*Diospyrous melanoxylon*), Dhaura (*Anogeissus latifolia*), Achhu (*Morinda tictoria*), Kusum (*Schleichera oleosa)*, Jamun (*Syzigium cumini*), Bhalia (*Semicarpus anacardium*), Mahula (*Madhuca indica*), Char (*Buchanania lanzan*), Haland (*Adina cordifolia*), Tentela (*Albizzia odoratissima*) and Moi (*Lannea coromondalica*)as the principal associates. Shrubs are mostly Danturi, Dhatki, Kurein, Karada, Bhaincha, Khukundi, Banatulasi with Pokasungha and Khajuri found everywhere but densely available in Central and Jangannthprasad ranges showing signs of open degraded spaces.

8.12.2 Herbs include Apamarang, Bajramuli, Haumaricha, Thotudi, Kapasia, veru, sungandhi etc with Bhuin neem being the commonest herb. Climber species include Muturi, Siali, Atundi, Dantari, Khelua, Gila and Indrajal etc. A range wise abstract of the number of tree, shrub, herb and climber and total species found in the sampled areas is given in **Table 8-5** and the same has also been represented graphically in **Figure 8.1**. Important fiber yielding, fruit bearing, gum yielding, oil and resin yielding and tannin yielding species are given from **Table 8-6** to **8-10**.

Table 8-5 Range wise and Category wise abstract of Total NTFP species of Ghumsur North Division

Sl. No.	Name of the Range	No. of tree species	No. of shrub Species	No. of Herb Species	No. of Climber	Total No. of Species
1	Mujagada	75	42	40	34	191
2	Gallery	50	22	14	17	103
3	Tarasingi	51	74	85	33	243
4	Central	46	23	15	17	101
5	Jagannath Prasad	54	36	41	28	159

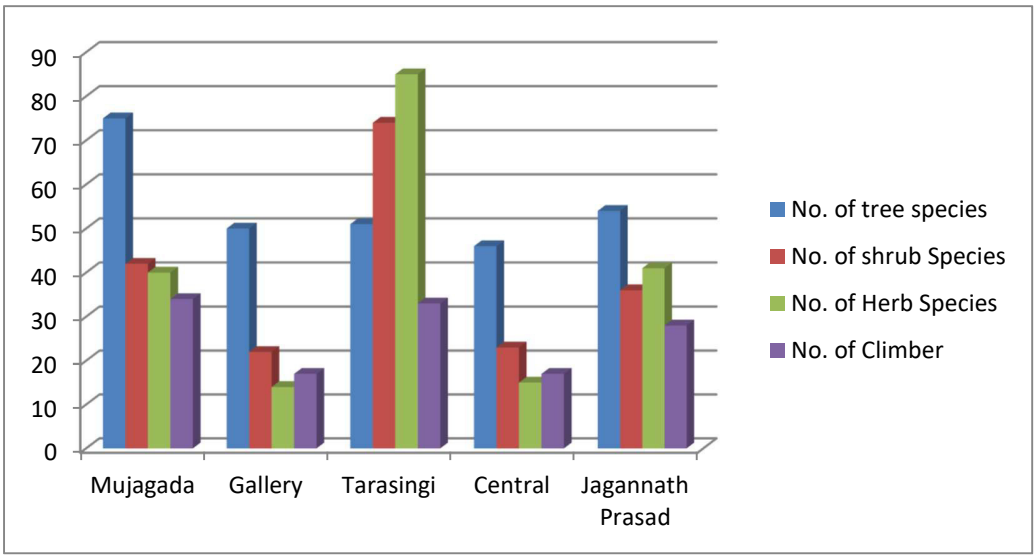


Figure 8-1 Graph of Table 8.4 (Total NTFP species inventory)

Table 8-6 Important Fiber yielding species found in Ghumsur North Division				
Sl.No	**Local Name**	**Botanical Name**	**Useful Part**	**Uses**
01	Aswastha	*Ficus religiosa*	Tree	Rope making
02	Bara	*Ficus bengulensis*	Tree	Rope making
03	Palasa	*Butea monosperma*	Root	Rope making
04	Siali	*Bauhinia vahlii*	Fibre	Rope making
05	Aswastha	*Ficus religiosa*	Tree	Rope making
06	Genduli	*Sterculia urens*	Tree	Rope making

Source: Field Inventory Report.

Table 8-7 Important Fruit Bearing trees found in Ghumsur North Division			
Sl.No	**Local Name**	**Scientific Name**	**Part Used**
01	Amba	*Mangifera indica*	Fruit is edible
02	Amla	*Emblica officinalis*	Medicinal
03	Aswastha	*Ficus religiosa*	Fruit for animal
04	Bara	*Ficus bengalensis*	Fruits eaten by Birds &
05	Bahada	*Terminalia belerica*	Medicinal and Edible
06	Barkoli	*Zizyphus mauritiana*	Fruit is edible
07	Baula	*Mimusops elengii*	Fruit is edible
08	Bela	*Aegle marmelos*	Edible Fruit
09	Bhalia	*Semicarpus anacardium*	Medicinal Use
10	Chara	*Buchanania lanzan*	Edible Fruit
11	Dimiri	*Ficus racemosa*	Fruits eaten by Birds &
12	Gambhar	*Gmelina arborea*	Fruits for Animals
13	Harida	*Terminalia chebula*	Fruit for Medicine
14	Jamu	*Syzygium cumini*	Edible Fruit
15	Karanja	*Pongamia pinnata*	Oil & Medicine
16	Kendu	*Diospyros melanoxylon*	Edible Fruit
17	Kochila	*Strychnos nuxvomica*	Fruit for Medicine Birds
18	Kusum	*Schleichera oleosa*	Edible Oil, Fruit
19	Mahua	*Madhuca indica*	Edible Oil, Fruit
20	Neem	*Azadirachta indica*	Medicine, Oil
21	Panas	*Artocarpus integrifolia*	Edible Fruit
22	Sal	*Shorea robusta*	Edible Oil
23	Simul	*Bombax ceiba*	Cotton yield
24	Tentuli	*Tamarindus indica*	Edible Fruit for Man

Table 8-8 Important Oil yielding Species of Ghumsur North Division				
01	Champa	*Michelia champaca*	Flower	Perfumes
02	Chandan	*Santalum album*	Wood	Perfume, soap
03	Eucalyptus	*Eucalyptus indica*	Leaf	Medicines
04	Karanja	*Pongamia pinnata*	Seed	Medicines
05	Kochila	*Strychnos nuxvomica*	Seed	Medicines
06	Kusum	*Schleichera oleosa*	Seed	Cooking, and soap
07	Mahua	*Madhuca indica*	Seed	Edible
08	Neem	*Azadirachta indica*	Seed	Medicines
09	Sal	*Shorea robusta*	Seed	Edible food
10	Sinduringundi	*Mallotus phillipinensis*		

The result of the study indicates that in poverty stricken areas dependence on NTFP is very high.

8.12.3 It is generally believed that collection of NTFP does not cause any harm to forests. This is not always true. Many collection practices very adversely affect forests and often unsustainable. For example, if all seeds are collected from forest floor and no seed is left for regeneration, forests may not regenerate. This is evident in many Sal forests where seed has been very intensively collected. Similarly, no young mahua trees are observed in many areas. Forest floors are often burnt, oil seeds and grasses, particularly fodder grasses, get burned before they are collected/ used. Local people generally burn the debris below the trees during collection of mahua flower. This practice is, often, very harmful to forests. It kills micro-flora and fauna. It also compacts soils. In many forests, floors are swept for leaf litter and humus. This practice adversely impacts nutrient re-cycling.

Table 8-9 Important Gum and Resin yielding Species of Ghumsur North Division				
Sl.No	**Local Name**	**Botanical Name**	**Useful Part**	**Uses**
01	Babul	*Acacia nilotica*	Gums	Calico-printing, dyeing and as sizing material for silk, cotton.
02	Dhaura	*Anogeissus latifolia*	Gum	Sizing paper and in printing
03	Genduli	*Sterculia urens*	Gum	Gum is edible and Used in

				preparation of Confectionaries
04	Khair	*Acacia catechu*	Khaira	Pan making industry
05	Salai	*Boswellia serrata*	Gum	Pleasant smell when burnt
06	Sal	*Shorea robusta*	Resin from heart wood	Manufacture of varnish, paint,
07	Rai	*Lannea coromondelica*	stem	-

8.12.4 Leaves, which play an important role in maintaining transpiration processes, are over-exploited in many cases. This process may very adversely affect some species, for example Sal. Similarly, some species, medicinal plants in particular, have been over-exploited. They have either become extinct or are facing extinction. Similarly, plants whose tubers and roots are collected/used are under greater threat. It also need be recognized that many uses of forests are competitive. That is, one use of forests precludes other uses. For example, plucking of Sal leaves from young coppice shoots adversely affects the growth having negative effect on its future returns like timber production. These negative aspects of NTFP collection, exploitation and utilization deserve greater attention of the Territorial Administration.

Table 8-10 Important Tannin Yielding species of Ghumsur North Division

Sl No	**Local Name**	**Botanical Name**	**Part Yielding Oil**	**Uses**
01	Anla	*Emblica officinalis*	Fruit	Medicinal, leather
02	Arjuna	*Terminalia arjuna*	Bark and fruits	Leather
03	Babul	*Acacia nilotica*	Bark and fruits	Leather
04	Bahada	*Terminalia*	Myrobalans(Fruit)	Medicinal,leather

		belerica		
05	Dhaura	*Anogeissus latifolia*	Leaves	Leather
06	Harida	*Terminalia chebula*	Fruit	Medicinal, leather

8.13 Potential Inventory Data

8.13.1 Potential NTFP inventory included all those species for which there is a knowledge amongst the local people of the use and importance of that particular species and which part of the plant/tree is used irrespective of the fact that they actually use it on a regular basis or not. **Table 8-11** gives a range wise and category wise (tree, shrub, herb and climber) summary of the total potential NTFP species found in the sampling area along with total number of potential NTFP species per ha., Total NTFP species per ha and the percentage of the potential NTFP species out of the total bracket of NTFP species encountered in the sample plots. The same is graphically represented in **Figure 8.2**.

8.13.2 Awareness should be propagated to harvest all those other species which normally are not harvested by bringing in technical people and creating a market for those products through backward and forward linkages with an in built benefit plough back component for the local community and the primary gatherers.

8.14 Traditionally Utilized Inventory Data

8.14.1 This group of NTFP items included all those species which are actually extracted by the local people from the forests either for their local consumption or for trade purposes seasonally as and when they are available for collection/harvest. **Table 8-12** gives a range wise and category wise (tree, shrub, herb and climber) summary of the total traditionally utilised NTFP species found in the sampling area along with total number of traditionally utilised NTFP species per ha., Total NTFP species per ha and the percentage of the traditionally utilised NTFP species out of the total basket of NTFP species encountered in the sample plots. The same is graphically represented in **Figure 8.3**.

8.14.2. In this case, the destructive practices normally executed to collect the produce must be discouraged and training on use of sustainable practices should be imparted by making the people realize the benefits of such practices over the conventionally used methods of collection for ensuring sustained yield year after year. More over value addition through simple methods should be followed

so as to sell processed items instead of unprocessed goods so as to fetch more prices. Storage facilities at motorable points should be developed so as to en-cash on the product value during its lean season and also to avoid wastage by keeping it safe from natural forces.

Table 8-11 Range wise and category wise summary of the potential NTFP species of Ghumsur North Division.

Sl. No.	Name of Range	Total No. of Species					Total Potential NTFP per ha.					Total NTFP species per ha.					Total Potential NTFPspecies %			
		Tree	Shrub	Herb	Climber	Total	Tree	Shrub	Herb	Climber	Total	Tree	Shrub	Herb	Climber	Total	Tree	Shrub	Herb	Climber
1	Mujagada	21	11	15	10	57	229	412	638	766	2045	305	644	4588	832	6369	74.9	63.98	13.9	92.07
2	Gallery	22	12	6	7	47	153	1244	3000	676	5073	251	1626	5238	1248	8363	61	76.51	57.3	54.17
3	Tarasingi	27	20	24	13	84	54.6	708	1239	667	2668	68	1510	8825	1334	11737	80.3	46.89	14	50.00
4	Central	24	15	10	11	60	1442	806	3938	806	6991	1803	1244	5125	1080	9252	80	64.79	76.8	74.63
5	Jagannathprasad	17	14	17	10	58	38.4	450	1400	242	2130	99.9	620	2963	750	4432	38.4	44.71	47.3	32.27

Table 8-12 Range wise and category wise summary of the traditionally used NTFP species of Ghumsur North Division.

Sl. No.	Name of Range	Total No. of Species					Total Traditionally used NTFP per ha.					Total NTFP species per ha.					Total Traditionally used NTFP species %			
		Tree	Shrub	Herb	Climber	Total	Tree	Shrub	Herb	Climber	Total	Tree	Shrub	Herb	Climber	Total	Tree	Shrub	Herb	Climber
1	Mujagada	21	10	13	10	54	234.7	370	614	766	1984.7	305.4	644	4588	832	6369.	76.8	57.45	13.38	92.0
2	Gallery	19	7	7	7	40	1891.	528	2913	898	6230.1	251.3	1626	5238	1248	8363.	75.2	32.47	55.61	71.9
3	Tarasingi	25	17	20	10	72	57.3	804	693.4	543	2097.7	68	1510	8825	1334	1173	48.2	53.25	7.86	40.7
4	Central	20	10	7	10	47	1271	640	6312.	696	8919.5	1802.	1244	5125	1080	9251.	70.5	51.45	70.49	64.4
5	Jagannathprasad	24	11	13	11	59	65	414	1337.5	362	2178.5	99.9	620	2962.5	750	4432.4	65.07	66.77	45.15	48.27

8.15 Prioritized NTFP Species Inventory Data

8.15.1 These species are those which have been either over exploitable or unsustainably extracted so that their abundance in the wild has dwindled beyond the limits of profitable economic exploitation. Hence these species through creating inviolate areas where they are still present supplemented by artificial regeneration need to be revived and restocked in the forests. **Table 8-13** gives a range wise and category wise (tree, shrub, herb and climber) summary of the total prioritized NTFP species found in the sampling area along with total number of prioritized NTFP species per ha., Total NTFP species per ha and the percentage of the prioritized NTFP species out of the total basket of NTFP species encountered in the sample plots. The same is graphically represented in **Figure 8.4**. In this case local population needs to be sensitized about the importance of such species for them as well as their surroundings and its usefulness. They have to be trained about the nursery practices of such delicate species and creating quality planting material (QPM) so as to undertake under planting of the species and help replenish themselves in the wild. The people also need to be educated to enforce restraints like allowing grazing, setting fire to forest floor or temporary stoppage in the collection activities of those species to allow the species to bounce back

8.16 Coppicing Inventory Data

8.16.1 This depicts the coppices encountered during the sample survey of those NTFP species that can coppice after being felled or exploitable to revegitate the area. **Table 8-14** gives a range wise and category wise (tree, shrub, herb and climber) summary of the total coppicing NTFP species found in the sampling area along with total number of coppicing NTFP species per ha., Total NTFP species per ha and the percentage of the coppicing NTFP species out of the total basket of NTFP species encountered in the sample plots. The same is graphically represented in **Figure 8.5**. In this case annual tending operations including high stump cutting, pruning, singling etc. followed by cultural operations like removal of debris, control burning at appropriate sites etc. needs to be done to ensure a decongested environment for establishment of the strong and avid coppice shoots free from diseases and malnourishment.

TABLE 8-13 RANGE WISE AND CATEGORY WISE SUMMARY OF PRIORITY NTFP SPECIES OF GHUMSUR NORTH DIVISION.

Sl. No.	Name of Range	Total No. of ree Species					Total Priority NTFP species per ha.					Total Priority NTFP species per ha.					Total Priority NTFP species %			
		Tree	Shrub	Herb	Clim	Total	Tree	Shrub	Herb	Climber	Total	Tree	Shrub	Herb	Climber	Total	Tree	Shrub	Herb	Climber
1	Mujagad	11	6	3	3	*23*	43.8	232	164	296	*735.8*	305.4	644	4588	832	*6369.4*	14.34	36.02	3.57	35.58
2	Gallery	11	6	3	3	*23*	116.4	630	1775	550	*3071.4*	251.3	1626	5238	1248	*8363.3*	46.32	38.75	33.89	44.07
3	Tarasingi	12	13	12	7	*44*	43	614	3076	788	*4521*	68	1510	8825	1334	*11737*	63.24	40.66	34.85	59.07
4	Central	17	11	6	3	*37*	1237	554	2163	506	*4460*	1803	1244	5125	1080	*9252*	68.6	44.53	42.2	46.85
5	Jagannath Prasad	11	7	3	3	*24*	39.5	348	467.5	160	*1015*	99.9	620	2963	750	*4432.9*	39.54	56.13	14.77	21.33

TABLE 8-14 RANGE WISE AND CATEGORY WISE SUMMARY OF COPPICING NTFP SPECIES OF GHUMSUR NORTH DIVISION.

Sl.No.	No. of Range	Total No. of Coppies found					Total No. of Coppies per ha.					NTFP Coppice to Total coppice per ha. %			
		Tree	Shrub	Herb	Climber	Total	Tree	Shrub	Herb	Climber	Total	Tree	Shrub	Herb	Climber
1	Mujagada	1316	240		29	*1585*	2632	480		58	*3170*	117.5	21.429		2.589
2	Gallery	1071	82		102	*1255*	2142	164		204	*2510*	95.63	7.312		9.107
3	Tarasingi	5249	597	173	37	*6056*	10498	1194	346	74	*12112*	173.35	19.72	5.713	1.221
4	Central	435	52		40	*527*	870	104		80	*1054*	165.09	19.734		15.18
5	Jagannathprasad	423				*423*	846				*846*	199.06			

8.17 Regeneration Inventory Data

8.17.1 The Regeneration Inventory of all categories of species has been analyzed for all highest groups of 5cm, 5-10cm and 15 cm and above. It shows the regeneration status of maximum no of species is still good in spite of much adverse climatic, anthropogenic condition. The regeneration of the species is relatively poor in central and Jaganathprasad ranges where the denudation and degradation of the forest floor and the depletion of the green cover has invited weed infestation and scorching effect of the sun with the loss of soil fertility, moisture and the edaphic flora and fauna.

8.18 Market and Domestic Consumption Inventory Data

8.18.1 This particular study also tried to study the potential/actual primary and the secondary markets for most of the NTFP items that are extracted from the forests. The study revealed the number of villages and households who are involved in collection and marketing of NTFP produce. The quantity of the items procured, the per unit value of the produce and the total number of items consumed or sold and the value of it was also assessed. . The details of the same range wise and category wise are given below.

8.19 Biodiversity Index Data

8.19.1 The biodiversity index data of the NTFP species was derived. Simpson's bio diversity index is a measure of quantifying the diversity status of habitat. To do that two statistical formulae were used which are as following

i) Simpson's index 'D' measures the probabilities that two individuals randomly selected from a sample will belong to the same species or some category other than the species. The value of D ranges between 0 to 1 where 0 represents infinite diversity and 1 represent no diversity. The bigger is D the lower is the diversity.

ii) Shannon's index (H) is used to measure the diversity in categorized data. The advantage of this index is that it takes in to account the no of species (species richness) and evenness of the species. The index is increased when additional unique species are added or when a greater species evenness is included. Typically the value of (H) ranges from 1.5 (low species richness & high evenness) to 3.5 (high species richness and evenness) though the value beyond this limit are arrived at some instances. Because the Shannon's index gives a measure of both species numbers and the evenness of their abundance, the resulting figure does not give an absolute description of diversity of the site. It is useful when comparing a particular eco system or habitat as it can highlight one example being richer or more even than other.

The details of the information so obtained has been given in detail Range wise and category wise from ANNEXURE -XXXX.

NTFP MARKETING INVENTORY DATA OF MUJAGDA RANGE, GHUMSUR NORTH FOREST DIVISION												
Total No of Forest Dependant village in the range												**77**
Total No of Forest Dependant House hold in the range												**5320**
Total No of Forest Dependant Sample Village in the range												**77**
Total No of Forest Dependant Sample House hold in the range												**211**
Population in Sample Village in 2011 census												**29260**
Category	**NTFP Species Utilized By forest fringed Village**	**Part / Item of NTFP spices Utilized by the forest fringed Villages**	**No of NTFP collecting House hold in the Sample Village**	**Total Quantity of NTFP collected in Sample Village (In Qntl)**	**Total Quantity NTFP used for self consumption in the Sample Villages(in Qntl)**	**Total Quantity of NTFP sold at Primary market**	**Total Quantity of NTFP sold at Secondary market**	**Total Quantity of NTFP sold (In Qntl)**	**Unit Price (Per Qntl)**	**Value of Self Consumed NTFP (in Rs)**	**Value Sold NTFP (In R.s)**	**Total Value of NTFP (In Rs.)**
Tree	Sal	Seed	500	180.5	0	100	80.5	180.5	816	0	147288	147288
	Sal	Leaf	300	120.5	50	50	20.5	70.5	1456	72800	102648	175448
	Mahula	Flower	300	265	120	82	63	145	1747	209640	253315	462955
	Mahula	Seed	150	120.5	40	60	20.5	80.5	1754	70160	141197	211357
	Bhallia	Seed	70	56.5	1	35	20.5	55.5	800	800	44400	45200
	Amla	Fruit	3	1.5	0.5	1	0	1	1542	771	1542	2313
	Kendu	Fruit	15	11.5	3.5	5	3	8	1253	4385.5	10024	14409.5
	Kendu	Leaf	900	735	0	430	305	735	2500	0	1837500	1837500
	Tentuli	Fruit	400	235	10	175	50	225	1800	18000	405000	423000
	Kusum	Seed	85	35	0	25	10	35	1000	0	35000	35000
	Jamun	Fruit	40	35.6	5.6	20	10	30	2000	11200	60000	71200
	Char	Seed	70	20	0	15	5	20	500	0	10000	10000
	Salap	Sap	5	1.5	0.5	1	0	1	3000	1500	3000	4500
	Arjuna	Bark	25	15	0	10	5	15	800	0	12000	12000
	Mango	Pulp	10	2.5	1.5	1	0	1	2000	3000	2000	5000

Tree Total			**2873**	**1835.6**	**232.6**	**1010**	**593**	**1603**	**22968**	**392256.5**	**3064914**	**3457170.5**
Shrub	Dimiri	fruit	52	8	4	3	1	4	900	3600	3600	7200
	Bhurudukoli	fruit	75	6	2	0	4	4	2000	4000	8000	12000
	Masania Bark	Spike	25	0.8	0.2	0.6	0	0.6	4812	962.4	2887.2	3849.6
	Palas flower	Flower	125	8	2	4	2	6	1800	3600	10800	14400
	Bhuineem Root	Root	40	3	2	1	0	1	1200	2400	1200	3600
Shrub Total			**317**	**25.8**	**10.2**	**8.6**	**7**	**15.6**	**10712**	**14562.4**	**26487.2**	**41049.6**
Herb	Sugandhi	Leaf,Root	43	1	0.25	0.75	0.75	0.75	2000	500	1500	2000
	Madarang	Root	41	0.5	0.2	0.3	0	0.3	1350	270	405	675
	Kaitha	fruit	142	10	2	6	2	8	6000	12000	48000	60000
	Bhuin Neem root	Root	162	3	2	1	0	1	5000	10000	5000	15000
Herb Total			**388**	**14.5**	**4.45**	**8.05**	**2.75**	**10.05**	**14350**	**22770**	**54905**	**77675**
Climber	Asadhua	Leaf	350	50	0	40	10	50	1800	0	90000	90000
	Madhabi Lai	Root, Branch	57	10	8	2	0	2	2000	16000	4000	20000
	Satawari	Branch	6	1	1	0	0	0	1200	1200	0	1200
	Muturi	Root	8	1	1	0	0	0	2000	2000	0	2000
Climber Total			**421**	**62**	**10**	**42**	**10**	**52**	**7000**	**19200**	**94000**	**113200**
Grand Total			**7998**	**3875.8**	**514.5**	**2137.3**	**1225.5**	**3361.3**	**110060**	**897577.8**	**6480612.4**	**7378190.2**

NTFP MARKETING INVENTORY DATA OF TARASINGI RANGE , GHUMUSUR NORTH DIVISION												
Total No of Forest Depandant village in the range												**60**
Total No of Forest Depandant House hold in the range												**7516**
Total No of Forest Depandant Sample Village in the range												**18**
Total No of Forest Depandant Sample House hold in the range												**3500**
Population in Sample Village in 2011 sensus												**2937**
Category	**NTFP Specis Utilized By forest fringed Village**	**Part / Item of NTFP spices Utilized by the forest fringed Villages**	**No of NTFP collecting House hold in the Sample Village**	**Total Quantity of NTFP collected in Sample Village (In Qntl)**	**Total Quantity NTFP used for self consumption in the Sample Villages(in Qntl)**	**Total Quantity of NTFP sold at Primery market**	**Total Quantity of NTFP sold at Secondary market**	**Total Quantity of NTFP sold (In Qntl)**	**Unit Price (Per Qntl)**	**Value of Self Consumed NTFP (in Rs)**	**Value Sold NTFP (In R.s)**	**Total Value of NTFP (In Rs.)**
Tree	Sal	Leaf	53	260	205	100	103.5	55	2018	0	110990	110990
	Sal	Sedd	1	5	2	2	1	3	850	1700	2550	4250
	Sal	Resin	5	2.7	0	2.3	0.4	2.7	1015	0	2740.5	2740.5
	Mahula	Flower	35	125	120	39	7	46	2045	245400	94070	339470
	Mahula	Seed	35	28	100	35	17	52	1412	141200	73424	214624
	Bhallia	Seed	32	181	1	35.5	14.5	50	5070	5070	253500	258570
	Amla	Fruit	7	10.8	4	2.8	4	6.8	1008	4032	6854.4	10886.4
	Kendu	Leaf	55	33	2	25.5	5.5	31	1189	2378	36859	39237
	Kendu	Fruit	55	52	0	368	88	456	800	0	364800	364800
	Tentuli	Fruit	7	260	19	203	27	230	540	10260	124200	134460
	Kusum	Seed	8	20	0	20	5	25	600	0	15000	15000
	Jamun	Fruit	53	46.7	3	42.5	1.2	43.7	750	2250	32775	35025
	Char	Fruit	5	16	0	16	9	25	400	0	10000	10000
	Siali	Leaf	56	172	160	52	20	72	2575	412000	185400	597400
Total			**407**	**1212.2**	**616**	**943.6**	**303.1**	**1098.2**	**20272**	**824290**	**1313162.9**	**2137452.9**

NTFP MARKETING INVENTORY DATA OF J.N.PRASAD RANGE, GHUMUSUR NORTH DIVISION												
Total No of Forest Depandant village in the range												**80**
Total No of Forest Depandant House hold in the range												**10723**
Total No of Forest Depandant Sample Village in the range												**29**
Total No of Forest Depandant Sample House hold in the range												**3152**
Population in Sample Village in 2011 sensus												**7059**
category	**NTFP Specis Utilized By forest fringed Village**	**Part / Item of NTFP spices Utilized by the forest fringed Villages**	**No of NTFP collecting House hold in the Sample Village**	**Total Quantity of NTFP collected in Sample Village (In Qntl)**	**Total Quantity NTFP used for self consumption in the Sample Villages(in Qntl)**	**Total Quantity of NTFP sold at Primery market**	**Total Quantity of NTFP sold at Secondary market**	**Total Quantity of NTFP sold (In Qntl)**	**Unit Price (Per Qntl)**	**Value of Self Consumed NTFP (in Rs)**	**Value Sold NTFP (In R.s)**	**Total Value of NTFP (In Rs.)**
Tree	Sal	Leaf	600	365	200	60	45.5	165	2060	0	339900	339900
	Sal	Seed	700	155	50	38	67	105	1052	52600	110460	163060
	Bhallia	Seed	789	589	358	35.5	195.5	231	5012	1794296	1157772	2952068
	Tentuli	Fruit	262	158	78	48	32	80	480	37440	38400	75840
	Jamun	Fruit	149	48	32	12.5	3.5	16	400	12800	6400	19200
	Sialli	Leaf	800	654	159	142	353	495	2185	347415	1081575	1428990
	Mango	Pulp	315	158	120	6	32	38	1000	120000	38000	158000
Total			**3615**	**2127**	**997**	**342**	**728.5**	**1130**	**12189**	**2364551**	**2772507**	**5137058**

NTFP MARKETING INVENTORY DATA OF GALLERY RANGE, GHUMUSUR NORTH DIVISION											
No. of Household	**Popu-lation on**	**SC%**	**ST%**	**No. of household Sampled**	**Species**	**Product**	**Total Consumption**	**Total Sold**	**Price per Unit**	**Sold to Market-2**	**Remarks**
160 Nos.	500	32	8	2 Nos.	1.Siali	1.Siali	200 Bundles	4000/-	20/-	Yes	G/1
		(Others 120)			Khali	Khali					
108 Nos.	500	25	6	2 Nos.	1.Siali	1.Siali	150	2700/-	18/-	Yes	G/2
		(Others 2)			Khali	Khali	Bundles				
20 Nos.	55 Nos.	-	100%	2 Nos.	Sal & .Siali	Sal & .Siali	300 Bundles	6000/-	20/-	Yes	G/4
					Khali	Khali					
8 Nos.	30 Nos.	-	100%	2 Nos.	Sal & .Siali	Sal & .Siali	150 Bundles	3000/-	20/-	Yes	G/5
					Khali	Khali					
13 Nos.	45 Nos	-	100%	2 Nos.	Sal & .Siali	Sal & .Siali	100 Bundles	2000/-	20/-	Yes	G/6
					Khali	Khali					
21 Nos.	80 Nos.	-	100%	2 Nos.	Sal & .Siali	Sal & .Siali	100 Bundles	2500/-	25/-	Yes	G/7
					Khali	Khali					
250 Nos.	1500 Nos.	100	30	2 Nos.	Sal & .Siali	Sal & .Siali	100 Bundles	2000/-	20/-	Yes	G/8
		(Others 120)			Khali	Khali					
150 Nos.	600 Nos.	50	5	2 Nos.	Sal & .Siali	Sal & .Siali	100 Bundles	2500/-	25/-	Yes	G/11
		(Others 95)			Khali	Khali					
50 Nos.	300 Nos.	-	100%	2 Nos.	Sal & .Siali	Sal & .Siali	300 Bundles	9600/-	32/-	Yes	G/12
					Khali	Khali					
11 Nos.	50 Nos.	-	100%	2 Nos.	Siali	Siali	300 Bundles	6000/-	20/-	Yes	G/13
					Khali	Khali					
13 nos.	58 Nos.	-	100%	2 Nos.	Siali	Siali	700 Bundles	14000/-	20/-	Yes	G/18

7 Nos.	29 Nos.	-	100%	2 Nos.	Siali	Siali	200 Bundles	4000/-	20/-	Yes	G/20
					Khali	Khali					
61 Nos.	343 Nos.	9 Nos.	28	2 Nos.	Siali	Siali	600 Bundles	21000/-	35/-	Yes	G/28
		OBC	Nos.		Khali	Khali					
		24 Nos.									
17 Nos.	65 Nos.	-	100%	2 Nos.	Siali	Siali	400 Bundles	14000/-	35/-	Yes	G/30
					Khali	Khali					
17 Nos.	65 Nos.	-	100%	2 Nos.	Siali	Siali	400 Bundles	14000/-	35/-	Yes	G/34
					Khali	Khali					
		-	100%	2 Nos.						Yes	G/36
4 Nos.	15 Nos.	-	100%	2 Nos.	Sal & Siali	Sal & Siali	450	11250/-	25/-	Yes	G/43
					Khali	Khali	Bundles				
8 Nos.	30 Nos.	-	100%	3 Nos.	Sal & Siali	Sal & Siali	400	10000/-	25/-	Yes	G/45
					Khali	Khali	Bundles				
17 Nos.	71 Nos.	100%	-	2 Nos.	Sal & Siali	Sal & Siali	350	8750/-	25/-	Yes	G/46
					Khali	Khali	Bundles				
19 Nos.	80 Nos.	-	100%	2	Sal & Siali	Sal & Siali	500	12500/-	25/-	Yes	G/50
				Nos.	Khali	Khali	Bundles				
15 Nos.	48 Nos.	OBC40%	60%	2	Sal & Siali	Sal & Siali	350	10500/-	30/-	Yes	G/51
				Nos.	Khali	Khali	Bundles				
150 Nos.	480 Nos.	150	20	3	Sal & Siali	Sal & Siali	800	28000/-	35/-	Yes	G/52
		OBC	Nos.	Nos.	Khali	Khali	Bundles				
		310			Bamboo	Bamboo					
					Basket	Basket					
10 Nos.	32 Nos.	-	100%	2	Sal & Siali	Sal & Siali	350	10500/-	30/-	Yes	G/57
				Nos.	Khali	Khali	Bundles				
12 Nos.	45 Nos.	OBC10	2 Nos.	2	Sal & Siali	Sal & Siali	450	13500/-	30/-	Yes	G/58
		Nos.		Nos.	Khali	Khali	Bundles				

28 Nos.	125 Nos.	3 Nos.	25 Nos.	2	Sal & Siali	Sal & Siali	500	15000/-	30/-	Yes	G/59
				Nos.	Khali	Khali	Bundles				
31 Nos.	75 Nos.	-	100%	2	Sal & Siali	Sal & Siali	430	12900/-	30/-	Yes	G/60
				Nos.	Khali	Khali	Bundles				
10 Nos.	35 Nos.	-	100%	2	Sal & Siali	Sal & Siali	450	13500/-	30/-	Yes	G/61
				Nos.	Khali	Khali	Bundles				
7 Nos.	28 Nos.	-	100%	2	Sal & Siali	Sal & Siali	250	7500/-	30/-	Yes	G/62
				Nos.	Khali	Khali	Bundles				
20 Nos.	45 Nos.	-	100%	2	Sal & Siali	Sal & Siali	300	9000/-	30/-	Yes	G/63
				Nos.	Khali	Khali	Bundles				
31 Nos.	130 Nos.	OBC95	35	2	Sal & Siali	Sal & Siali	550	16500/-	30/-	Yes	G/64
				Nos.	Khali	Khali	Bundles				
85 Nos.	2173	85	-	2	Sal & Siali	Sal & Siali	1000	35000/-	35/-	Yes	G/68
	Nos.	(Others 426)		Nos.	Khali	Khali	Bundles				
51 Nos.	197 Nos.	21	-	2	Sal & Siali	Sal & Siali	550	16500/-	30/-	Yes	G/70
		(Others 30)		Nos.	Khali	Khali	Bundles				
					Bamboo	Bamboo					
					Basket	Basket					
67 Nos.	280	7	41	2	Sal & Siali	Sal & Siali	650	22750/-	35/-	Yes	G/78
	Nos.	OBC		Nos.	Khali	Khali	Bundles				
		19									
130 Nos.	598 Nos	OBC	24	2	Sal & Siali	Sal & Siali	750	26250/-	35/-	Yes	G/80
		106		Nos.	Khali	Khali	Bundles				
86 Nos.	377 Nos.	38	-	2	Sal & Siali	Sal & Siali	480	14400/-	30/-	Yes	G/81
		(Others		Nos.	Khali	Khali	Bundles				

		48)									
46 Nos.	231 Nos.	100%	-	2	Sal & Siali	Sal & Siali	380	11400/-	30/-	Yes	G/82
				Nos.	Khali	Khali	Bundles				
81 Nos.	452 Nos.	(Others 51)	30	2	Sal & Siali	Sal & Siali	250	7500/-	30/-	Yes	G/83
				Nos.	Khali	Khali	Bundles				
22 Nos.	103 Nos.	-	100%	2	Sal & Siali	Sal & Siali	650	19500/-	30/-	Yes	G/85
				Nos.	Khali	Khali	Bundles				
15 Nos.	75 Nos.	-	100%	2	Sal & Siali	Sal & Siali	200	6000/-	30/-	Yes	G/86
				Nos.	Khali	Khali	Bundles				
22 Nos.	95 Nos.	1	2	2	Sal & Siali	Sal & Siali	400	12000/-	30/-	Yes	G/89
		(Others 18)		Nos.	Khali	Khali	Bundles				
12 Nos.	64 Nos.	(Others 4)	8	2	Sal & Siali	Sal & Siali	200	5000/-	25/-	Yes	G/96
				Nos.	Khali	Khali	Bundles				
25 Nos.	110	-	100%	2	Sal & Siali	Sal & Siali	400	12000/-	30/-	Yes	G/98
				Nos.	Khali	Khali	Bundles				
160 Nos.	640 Nos.	80	-	2	Sal & Siali	Sal & Siali	800	24000/-	30/-	Yes	G/99
		(Others 80)		Nos.	Khali	Khali	Bundles				
150 Nos.	750 Nos.	45	2	2	Sal & Siali	Sal & Siali	320	11200/-	35/-	Yes	G/100
		(Others 103)		Nos.	Khali	Khali	Bundles				

NTFP MARKETING INVENTORY DATA OF CENTRAL RANGE												
No. Of Household	Population On 2001	SC %	ST %	No. Of Household Sampled	Species	Product	Total Consumption	Total Sold	Price Per Unit	Sold To Market-1	Sold To Market-2	Remarks
32	96	31.25	Nil	32	Sal Leaf	Plate	600 Kgs	16000 Units /Month	0.625 Rs	16000 Units /Month	Nil	The villagers sell the finished product at Bhanjangar
15	40	Nil	100	15	Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
31	124	16.129	Nil	31	Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
75	280	34.666	5.333	75	Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
21	65	Nil	Nil	21	Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
84	296	77.38	Nil	84	Sal Leaf	Plate	1323 Kgs	35280 Units /Month	0.6875 Rs	35280 Units /Month	Nil	The villagers sell the finished product at Bhanjangar
21	81	Nil	100	21	Sal Leaf	Plate	600 Kgs	16000 Units /Month	0.6875 Rs	16000 Units /Month	Nil	The villagers sell the finished product at Bhanjangar
101	423	14.81	15.56	101	Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
51	155	3.92	Nil	51	Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
21	65	14.28	Nil	21	Sal Leaf	Plate	420 Kgs	11200 Units /Month	0.8125 Rs	11200 Units /Month	Nil	The villagers sell the finished product at Bhanjangar
21	76	Nil	100	21	Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP

96	371	84.37	Nil	96	Sal Leaf	Plate	2400 Kgs	48000 Units /Month	0.75 Rs	48000 Units /Month	Nil	The villagers sell the finished product at Bhanjangar
201	794	13.43	Nil	201	Amla	Sal Leaf Plate	5500 kgs	115,200 Units /Month	0.75 Rs	115,200 Units /Month		The villagers sell the finished product at Bhanjangar
71	281	23.94	2.81	71	Bell, Siali Leaf, Sal Leaf	Sal Leaf Plate	2000 kgs	48,400 Units /Month	0.68 Rs	48,400 Units /Month		The villagers sell the finished product at Bhanjangar
161	644	13.66	Nil	161	Sal Leaf	Plate	3300 kgs	70,000 Units /Month	0.75 Rs	70,000 Units /Month		The villagers sell the finished product
120	358	30.83	Nil	120	Bell, Siali Leaf, Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
31	93	Nil	Nil	31	Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
22	66	Nil	Nil	22	Amla,Bell , Sal	Plate	440 Kgs	10000 Units /Month	0.75 Rs	10000 Units /Month	Nil	The villagers sell the finished product at Surada
23	68	Nil	100	23	Amla,Bell ,Siali	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
88	264	21.59	Nil	88	Siali	Plate	600 Kgs	14,700 Units /Month	0.72 Rs	14,700 Units /Month	Nil	The villagers sell the finished product at Surada
51	191	88.23	Nil	51	Bell,Amla	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
60	180	10	Nil	60	Bell,	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of

												NTFP
380	1525	16.05	Nil	380	Mushroom	Mushroom	3600 kgs/ 2 months	3600 kgs/ 2 months	70 Rs / Kg	3600 kgs	Nil	The villagers sell the finished product at Surada
380	1525				Amla	Amla	600 kgs/ 1 month	600 kgs/ 1 month	16 Rs / Kg	600 kgs	Nil	The villagers sell the finished product at Surada
8	31	Nil	100	8	Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
8	24	Nil	100	8	Siali	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
36	141	Nil	58.33	36	Siali	Plate	800 Kgs	19,000 Units /Month	0.72 Rs	19,000 Units /Month	Nil	The villagers sell the finished product at Surada
21	57	Nil	Nil	21	Siali	Plate	500 Kgs	11,200 Units /Month	0.75 Rs	11,200 Units /Month	Nil	The villagers sell the finished product at Surada
7	28	Nil	100	7	Bela	Bela	21,000 kgs/ 2 months	21,000 kgs	25 Rs / Kg	21,000 kgs	Nil	The villagers sell the finished product at Surada
					Amla	Amla	2,100 kgs/ 1 month	2,100 kgs	15 Rs / Kg	2,100 kgs	Nil	The villagers sell the finished product at Surada
70	280	11.42	Nil	70	Siali	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
235	815	30.21	Nil	235	Bela	Bela	1,800 kgs/ 1 month	1,800 kgs	18 Rs / Kg	1,800 kgs	Nil	No Usage of NTFP
36	144	Nil	100	48	Sal Leaf	Plate	900 Kgs	24,000 Units /Month	0.72 Rs	24,000 Units /Month	Nil	The villagers sell the finished product at Surada

30	121	Nil	13.33	30	Mahula		15,000 kgs/ 2 months	15,000 kgs	25 Rs / Kg	15,000 kgs	Nil	The villagers sell the finished product at Surada
15	61	Nil	Nil	9	Siali Leaf	Plate	80 Kgs	2,000 Units /Month	0.72 Rs	2,000 Units /Month	Nil	The villagers sell the finished product at Surada
15	61				Mahula	Mahula	13,500 kgs/ 2 months	13,500 kgs	25 Rs / Kg	13,500 kgs	Nil	The villagers sell the finished product at Surada
18	72	Nil	100	18	Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
84	290	9.52	2.38	84	Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
38	152	Nil	100	38	Bell,	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
51	171	5.88	Nil	51	Bell,	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
16	61	Nil	Nil	16	Bell,Amla	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
4	15	Nil	100	4	Bell,	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
80	405	10	18.75	80	Siali Leaf	Plate	910 Kgs	22,400 Units /Month	0.72 Rs	22,400 Units /Month		The villagers sell the finished product at Surada
23	75	Nil	Nil	23	Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
201	611	5.97	Nil	201	Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	No Usage of NTFP
12	48	Nil	Nil	12	Sal Leaf	Plate	920 Kgs	24,000 Units /Month	0.68 Rs	24,000 Units /Month	Nil	The villagers sell the finished product at Surada
12	48				Mahula	Mahula	18,000 kgs/ 2	18,000	25 Rs	18,000	Nil	

							months	kgs		kgs		
14	57	0	Nil	14	Mahula	Mahula	9,600 kgs/ 2 months	9,600 kgs	25 Rs	9,600 kgs	Nil	The villagers sell the finished product at Surada
45	178	8.88	Nil	45	Siali Leaf	Plate	1,000 kgs	26,400 Units /Month	0.68 Rs	26,400 Units /Month	Nil	The villagers sell the finished product at Surada
60	140	41.666667	Nil	60	Sal Leaf	Nil	Nil	Nil	Nil	Nil	Nil	Nil

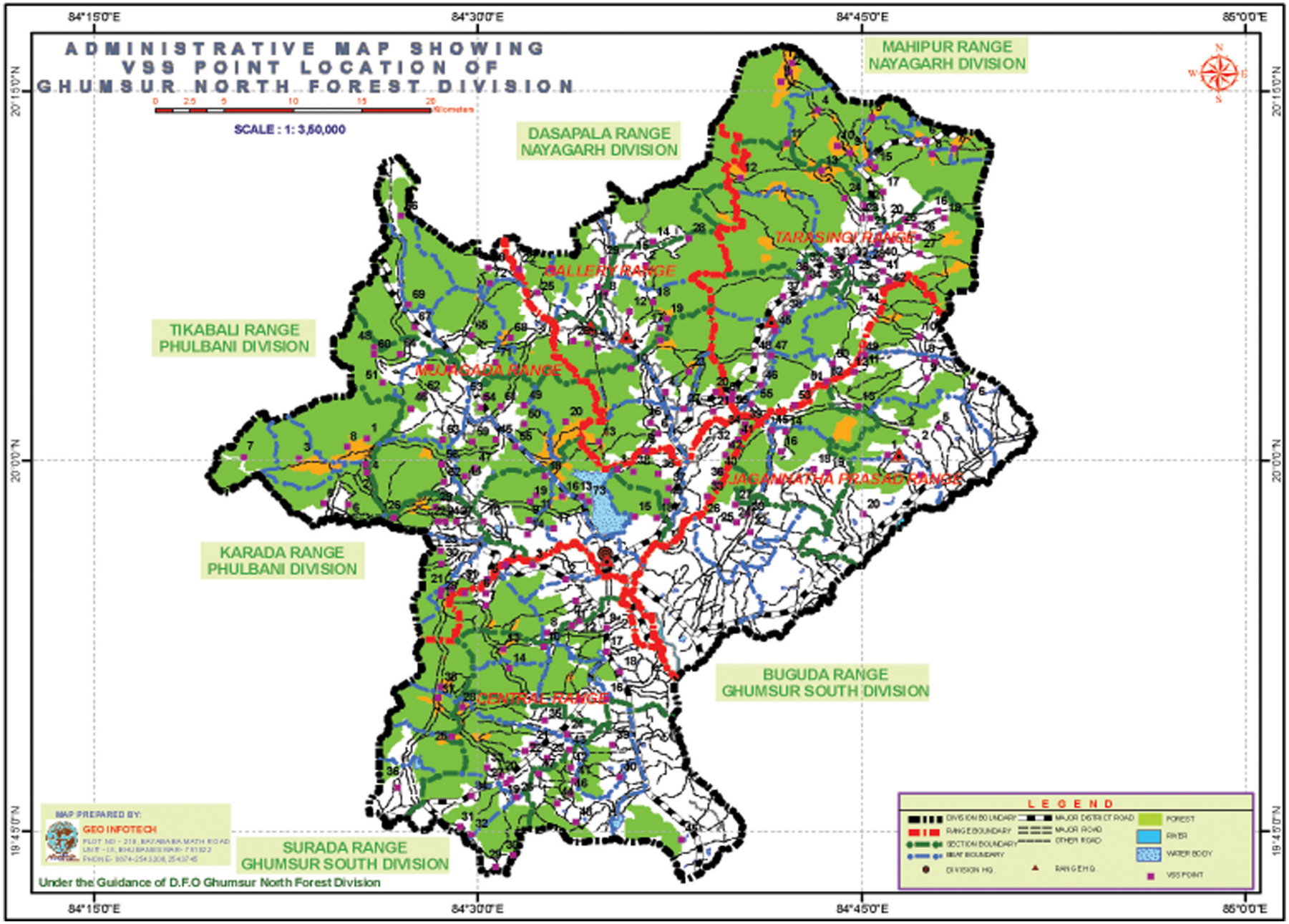
8.20 Value Addition

8.20.1 The sole aim of the value addition to the collected NTFP is to enhance income of the primary collectors. They should be properly guided to collect the NTFP items in the non-destructive way, so that sustainability of the NTFP species is maintained. Necessary training for skill up-gradation of the VSS members & value addition of the locally available medicinal plant products will be provided through support from SMPB and other sources.

8.21 Miscellaneous Regulation

8.21.1 Many NTFP items are left untapped because they are away from the traditional marketing of these produces are the main constraint on the part of the primary collectors. Most often the middle man exploits the primary collectors. Therefore it is need to look into the marketing aspects of various NTFP items on the priority basis and this can be addressed by way of training on collection and utilization of NTFPs.

8.22 FINANCIAL FORECAST- The same has been furnished in **Chapter-X of part-II.**


ADMINISTRATIVE MAP SHOWING
VSS POINT LOCATION OF
GHUMSUR NORTH FOREST DIVISION
SCALE : 1: 3,50,000
0 2.5 5 10 15 20 Kilometers
84°15'0"E
84°30'0"E
84°45'0"E
85°0'0"E
20°15'0"N
20°0'0"N
19°45'0"N
MAHIPUR RANGE
NAYAGARH DIVISION
DASAPALA RANGE
NAYAGARH DIVISION
TARASINGI RANGE
BALLERY RANGE
TIKABALI RANGE
PHULBANI DIVISION
MUNIGADA RANGE
JAGANNATHA PRASAD RANGE
KARADA RANGE
PHULBANI DIVISION
BUGUDA RANGE
GHUMSUR SOUTH DIVISION
CENTRAL RANGE
SURADA RANGE
GHUMSUR SOUTH DIVISION
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Under the Guidance of D.F.O Ghumsur North Forest Division
LEGEND
DIVISION BOUNDARY
RANGE BOUNDARY
SECTION BOUNDARY
BEAT BOUNDARY
DIVISION HQ.
RANGE HQ.
MAJOR DISTRICT ROAD
MAJOR ROAD
OTHER ROAD
FOREST
RIVER
WATER BODY
VSS POINT

CHAPTER - IX

JOINT FOREST MANAGEMENT
OVER-LAPPING WORKING CIRCLE

9.1 General Constitutions

9.1.1 Forest being a natural resource is considered as a common property resource for human kind. While the invaluable and intangible product of this precious asset is indispensable for the very existence of life on this planet, the valuable and tangible products are the essential commodities of our living. Age-old dependence of the local people on the forests is irrevocable. It necessitates a people revolving management.

9.1.2 Attempts were made during 70's of the last century through launching of Social Forestry Project to meet the demand of local people through raising of plantation mostly in community wastelands with their active participation. This is the beginning of involvement of local people, but it did not yield the desired result to reduce the pressure on natural forests, which was kept out of their hold. The situation deteriorated day by day leading to the degradation of forests, which is directly proportional to the increase in demand of forest produce by the ever-rising population and their alienation from the management process. In such scenario the protection of forests is extremely difficult on the part of the forest officials alone. The involvement of local people is barely felt for this purpose. Participation of the local people cannot be ensured without considering their bonafide need. In order to make the matter broad based particularly people's friendly, Joint Forest Management is conceptualised for protection, conservation and management of the natural forests by the forest officials and local people combine in consonance with the compelling need of the circumstances. Such change in the style of management of forests is really the call of the time.

9.1.3 Joint Forest Management is presently an essential approach for management of forest resources in the Division. Joint Forest Management committee i.e. VSS areas are growing as a dominant institution in the area. Rural people depend on forests wholly or partially for their livelihoods, majority of them are living in the forest fringes. Joint Forest Management is a mechanism to promote local peoples participation for protecting forests and sustainable use of the forests resources. The National Forest Policy 1988 emphasizes to actively involve people in general, women and weaker sections in particular in the process of forest management.

9.1.4 Orissa is a pioneer state in involving village community in protection and management of the forests. The steps taken in that regard are as follows-

1. First step towards involving people in protection of forests came about vide Govt. Resolution No*. 10F(Pron)-47/88/17240/FFAH dt. 1.8.1988.* In this resolution the villagers were assigned a specific role for protecting the Reserved Forest areas adjoining their villages and granted in return certain concessions for meeting their bonafide requirement of firewood and small timber.

2. Second, the resolution was amended vide Resolution No*. 10F(Pron) 47/88/23638/FFAH dt 13.10.1988,* the state government had passed a resolution and had formally introducing a scheme for protection of peripheral Reserve forests in which Village level Forest protection committees (VLFPCs) were formed with a prescribed constitution in consultation with the local villagers and the non-official members of the village level FPC would be selected by convening a meeting of the concerned villages.

3. Third, the scope of the resolution was extended to protected forests vide Resolution No. *10F(Pron)4/90/29825/FFAH dated 11.12.1990* the scope was enlarged and protected forests were also included for assignment to adjoining villages. As per the resolution, the job of protection was assigned to the people and in lieu they were entitled to get small timber and firewood.

4. Subsequently, the Govt of Orissa, Forest and Environment Department vide their resolution No. *16700 dated 03/07/1993* passed another resolution to make the forest-people interface more effective and transparent. This resolution dealt in a fairly exhaustive manner the involvement of all local communities in protecting the adjoining forests, formation of Vana Samrakshyana Samiti (V.S.S), duties and responsibilities of the V.S.S. and their Executive Committees and the role of Forest Department and Gram Panchayats, preparation of Joint Forest Management plan, usufructory benefits for the V.S.S. and provisions of MOU and *related issues*.

5. Subsequently, the Govt of Orissa, Forest and Environment Department vide their resolution No. *22180 dt. 30.9.1996* tried to confer specific rights in favour of the village committees in respect of various products, wherein the Forest Department and the villagers of adjacent villages are equal partners in the task of regeneration and restoration.

6. Govt. of Orissa, Forest and Environment Department vide their resolution No. *1F-Affn.17/2008-17454/F&E dt. 22.10.2008* enlarged the scope and included the National parks, Wildlife

sanctuaries and the mangrove wetlands to be protected through the participation of the adjoining villagers. However the core areas of these PA networks were kept aloof from such responsibility of protection being extended to the villagers and that they would continue to be solely managed and protected by the forest department. A new institution named the Eco-development committees (EDCs) comprising of the villagers living in the fringe areas of these protected areas were formed to protect the biodiversity of the area and in turn were allowed to enjoy the usufruct benefits out of it.

7. Subsequently, the Govt of Orissa, Forest and Environment Department passed another resolution vide resolution No. *16524-1F-Affn.17/2011/F&E dt. 09.09.2011* superseded the earlier resolution of 2008. it is given in **Annexure-XXXXI**. This resolution aimed at giving more autonomy to the villagers in protecting and managing the forests given to them and enforced the people to make their own decisions.

8. Next Govt of Orissa, Forest and Environment Department passed another resolution No. 9182/F&E dated 01.06.2015 which amended the provisions laid down in clause (i) and (iii) of para 4 and clause (vi) of the earlier resolution dated 09.09.2011. The resolution is given as **ANNEXURE-XXXXII**.The essence of the amendment is that instead of an elected member of the village, either the forest guard or the forester would act as the ex-officio member secretary and it would be sole responsibility of the member secretary to maintain the financial discipline relating to the maintenance of the monthly cash accounts and financial transaction of the VSS and related documents. This has also reduced the minimum number of members constituting the EC from 16 to 15.

9.2 General Character of Vegetation

9.2.1 Different types of forests from mixed deciduous to northern moist and dry deciduous forest which are degraded have been included. The detail description of vegetation has been dealt in **Chapter-II of Part-I** of this Working Plan.

9.3 Special Objects of Management

9.3.1 The special objectives of management to undertake here is as follows:

1. To promote JFM and active participation of the people in the management of local forests.
2. All the forest area assigned to VSS including those covered under FDA to be included and micro-plans to be prepared as per necessity.
3. To involve local people in regeneration and protection of the forests by formation of V.S.S. in each village adjoining the degraded Reserved and Proposed Reserved Forests.

4. To improve the crop condition of these areas which will in turn fulfill the demands of the local people in terms of small timber, firewood, N.T.F.Ps. etc.,
5. To make people and Forest Department equal partners in management of the forests.
6. To restock the barren and blank areas through artificial regeneration.
7. To increase the productivity of the soil through soil and moisture conservation activities.
8. To encourage people to rationally utilize their own community resources for the betterment of the community.
9. To involve people in N.T.F.P. collection and trade.
10. To create multiple income generating activities in the villages protecting the forests.
11. To achieve all round socio economic development of the village by involving all other line departments like Horticulture, Veterinary, Health, Mass Education & Agriculture etc.
12. To study the scope of enhancing the network of VSS protection areas.

9.4 Silvicultural System

9.4.1 No specific system in general has been prescribed for this Overlapping Working Circle. The prescription for the main working circle to which the assigned area is primarily allotted is applicable for the purpose. As per the provisions of Joint Forest Management Resolution 1993 the management is regulated through a Micro plan which is specific to the area assigned. Such Micro plan is also in conformity with the prescriptions of main working circle. As narrated above, the area of this working circle overlaps mostly some portion of Rehabilitation Working Circle, only tending and after care treatment has been prescribed without any silvicultural system. However, The Silvicultural system to be followed for this overlapping Working Circle is suggested to be based on the prescription to be made in the main Working Circle to which the block is primarily allotted. Any treatment to the assigned areas would be guided by approved Micro Plan prepared in consonance with the prescription of the main Working Circle.

9.5 Area Allotment

9.5.1 Earlier in pursuance to the resolutions passed in 1996 and 2008, **223** Vana Samrakhshana Samities (VSS) had been formed in Ghumsur North Division covering an area of **31457.79** hectares. But after the enforcement of resolution of 2011, necessary structural changes to the earlier formed VSS have now been made in all the VSS and which are now known as Vana Surakshya Samities. Now after the amendment, the executive committees of the Vana Surakshya Samities have to be reconstituted as per the recent resolution passed on 01.06.2015. The entire VSS area is within the reserve forest only. **Table 9-2** summarizes the Range wise list of villages and their corresponding VSS along with the name of the Reserve Forest block and compartment number. A detailed list of these VSS Range wise also elucidating on its year of formation, VSS area in hectares, the scheme under which they have formed and the funds that have been paid is given in **ANNEXURE-XXXXIII.**

Table 9-2 Range wise Complete list of VSS in Ghumsur North Forest Division, Bhanjanagar				
Sl. No.	**Name of the Range**	**Name of the village**	**Name of the V.S.S**	**Name of the Forest Block assigned**
1	2	3	4	5
1	Central	Balarampur	Balarampur	Vinjigiri RF C/3
2	Central	Baradhangidi	Baradhangidi	Vinjigiri RF C/2
3	Central	Bibhutia	Bibhutia	Ragada RF C/5
4	Central	Sandhipalli	Birahanumantapur (Sandhipalli)	Dumudumi West
5	Central	Buduli	Buduli	Kaliamba RF C/6
6	Central	Dandipadar	Dandipadar	Tiliki RF C/6
7	Central	Dimiripalli	Dimiripalli	Kaliamba RF C/4
8	Central	Dumakumpa	Dumakumpa	Tiliki RF C/4
9	Central	Dumudumi	Dumudumi	Dumudumi East
10	Central	Gochha & Tikidi	Gochha & Tikidi	Ragada RF C/7
11	Central	Godipadar	Godipadar	Tiliki RF C/3
12	Central	Godipalli	Godipalli	Ragada RF C/4
13	Central	Gudiamba	Gudiamba	Tiliki RF C/5 (P)
14	Central	Gurandia	Gurandia	Ragada RF C/5
15	Central	Haripur	Haripur	Ragada RF C/10
16	Central	Kadalijhola	Kadalijhola	Ragada RF C/5
17	Central	Kaliaguda	Kaliaguda	Ragada RF C/3
18	Central	Kaliamba	Kaliamba	Kaliamba RF C/2
19	Central	Kaliapalli	Kaliapalli	Tiliki RF C/5
20	Central	Kanteipalli	Kanteipalli	Kaliamba RF C/5
21	Central	Kesara	Kesara	Vinjigiri RF C/2
22	Central	Khariguda	Khariguda	Ragada RF C/3
23	Central	Kulangi	Kulangi	Ragada RF C/4
24	Central	Lathipada	Lathipada	Ragada RF C/4
25	Central	Makarapalli	Makarapalli	Ragada RF C/4
26	Central	Malati	Malati	Malati RF C/1
27	Central	Maraipatta	Maraipatta	Kaliamba RF C/4 & 5
28	Central	Mathasahi	Mathasahi	Dumudumi West
29	Central	Neempalli	Neempalli	Ragada RF C/4
30	Central	Palakasandha	Palakasandha	Dumudumi East
31	Central	Parsulunda	Parsulunda	Dumudumi East
32	Central	Purunapani	Purunapani	Kaliamba RF C/3
33	Central	Ragada	Ragada	Ragada RF C/1 & 2

34	Central	Rampalli	Rampalli	Tiliki RF C/3
35	Central	Rangabali	Rangabali	Vinjigiri RF C/2
36	Central	Saluapalli	Saluapalli	Kaliamba RF C/6
37	Central	Sardula	Sardula	Tiliki RF C/6
38	Central	Somanathpalli	Somanathpalli	Kaliamba RF C/5
39	Central	Sunapalibanjar	Sunapalibanjar	Dumudumi East
40	Central	Tinikhandia	Tinikhandia	Ragada RF C/3
41	Central	Tokaganda	Tokaganda	Tiliki RF C/6 (A)
42	Central	V.Kotibadi	V.Kotibadi	Vinjigiri RF C/1
43	Central	Vinjigiri	Vinjigiri	Vinjigiri RF C/4
44	Central	Gobarabandha	Gobarabandha	Kaliamba RF C/2
45	Gallery	Baliapata	Baliapata	Gallery RF C/23
46	Gallery	Banjarasahi	Banjarasahi	Chandragiri RF C/3
47	Gallery	Barhakuda	Barhakuda	Gallery RF C/16
48	Gallery	Beruanbadi	Beruanbadi	Chandragiri RF C/11
49	Gallery	Bilipada	Bilipada	Gallery RF C/23
50	Gallery	Bori Bandha	Bori Bandha	Gallery RF C/23
51	Gallery	Budhagochha	Budhagochha	Chandragiri RF C/11
52	Gallery	Chadheiyapalli	Chadhiapalli	Chadhiapalli RF C/1
53	Gallery	Dhimirijholi	Dhimirijholi	Dhimirijholi RF C/2
54	Gallery	Dhobataila	Dhobataila	Gallery RF C/20
55	Gallery	Harigada	Harigada	Dhimirijholi RF C/2
56	Gallery	Kalijhari	Kalijhari	Chadhiapalli RF C/1
57	Gallery	Khairaputi	Khairaputi	Gallery RF C/23
58	Gallery	Khamanasahi	Khamanasahi	Ambajhara RF C/4
59	Gallery	Kirajhola	Kirajhola	Chandragiri RF C/3
60	Gallery	Kotipada	Kotipada	Gallery RF C/22
61	Gallery	Kumbhipalli	Kumbhipalli	Chandragiri RF C/11
62	Gallery	Kurhadia	Kurhadia	Chandragiri RF C/3
63	Gallery	Kutunikumpa	Kutunikumpa	Chandragiri RF C/12
64	Gallery	Nua Lembhei	Maa Chudakhai (Nua Lembhei)	Chandragiri RF C/10
65	Gallery	Lembhai	Maa Karadabani (Lembhei)	Chandragiri RF C/10
66	Gallery	Manisahi	Manisahi	Dhimirijholi RF C/1
67	Gallery	Puduringi	Puduringi	Chandragiri RF C/1
68	Gallery	Rangameru	Rangameru	Gallery RF C/18
69	Gallery	Ranikirari	Ranikirari	Dhimirijholi RF C/1
70	Gallery	Ranjasahi	Ranjasahi	Gallery RF C/16
71	Gallery	Samarada	Samarada	Chandragiri RF C/11
72	Gallery	Tuinpadara	Tuinpadara	Ambajhara RF C/5
73	Gallery	Nuapalli	Nuapalli	Dhimirijholi RF C/2

74	Jagannathprasad	Akulakumpa	Akulakumpa	J.N.Prasad RF C/5
75	Jagannathprasad	Baniapalli	Baniapalli	J.N.Prasad RF C/10
76	Jagannathprasad	Bankatara	Bankatara	J.N.Prasad RF C/9
77	Jagannathprasad	Bhusubhusa	Bhusubhusa	J.N.Prasad RF C/8
78	Jagannathprasad	Biluamara	Biluamara	J.N.Prasad RF C/1
79	Jagannathprasad	Dhimiripalli	Dhimiripalli	J.N.Prasad RF C/5
80	Jagannathprasad	Dungapalli	Dungapalli	J.N.Prasad RF C/6
81	Jagannathprasad	Ekagharia	Ekagharia	Jogipahada Protected forest
82	Jagannathprasad	Gothalunda	Gothalunda	J.N.Prasad RF C/10
83	Jagannathprasad	Hajapalli	Hajapalli	J.N.Prasad RF C/9 & 10
84	Jagannathprasad	Jaripankal	Jaripankal	J.N.Prasad RF C/3
85	Jagannathprasad	Kandha Banta	Kandha Banta	J.N.Prasad RF C/2
86	Jagannathprasad	Kandhatirigochha	Kandhatirigochha	J.N.Prasad RF C/1
87	Jagannathprasad	Kapilapalli	Kapilapalli	J.N.Prasad RF C/9
88	Jagannathprasad	Kepiti	Kepiti	J.N.Prasad RF C/9
89	Jagannathprasad	Kriyadhar	Kriyadhar	J.N.Prasad RF C/3
90	Jagannathprasad	Kudutei	Kudutei	J.N.Prasad RF C/9
91	Jagannathprasad	Lunagundi	Lunagundi	J.N.Prasad RF C/5
92	Jagannathprasad	Lundurupadar	Lundurupadar	Paichalia RF C/5
93	Jagannathprasad	Narayanapalli	Narayanapalli	J.N.Prasad RF C/8
94	Jagannathprasad	Patrapalli	Patrapalli	J.N.Prasad RF C/10
95	Jagannathprasad	Samarabandha	Samarabandha	J.N.Prasad RF C/8
96	Jagannathprasad	Talapanka	Talapanka	J.N.Prasad RF C/6
97	Jagannathprasad	Tirikupa	Tirikupa	J.N.Prasad RF C/7
98	Jagannathprasad	Umasahi	Umasahi	J.N.Prasad RF C/9
99	Jagannathprasad	Banta	Banta	J.N.Prasad RF C/2
100	Jagannathprasad	Banta Nua Sahi	Banta Nua Sahi	J.N.Prasad RF C/2
101	Mujagada	Akhupadar	Akhupadar	Tiliki RF C/1
102	Mujagada	Badapathara	Badapathara	Gallery RF C/5
103	Mujagada	Bahakapalli	Bahakapalli	J.N.Prasad RF C/11
104	Mujagada	Balinkia	Balinkia	Rambha RF C/3
105	Mujagada	Banjaragaon	Maa Ghoderekha (Banjaragaon)	Darapangia RF C/10
106	Mujagada	Bedigoba	Bedigoba	Rambha RF C/5
107	Mujagada	Bhaluguda	Bhaluguda	Rambha RF C/2
108	Mujagada	Binagaon	Binagaon	Darapangia RF C/9
109	Mujagada	Binjigiri	Binjigiri	Gallery RF C/6
110	Mujagada	Buduli	Bira Hanumantia (Buduli)	Gallery RF C/5 & 6
111	Mujagada	Chadhiapalli	Chadhiapalli	Gallery RF C/4

112	Mujagada	Birikote	Dadhibamana (Birikote)	Darapangia RF C/6
113	Mujagada	Daha	Daha	Baiballi RF C/10
114	Mujagada	Danguapalli	Danguapalli	Gallery RF C/2
115	Mujagada	Dirbisingh	Mahabir (Dirbisingh)	Darapangia RF C/10
116	Mujagada	Durgaprasad	Durgaprasad	Rambha RF C/7
117	Mujagada	Gajapadar	Gajapadar	J.N.Prasad RF C/11
118	Mujagada	Gambharigochha	Gambharigochha	Revenue Forest Gramy Jungle
119	Mujagada	Gandisula	Gandisula	Gallery RF C/7
120	Mujagada	Gochhapalli	Gochhapalli (Daha)	Tilliki RF C/1
121	Mujagada	Gutuliguda	Gutuliguda	Darapangia RF C/3
122	Mujagada	Hati Sahi	Hati Sahi	Gallery RF C/1
123	Mujagada	Jaya Mangala	Jaya Mangala	Gallery RF C/10
124	Mujagada	Jogimari	Jogimari	Gallery RF C/5
125	Mujagada	Kadalundi	Kadalundi	J.N.Prasad RF C/11
126	Mujagada	Kalipanka	Kalipanka	Gallery RF C/9
127	Mujagada	Kanabindha	Kanabindha	Darapangia RF C/14
128	Mujagada	Khariguda (Badasahi)	Khariguda (Badasahi)	Gallery RF C/11
129	Mujagada	Khariguda (Kandhasahi)	Khariguda (Kandhasahi)	Gallery RF C/11
130	Mujagada	Khurudugochha	Khurudugochha	Rambha RF C/3
131	Mujagada	Kotibaradi	Kotibaradi	Kullada RF C/2 & 3
132	Mujagada	Krushnapalli	Krushnapalli	J.N.Prasad RF C/11
133	Mujagada	Kutunikumpa	Kutunikumpa	Gallery RF C/3
134	Mujagada	Langalakhola	Langalakhola	Darapangia RF C/9
135	Mujagada	Naringipalli	Maa Bapangi (Naringipalli)	Baiballi RF C/6
136	Mujagada	Kullada	Maa Bhuinyani	Kullada RF C/2
137	Mujagada	Gunakia	Maa Budhima (Gunakia)	Baiballi RF C/11
138	Mujagada	Baragoan	Maa Gramadevati (Baragaon)	Baiballi RF C/6
139	Mujagada	Baiballi	Maa Kali (Baiballi)	Baiballi RF C/4
140	Mujagada	Benakunda	Maa Ratneswari (Benakunda)	Kullada RF C/1
141	Mujagada	Dhaumundia	Maa Thakurani (Dhaumundia)	Baiballi RF C/11
142	Mujagada	Mahaguda	Mahaguda	Gallery RF C/2
143	Mujagada	Miniary	Miniary (Chameharapalli)	Gallery RF C/11
144	Mujagada	Nabagochha	Nabagochha	Darapangia RF C/11

145	Mujagada	Nidhiapalli	Nidhiapalli	Gallery RF C/11
146	Mujagada	Nuapalli	Maa Kandhuni (Nuapalli)	Tilliki RF C/2
147	Mujagada	Nuasahi	Nuasahi	Baiballi RF C/12
148	Mujagada	Pankal	Pankal	Kullada RF C/3
149	Mujagada	Pochalundi	Pochalundi	J.N.Prasad RF C/11
150	Mujagada	Raipalli	Raipalli	J.N.Prasad RF C/11
151	Mujagada	Rajakunda	Rajakunda	Gallery RF C/6
152	Mujagada	Ripitipalli	Ripitipalli	Baiballi RF C/10
153	Mujagada	Sadhugaon	Sadhugaon	Gallery RF C/12
154	Mujagada	Sahanapalli	Sahanapalli	Kullada RF C/1
155	Mujagada	Samapalli	Samapalli	Gallery RF C/4
156	Mujagada	Sarapada	Sarapada	Baiballi RF C/9
157	Mujagada	Satagharia	Satagharia	Darapangia RF C/8
158	Mujagada	Sidhapadar	Maa Suradevi (Sidhapadar)	Gallery RF C/6
159	Mujagada	Salapaguda	Maa Suradevi (Salapaguda)	Darapangia RF C/7
160	Mujagada	Sutangi	Sutangi	Gallery RF C/17
161	Mujagada	Tadama	Tadama	Baiballi RF C/2
162	Mujagada	Tajiki	Tajiki	Rambha RF C/1
163	Mujagada	Tangana	Tangana	J.N.Prasad RF C/12
164	Mujagada	Tiliki	Tiliki	Tiliki RF C/2
165	Mujagada	Uldan	Uldan	J.N.Prasad RF C/11
166	Mujagada	Upar Bagdevi Kullad	Upar Bagdevi Kullad	Kullada RF C/2
167	Mujagada	Indagada	Indagada	Baiballi RF C/10
168	Mujagada	Khandikoti	Khandikoti	Darapangia RF C/10
169	Tarasingi	Adibasi colony	Adibasi colony	Ambajhara RF C/12
170	Tarasingi	Badabhumi	Badabhumi	Ghogoda RF C/4
171	Tarasingi	Badagunduribadi	Badagunduribadi	Gunduribadi RF C/1
172	Tarasingi	Baniasahi	Baniasahi	Ambajhara RF C/9
173	Tarasingi	Barapalli	Barapalli	Paichalia RF C/3
174	Tarasingi	Bhogara	Bhogara	Gunduribadi RF C/3
175	Tarasingi	Bibhutiakhala	Bibhutiakhala	Paichalia RF C/3
176	Tarasingi	Budhabari	Budhabari	Paichalia RF C/2
177	Tarasingi	Budurungi	Budurungi	Paichalia RF C/2
178	Tarasingi	Dangabhumi	Dangabhumi	Brahamanasahi RF C/3
179	Tarasingi	Dubapalli	Dubapalli	Brahamanasahi RF C/6
180	Tarasingi	G.Nabagochha	G.Nabagochha	Paichalia RF C/2
181	Tarasingi	Garudapathara	Garudapathara	Chandragiri RF C/8 & 9
182	Tarasingi	Ghogada	Ghogada	Ghogoda RF C/4
183	Tarasingi	Khetamunduli	Gramadevati	Brahamanasahi RF C/2

184	Tarasingi	Halandakhola	Halandakhola	Chandragiri RF C/9
185	Tarasingi	Harijana colony	Harijana colony	Ambajhara RF C/19
186	Tarasingi	Gayaganda	Highschoolsahi	Ambajhara RF C/18
187	Tarasingi	Indira colony	Indira colony	Ambajhara RF C/13
188	Tarasingi	Jadadhara	Jadadhara	Ambajhara RF C/10
189	Tarasingi	K.Nabagochha	K.Nabagochha	Paichalia RF C/2
190	Tarasingi	Kadaligada	Kadaligada	Ambajhara RF C/14
191	Tarasingi	Kalingapadar	Kalingapadar	Ambajhara RF C/12
192	Tarasingi	Kandhagunduribadi	Kandhagunduribadi	Paichalia RF C/2
193	Tarasingi	Kandhasarala	Kandhasarala	Brahamanasahi RF C/3
194	Tarasingi	Kathapatani	Kathapatani	Gunduribadi RF C/2
195	Tarasingi	Khajuripalli	Khajuripalli	Ghogoda RF C/3
196	Tarasingi	Khallisahi	Khallisahi	Ambajhara RF C/12
197	Tarasingi	Khetamundali	Khetamundali	B.Sahi RF C/5(p),2 (p),1(p)
198	Tarasingi	Khurudupalli	Khurudupalli	Ambajhara RF C/10
199	Tarasingi	Kimbharakhani	Kimbharakhani	Paichalia RF C/2
200	Tarasingi	Maa Gramadevati	Maa Gramadevati	Ambajhara RF C/14
201	Tarasingi	Mahadevakhaman	Mahadevakhaman	Ambajhara RF C/16
202	Tarasingi	Mallicksahi	Mallicksahi	Ghogoda RF C/3
203	Tarasingi	Manapur	Manapur	Brahamanasahi RF C/6
204	Tarasingi	Mandapathara	Mandapathara	Paichalia RF C/1
205	Tarasingi	Narayanprasada	Narayanprasad	Ambajhara RF C/10
206	Tarasingi	Nuasahi	Nuasahi	Brahamanasahi RF C/2
207	Tarasingi	Patangi	Patangi	Paichalia RF C/3
208	Tarasingi	Patharaganda	Patharaganda	Ghogoda RF C/3
209	Tarasingi	Rampoo	Rampoo	Paichalia RF C/4
210	Tarasingi	Rudhapadar	Rudhapadar	Ghogoda RF C/13
211	Tarasingi	Salapataila	Salapataila	Chandragiri RF C/5
212	Tarasingi	Sarangapatta	Sarangapatta	Gunduribadi RF C/4
213	Tarasingi	Sisunda	Sisunda	Brahamanasahi RF C/5
214	Tarasingi	Suramani	Suramani	Brahamanasahi RF C/4
215	Tarasingi	Talaganda	Talaganda	Ghogoda RF C/3
216	Tarasingi	Talakhamana	Talakhamana	Ghogoda RF C/6
217	Tarasingi	Tinichhakia	Tinichhakia	Chandragiri RF C/9
218	Tarasingi	Tirigochha	Tirigochha	Brahamanasahi RF C/2
219	Tarasingi	Toladi	Toladi	Paichalia RF C/4
220	Tarasingi	Baradanda	Baradanda	Brahamanasahi RF C/5
221	Tarasingi	Dasa Sahi	Dasa Sahi	Ghogoda RF C/5
222	Tarasingi	Banjarasahi Raigochha	Banjarasahi Raigochha	Chandragiri RF C/3
223	Tarasingi	Naragadu	Naragadu	Ghogoda RF C/3

9.5.2 The Joint Forest Management (Over-lapping) Working Circle includes the working Plan areas that are under protection of Vana Samrakhshana Samities (VSS) constituted as per the Joint Forest Management resolution of the state. It is proposed to create additional 330 VSS with an annual target of 33 VSS with management/protection over **50,000** hectares excluding the previously existing VSS area. These areas suggested to be brought under the VSS should preferably include degraded forest areas, so as to ensure active participation of the local community in regenerating the areas.

9.5.3. The total area allotted to this overlapping Working Circle is **81457.79** hectares. **JFM Working Circle overlaps the area of Rehabilitation Working Circle.** More JFM committees are expected to be formed during the revised Plan period. During the field study it was observed that **14 blocks** out of the total of **22 forest blocks** need more VSS committees for effective participation of the public and the department in putting up a conjoint effort in protecting the natural resources in the wilderness. The important forest blocks included as potential areas are Ghogoda RF, Paichallia RF, Jaganathprasad RF, Brahmanasahi RF, Chandragiri RF, Ambazora RF, Gallery RF, Rambha RF, Baiballi RF, Darpangia RF, Ragada RF, Tiliki RF, Malati RF and Vinjigiri RF. **Table 9-3** below gives the range wise potential JFM area in different blocks of the Division, **Table 9-4** shows the range wise and reserve forest wise abstract of the potential JFM areas and **Table 9-5** shows Range wise list of VSS that is felt necessary to be formed at the moment for some of the areas out of the total additional area of forest that needs to be brought under VSS coverage as per the data obtained from field. Rest of the areas can be similarly covered as prescribed, as and when required during the currency of the plan depending on the need and circumstantial demands. The DFO will attempt to cover these areas under Joint management by formation of VSS during the revised Plan period through consultation with Forest Ranger, Foresters and Forest Guard of concerned ranges.

Table 9-3 Range-wise JFM Potential Area of Ghumsur North Forest Division

Sl.No.	Name of Range	Forest Block	Compt. No	Area in ha.	Range Total
1	Central	Vinjigiri	1	250	
2			2	250	
3			3	250	
4			4	250	
5		Ragada	1	400	
6			2	400	
7			3	250	
8			4	550	
9			5	200	
10			6	300	
11			7	700	
12			8	300	

13			9	500	
14			10	350	
15		Kaliamba	1	700	
16			2	550	
17			3	450	
18			4	450	
19			3	350	
20			4	450	
21			5	300	
22			6	200	
23		Dumdumi West	1	250	
24		Malati	1	650	**9300**
25	Mujagada	Gallery	3	300	
26			8	400	
27			13	400	
28			14	400	
29			15	750	
30			17	300	
31		Rambha	1	500	
32			2	700	
33			3	250	
34			4	700	
35			5	500	
36			6	650	
37			7	800	
38		Baiballi	1	700	
39			2	500	
40			3	650	
41			4	550	
42			5	400	
43			7	900	
44			8	600	
45			9	350	
46		Kullada	1	250	
47			2	250	
48			3	200	
49			4	300	
50		Darpangia	1	600	
51			2	600	
52			3	500	
53			4	500	
54			5	300	
55			6	300	

56			7	700	
57			12	300	**16100**
58	Gallery	Ambazora	1	500	
59			2	600	
60			3	600	
61			4	500	
62			5	350	
63			6	650	
64		Dimirijholi	1	250	
65			2	400	
66		Gallery	19	450	
67			20	100	
68			21	400	
69			22	200	
70		Chandragiri	1	500	
71			2	650	
72			3	250	
73			12	200	**6600**
74	Tarsing	Ambazora	7	600	
75			8	650	
76			9	400	
77			10	500	
78			11	600	
79			12	200	
80			13	500	
81			14	300	
82			15	750	
83			16	300	
84			17	600	
85			18	450	
86			19	350	
87		Ghogodo	1	600	
88			2	500	
89			4	400	
90			5	650	
91			6	550	
92		Paichalia	1	450	
93			3	150	
94			4	300	
95			5	700	
96		Gundribadi	1	550	
97			2	500	
98			3	350	

99			4	500	
100		Brahmanasahi	1	400	
101			2	700	
102			5	100	
103		Chandragiri	4	550	
104			5	150	
105			6	400	
106			7	500	
107			8	150	
108			9	150	**15500**
109	Jagannathprasad	Jagannathprasad	1	700	
110			2	250	
111			3	250	
112			4	400	
113			5	200	
114			6	250	
115			7	400	
116			8	50	**2500**
Division Total					**50000**

Table 9-4 Range wise & Reserve Forest wise Abstract of JFM Potential area of

Sl.No.	Name of Range	Forest Block	Area in ha.	Range Total
1	Central	Vinjigiri	1000	
2		Ragada	3950	
3		Kaliamba	3450	
4		Dumudumi (W)	250	
5		Maliti	650	**9300**
6	Mujagada	Gallery	2550	
7		Rambha	4100	
8		Baibali	4650	
9		Kullada	1000	
10		Darpangia	3800	**16100**
11	Gallery	Ambazora	3200	
12		Dimirijholi	650	
13		Gallery	1150	
14		Chandragiri	1600	**6600**
15	Tarsingi	Ambazora	6200	
16		Ghogada	2700	
17		Paichallia	1600	
18		Gundaribadi	1900	
19		Brahmansahi	1200	

20		Chandragiri	1900	**15500**
21	J.Prasad	J.Prasad	2500	**2500**
Division Total				**50000**

Table 9-5 Range wise and Reserve Forest wise proposed VSS Area of Ghumsur				
Range	**Forest Block**	**Compt. No.**	**Name of VSS/village**	**Area in ha.**
Central	Vinjigiri	1	Bijayanagar	100
	Ragada	4	Sagidi	100
	Ragada	6	Khaparaganda	100
	Ragada	9	Jyotinagar	100
	Ragada	9	Sindhukumpa	100
	Malati	1	Balipata	100
Tarasingi	Ambazora	13	Gayanda	100
	Paichallia	4	Dhepasahi	100
	Chandragiri	9	Dalaka	70
	Chandragiri	9	Balisahi	70
	B.sahi	3	Matigadia	100
	Ambazora	12	Kainphulia	70
	Ambazora	17	Saratabadi	100
	Ghogada	1	Sukhamana	100
	Gunduribadi	2	Narabari	100
	Chandragiri	5	Kokolaba	100
	Chandragiri	5&6	Tarasingi	100
	B.sahi	1	Panchanapalli	100
	Ambazora	14	Podagada	100
	Ghogada	4	Serada	100
J.Prasad	J.Prasad	6	Barabara	50
	J.Prasad	8	Gereda	50
	J.Prasad	9	Tulasipalli	50
	J.Prasad	3	Charikonia	40
	J.Prasad	6	Chikili	50
	J.Prasad	3	Rauti	40
	J.Prasad	6	Chopara	40
	J.Prasad	3	Bhabasara	20
	J.Prasad	10	Sapanga	20
	J.Prasad	10	Burapalli	20
Gallery	Dimirijholi	1	Bileisahi	75
	Chandragiri	3	Gunduribadi	75
	Chadhiapalli	1	Chadhiapalli	75
Mujagada	Darpangia	10	Belatun	50
	Darpangia	12	Bhitiri Bedigura	50
Total				**2615**

9.5.4 The degraded forest areas protected by the VSS outside the Plan area are also included. The general prescription given for this Working Circle shall also extended to the VSS forest areas.

9.5.5 The prescriptions for this working circle shall also extend to other forest areas where new VSS shall be constituted during the course of implementation of this overlapping Working Circle. All new areas allotted to the joint management will automatically become part of this JFM overlapping Working Circle. Therefore, the area will remain dynamic as there is scope of increasing VSS committees in the Division.

9.6. Method of Execution of Operations

9.6.1 The assigned VSS areas will be demarcated with posting of stone cairons of size 2 ft height, maps on GIS domain need to be prepared, PRA exercise are to be conducted and MoUs are need to be signed as per the JFM Resolutions. The resolution No.10F (Pron.) 20/93 – 16700 / F&E dt.03.07.1993 issued by Government of Odisha during 1993 contains the guideline as well as procedure for implementation of Joint Forest Management This resolution has been modified and published in extra ordinary issue of the Odisha Gazette on 22.10.2008 vide Resolution No. 1F-Affn.17/2008 – 17454/F&E dated. 22.10.2008 of Govt. of Odisha, Forest & Environment Department) Again the aforesaid resolution is undergone modified and published in extra ordinary issue of the Odisha Gazette on 09.09.2011 vide Resolution No. 1F-Affn.17/2011 - 16524/F&E dated. 09.09.2011 of Govt. of Odisha, Forest & Environment Department. The control and management is always subject to the prevalent guideline and instruction of the Government. However, in addition to the Government policy and resolution for Joint Forest Management, it is necessary to provide the following prescriptions in order to accomplish the special objectives of management of this Working Circle as well as facilitating the effective working of Joint Forest Management.

9.6.2 The forest areas assigned to the VSS are largely in the Rehabilitation Working Circle. The micro plans should be prepared keeping in view the overall prescriptions of the concerned Working Circle. All prescriptions for exploitation and harvest should be- done conservatively. Exploitable diameter for different species for final harvest, marking rules, limiting the final yield with emphasis on conservation measures and biotic pressure etc. as prescribed in this revised plan should be followed while preparing the micro-plans. The yield in the area assigned to the VSS should be calculated after providing for safeguard against erosion, illicit felling and other biotic pressures. In areas falling under Rehabilitation Working Circle areas, emphasis should be laid on gap plantations and soil and moisture conservation measures.

9.6.3. The Micro Plan for each assigned area needs to be prepared as per the approved Working Plan prescriptions and prevailing Law, Rules and notifications etc. The VSS would be provided with funds for income generating activities along with improvement of the assigned area. The self help group, (SHG) would be strengthened by Forest Department funding for procurement of NTFP items, processing and value addition so as to fetch more price for the primary collectors. The market network would be dealt for quick and assured disposal for the products.

9.7 Capacity Building

9.7.1 Regular training camp and awareness campaign shall be organised to ensure this aspect. Only through such process the VSS can be stabilised and built up necessary capacity to discharge their function effectively. The field level functionaries particularly Forester and Forest Guard being the cutting edge of forest establishment should concentrate on this matter. Once this foundation is consolidated, it can march ahead smoothly and steadily surpassing any type of obstacle coming in the way. Hence it is reiterated that the field level functionaries shall adopt a devoted approach in the beginning for formation of VSS. Meetings shall be conducted regularly and sincerely. Instead of acting as an arbitrator, the forest officials should play the role of facilitator or moderator for the people who should be groomed to solve their own problem. Protection mechanism, benefit sharing, Conflict resolution, and participation of women actively are the focal points. These are valuable ingredients of a strong VSS. Very often it is observed that VSS having dominated women and youth executive committee is successful one. So efforts shall be made to encourage the participation of women and youth actively in VSS.

9.8 Preparation of Micro Plan

9.8.1 This is the elementary document of Joint Forest Management. Though elaborate procedure has already been prescribed for preparation of such Micro Plan in the guidelines issued by Government, still three basic aspects namely.

i. Need of villagers for forest produce
ii. Need of the forests for rejuvenation and improvement
iii. The need for other supporting non-forest activities shall be assessed properly and considered as a guiding factor for preparation of the plan document.

This is the micro treatment plan for that area within the ambit of the prescription of the main working circle to which the area is assigned. The Forest Guard being the ex-officio Members of the VSS shall prepare the micro plan with the villagers in a participatory process. The micro plan so prepared by the VSS through the Department will be examined by the Range Officer and forwarded to the Division Office. The Assistant Conservator of Forests will ratify the aforesaid proposal recommended by the

Range Officer. In case of any disagreement, he will refer the matter to the Divisional Forest Officer whose decision shall be the final.

9.9 Protection Mechanism

9.9.1 The first and foremost task in tackling the degraded forests is to restrict the deterioration, which is caused by mostly biotic interference. The protection is the prescribed treatment, which should be administered at the very beginning to halt the process of degradation. Various protection methods like watching on roster basis, social sanction, cowherd boys for domestic cattle, contribution either in shape of kind or money for engagement of watcher etc. are in practice by the villagers. It is not prudent to prescribe any method in a general manner. The method suitable to the VSS shall be explored and adopted. This is the crucial task which should be done with utmost care. Once this is accomplished properly, the success of Joint Forest Management is almost certain. The field functionaries particularly the Foresters and Forest Guards shall apply their mind seriously to this matter. Site-specific strategy shall be chalked out to encounter the hazards inter alia uncontrolled grazing, illicit cutting and fire to contain them.

9.10 Rejuvenation & Development Process

9.10.1 After arresting the degradation through control of biotic interference by suitable protection mechanism, the vegetation starts rejuvenating in the areas having potential rootstock and shrubby growth. Silvicultural treatment is necessary to augment and accelerate this process. The details of such treatment including gap/block planting wherever necessary have been described in Rehabilitation Working Circle. However, the operations as spelt out in the Micro Plan shall be carried out. Silvicultural Cleaning and Soil & Moisture Conservation measure must be executed scrupulously and meticulously. Fire protection is to be ensured strictly in the JFM area. Care shall be taken to prevent any type of destructive disturbance during this phase, failing which not only the restoration but also the development of the forests will be jeopardised. The Forester and Forest Guard shall visit the area frequently along with the VSS members to enable them for perceiving the results from implementation of Micro Plan. This will boost the morale of the VSS and encourage their mindset for Joint Forest Management.

9.11 Benefit of Usufruct to the Households of the Village Community

9.11.1 This is the most vital component, which is intended to cater the bonafide need of the villagers in a legalised manner. All the intermediary benefit and half of the final/major harvest are meant for the VSS as per the existing provisions of Joint Forest Management resolution. It is observed that various products are collected without systematic documentation for which the tangible benefits from the assigned area are not properly appreciated. All sorts of collection shall be regulated quantified and documented. The VSS should be technically guided regarding the method, period and quantum of

collection of usufruct, but these activities shall be executed by them. The sharing of usufruct is a very delicate issue, which sometimes leads to the collapse of the system. Of course such incidence is rare in this Division but the Forester and Forest Guard shall be extra cautious to ensure that VSS should evolve a suitable and sustainable distribution mechanism for themselves. It is experienced that equitable distribution on household basis is the most accepted one. In this process the VSS shall be encouraged to play an active and major role for infusing the idea of both producer and consumer of forest produce. Further, the quantum of collection of produce shall be compared with that of pre JFM period for pronouncing the increase from the result of management. This will consolidate the mindset of the VSS for Joint Forest Management as well as to become self-reliant.

9.12 VSS Support Activities

9.12.1 Apart from enjoying the usufruct from the assigned area for catering the bonafide need, other income generating activities shall be explored. NTFP collection, processing, value addition and marketing should be given top priority as first choice if it is feasible for the VSS. Herbal medicinal plantation shall also be emphasised. Similarly the production of bamboo can be taken up since bamboo is occurring in most forest blocks of this Division. Being a four-year rotation crop it can provide fabulous income at short period. This is essential to prevent the desperation of the people in awaiting the long gestation period of timber harvest. Other non forestry livelihood support activities like Pisciculture, mushroom production, cultivation of banana, pineapple, Papaya, drumstick, ginger, onion, processing of pulses and rice etc. shall be encouraged to augment their income and livelihood. However this list is only indicative but not exhaustive. The Forester and Forest Guard shall assess the skill and adaptability of the VSS and provide them a galaxy of options with the cost benefit analysis for choice. The Range Officer and if necessary the D.F.O. should make the marketing arrangement of the items produce by the VSS for ensuring appreciable income. This is essential to make the system sustainable.

9.13 Miscellaneous Regulations

9.13.1 Besides the prescriptions provided in the foregoing paras, some other regulations are necessary to augment the former for effective results. These are the following.

9.13.2 Monitoring & Evaluation

9.13.2.1. Periodical assessment is necessary to improve the implementation by removing the bottlenecks noticed. Normally the monitoring is done regularly through departmental staff but the evaluation should be done by an independent agency for providing the correct position. The evaluation shall be made in an objective manner for which the Divisional Forest Officer will prescribe a suitable format containing point wise scoring system. Reputed local NGO can be entrusted for such evaluation. Each year in the month of April, such evaluation shall be done for the performance of preceding financial year.

9.13.2.2 Review

9.13.2.2.1 The evaluation report shall be examined through a review by a committee comprising of all Range Officers under the Chairmanship of Assistant Conservator of Forests. This committee will finalise the list of best three VSS basing on the scores in the evaluation report and also shortlist the shortcomings along with remedial measures. This will be treated as a guiding factor for the next course of action on Joint Forest Management.

9.13.2.3 Rewards

9.13.2.3.1 Recognition of any meritorious work is always the best stimulant for any person or organisation to proceed further. VSS showing praiseworthy performance should be rewarded as a token of recognition to their work. It will encourage a healthy competition among the VSS to propagate the Joint Forest Management. So it is prescribed to reward the best VSS each year sub division wise with a citation and cash as per the Govt resolution. Such VSS will be felicitated either on Independence Day or Republic Day or World Environment Day or World Forestry Day celebration.

9.13.2.4 Conflict Resolution

9.13.2.4.1 Sometimes conflict arises with the inhabitants of other villages for their unauthorised and forcibly collection of forest produce from the assigned area of the VSS. The details of the conflict resolution mechanism have been spelt in the latest JFM resolution 2011.It is necessary to resolve the same from the very beginning. In such cases the Range Officer shall visit the area at earliest and try to settle the matter amicably. If not legal action shall be taken departmentally. It is observed that good VSS become disillusioned without adequate support from the department in this regard. Hence all sort of support shall be provided to the VSS in time. Similarly any conflict within the VSS if arises shall be resolved forthwith. The Range Officer shall discuss the matter with the VSS and help them in sorting out the problem instead of acting as an adjudicator.

9.13.2.5 Convergence

9.13.2.5.1 Joint Forest Management cannot be fully successful in isolation. An integrated approach along with other developmental activities will make the process easier and quicker for achievement. The local Range Officer shall explore this aspect in consultation with his counter parts of other departments particularly B.D.O,Tahasildar, V.A.S, Agriculture Officer, Horticulturist etc. and ensure the needful coordination for converging various activities in the village.

9.13.2.6 Publicity

9.13.2.6.1 Wide propaganda is of immense help for successful implementation of Joint Forest Management. Though the villagers show interest and appreciate the benefit of Joint Forest Management but they suffer from scepticism regarding the ultimate success. So exposure visit to the successful VSS area as well as the success story shall be circulated. Frequent awareness programme shall be organised to allure the villagers towards the usefulness of Joint Forest Management. The Range Officer shall take initiative for discussion on this issue in various Village / Gram Panchayat / Panchayat Samiti level forums through regular interaction with the concerned PRI members. The Forester and Forest Guard shall assist the Range Officer in ensuring due publicity of the programme. Now as per the Govt Resolution No-3 Affn 1-2002/3963/14.3.2002 have instituted award for the best VSS of the sub division & State which is a new direction in the scope of publicity.

9.14 INTERMEDIATE REVISION OF THE PLAN

9.14.1 Though it is not anticipated, yet an intermediate review of the prescriptions may be made after 5 years, jointly by the Regional Chief Conservator of Forests (Territorial) and Conservator of Forests (Working Plans), taking into account the crop condition and necessity of revision. Any deviation suggested, however, shall be subject to the approval of competent authority.

9.15 COST NORMS FOR IMPLEMENTATION OF THE PRESCRIPTIONS OF THIS WORKING CIRCLE:

The Cost norm of this Working Circle has been discussed in **Chapter –X of Part-II.**

CHAPTER-X

FINANCIAL FORECAST AND FINANCIAL PLAN

10.0 Financial Forecast

10.1 Previously, the forests of this division were primarily being exploited to obtain timber and other NTFP items. In the outgoing plan period, there was a ban on green felling since 1995-96 to 2004-05. As a result of this the forest stretches remained wanting for scientific intervention of crop management for a pretty long time. As a result, the forested areas became vulnerable to the natural calamities in the form of super cyclone in the year 1999-2000 and very severe cyclonic storms namely Phailin and Hud-Hud during the year 2013-14 and 2014-15 respectively. There was unprecedented occurrences of wind fallen trees and planted areas also suffered massively. Thus the financial forecast has been made keeping in view the present condition of the forests and the interventions that is required the most to bring in the necessary changes to the crop composition, density, stand structure and the multilayer nature of the forest canopy and in the process make it more resistant and resilient against such natural hazards and biotic pressures in the times to come. Hence, conservation of wilderness and biodiversity is being prioritized over removals for earning of revenue. However, enhanced royalty and revenue is expected from the disposals of the wind fallen trees which will either be delivered to OFDC through formation of irregular lots or will be locally auctioned by the department generating revenue. With increasing trends in the use of various NTFP items for industrial, commercial as well as domestic purposes, some revenue is also expected from sale of NTFP of this Division. The total establishment cost of Ghumsur North Division is given in the Table 12-1 and 12-2 of **Chapter XII of Part II.**

10.2 Costs of the Plan

10.2.1. The Preparation of the Plan commenced during 2012-13 October and continued up to March 2016. Total cost of the Plan is Rs.2, 99, 90,899 over a period in excess of 3 year. **Table 10-1** summarizes the details of these costs budget head-wise for the period from **2012-13 to 2015-16.**

10.2.2 The total expenditure for preparation of this Plan is about Rs.300.00 lakhs. Out of this Rs.2, 02, 44,865/- is the cost of establishment which comes to 67.50% of the total expenditure. The amount spent for working plan preparation is Rs.58, 33,034/- i.e. 21.44% of the total budget. The total forest area covered under the plan is 92048.473 ha of GPS documented area. The cost of preparation of this Plan per ha comes to Rs. 63.37 per ha, the detailed head wise calculation of which is given in **Table 10-1**.

Table 10-1 Cost of the Plan of Ghumsur North Division (in Rupees)					
Budget Sub-head.	**12-13**	**13-14**	**14-15**	**15-16**	**Total**
1	**2**	**3**	**4**	**5**	**6**
2406 Forestry & Wild Life (Non Plan)					
1. Salary	47,34,409	47,42,235	39,13,651	42,62,409	1,76,52,704
2. T.E	45,000	75,000	85,000	52,000	2,57,000
3. R.C.M	22,000	18,000	16,000	5,45,000	6,01,000
Total	**48,01,409**	**48,35,235**	**40,14,651**	**48,59,409**	**1,85,10,704**
Electricity	28,000	45,000	42,000	34,000	1,49,000
Water Charge	0	10,000	13,857	5,000	28,857
Telephone	14,000	20,000	18,000	16,000	68,000
MV (POL)	42,000	55,000	54,000	30,104	1,81,104
Office Contingency	28,000	30,000	30,000	30,000	1,18,000
Total 8001 OE	**1,12,000**	**1,60,000**	**1,57,857**	**1,15,104**	**5,44,961**
RRT	0	5,200	6,000	4,000	15,200
20003-Other Charges (Clothing)	10,000	30,000	14,000	11,000	65,000
78128 Up gradation of Computer facility	10,000	15,000	15,000	9,000	49,000
78012 Computer Consumable	7,000	10,000	9,000	7,000	33,000
33011 Spare and Services	7,000	10,000	6,000	4,000	27,000
21064-Repair of building	1,50,000	2,50,000	2,00,000	4,00,000	10,00,000
0484 C-Field Est. 005	**50,97,409**	**53,15,435**	**44,22,508**	**54,09,513**	**2,02,44,865**
Budget Sub-head.	**12-13**	**13-14**	**14-15**	**15-16**	**Total**
1	**2**	**3**	**4**	**5**	**6**
36002 Minor works	1,00,000	2,00,000	0	50,000	3,50,000
21033-Maintenance work	2,00,000	50,000	2,00,000	0	4,50,000
2059 Public Works NP- NRB	3,00,000	4,00,000	2,00,000	2,00,000	11,00,000
78124 Working Plan.	1,20,000	1,36,000	1,06,000	1,50,000	5,12,000
32011Survey and investigation	0	0	5,000	0	5,000
13th F.C. State Plan	7,57,434	0	0	0	7,57,434
CAMPA	0	20,13,000	0	0	20,13,000
CSP	0	15,00,000	0	0	15,00,000
IFM-SP	0	0	15,00,000	15,58,600	30,58,600
Grand Total	**65,74,843**	**96,14,435**	**64,33,508**	**73,68,113**	**2,99,90,899**

10.3 Roads: The total length of forest roads is 248.5 KM. Most of the forest roads needs annual repair before rainy season, as required to keep the roads in good condition. Some repair work was carried out during the year from 2006-07 to 2015-16 under Non Plan and CAMPA fund. An estimated average expenditure of Rs.42, 000/- Per KM has been taken for annual maintenance of road so that in 5 years all the roads can be maintained. Thus annual expenditure for road repair will be 248.5x Rs. 42,000= **Rs.10437000 lakhs**

10.4 Building and wells:

10.4.1 Buildings: The total number of buildings in the division is 90. Most of these buildings are old. The average annual maintenance cost per building is expected to be Rs.10 lakhs/Year-. So for 10 years with 5% escalation of price per year the total cost comes to **12577890 lakhs.**

10.4.2 Wells: here are 38 wells out of which 7 no's non-existent. Thus the total no of existing wells are 31. The average maintenance cost per well is expected to be Rs.10, 000/- per well per annum. Thus, the estimated annual cost of maintenance of wells is Rs.3, 10,000/-. Taking into consideration 5% escalation of cost per year the total estimated cost for the plan period of 10 years comes to Rs**. 53, 49,963 /-.** Projected costs by assuming 5% annual rise for 10 years is given below in **Table 10.2**

Table No.10.2: Estimated Projected Cost (in Rs.)

Sl. No.	Year of operation	Establishment cost	Maintenance of Roads	Maintenance of Buildings	Maintenance of wells
1	2015-16	29990899	1043700	1000000	310000
2	2016-17	31490444.95	1095885	1050000	325500
3	2017-18	33064966.15	1150679	1102500	356500
4	2018-19	34718214.45	1208212	1157625	372775
5	2019-20	36454125.18	1268622	1215506	436325
6	2020-21	38276831.44	1332053	1276281	518513
7	2021-22	40190673.01	1398655	1340095	622518
8	2022-23	42200206.66	1468587	1407100	752448
9	2023-24	44310216.99	1542016	1477455	790070
10	2024-25	46525727.84	1688874	1551328	865314
TOTAL		**3,47,531,314**	**11969071**	**12577890**	**5349963**

The cost of new constructions required is given below in **Table No. 10-3**

Table 10-3 Cost of New Constructions in Ghumsur North Division

Type	Total units required	Number per year	Cost per unit in lakh Rs.	Cost (Rs lakh) per Annum
Forester Quarter	10	1	7.5	7.5
Forest Guard's quarter	30	3	5.30	15.90
Others (Rest sheds)	10	1	8	8.0
Well, Tube wells etc.	20	2	1.0	2.0
Total Annual requirement=			**Rs. 33.40**	

10.5 Generation of Employment

10.5.1 Implementation of all the Plan prescriptions at the stipulated expenditure is expected to generate person days per annum. The rural labourers will be directly engaged by the department and get the prevailing wage per MD i.e. Rs.200.00. This will improve the economic condition to a great extent. Migration of labourers to outside can be reduced consequent upon the implementations of these prescriptions.

10.6 Prescriptions of Various Working Circles

10.6.1 Treatment of Selection Working Circle: The Total area under this Working Circle **51842.906 ha.** The cost norm to be followed in Selection Working Circle is given in **Table 10.4** which is as follows:

Table No. 10-4. Requirement of Funds for Selection Working Circle

Sl. No.	Items of Work	Rate	Area (in Ha.)	Total Man days
1	Demarcation of annual coupes	@ 0.2 MD/ Ha.	51842.906	10369
2	Marking of Coupe	@ 0.2 MD/ Ha.	51842.906	10369
3	Subsidiary Silvicultural operation including Climber cutting, high stump cutting, fire protection, soil moisture conservation etc.	@ 10 MD/ Ha.	51842.906	518429
4	Misc. regulation	@ 0.5 MD/ Ha.	51842.906	25921
Total Man-days and cost				**565088 and Rs. 1,13,017,600/-**

Total expenditure will be incurred for whole working plan period is **11.30 crore's.**

10.6.2 Treatment of Rehabilitation Working Circle: The total area under rehabilitation Working Circle is 33,470.072 ha. . The minimum blank area for gap plantation will be 0.4 Ha; the site specific treatment plan will be prepared one year before the year of execution. Hence, separate norms are provided for execution of works in the field which may vary according to scheme. The proposed treatment cost norm is as follows

1. with gap plantation (200 Plants/Ha): - Cost of Execution of works/ treatment @ Rs. 26098/- per Ha.

Assuming that prescribed treatment will cover annually 3347 ha, then the total expenditure works to be incurred **Rs. 873500060/-** for whole area of the rehabilitation circle.

Table No. 10.5. Cost Norm for A.N.R. with Gap Plantation (200 Plants/ Ha.)			
Items of Work	**M/Ds**	**Material Cost in Rs.**	**Total (in Rs.)**
0th Year			
Survey and Demarcation	2	0	400
Site Preparation	2	0	400
Silvicultural operation	5	0	1000
Nursery cost	5.5	367	1467
Contingency and Unforeseen Expenditures	0	0	133
Total	**14.5**	**500**	**3400**
1st Year			
Nursery cost	2.5	112	612
Pitting	6	0	1200
Carriage of seedlings to the planting site	5	0	1000
Complete weeding, soil working, manuring	6	0	1200
Cost of Vermicompost and granular insecticide	0	880	880
Cost of chemical fertilizer	0	324	324
Silvicultural operation	15	0	3000
Soil conservation measure	20	0	4000
Fire line tracing	3	0	600
Watch and ward	7	0	1400
Contingency	0	304	304
Sub Total	**64.5**	**1620**	**14520**
2nd Year			
Casualty replacement	1	189	389
Weeding and cultural operations	2	0	400
Soil working and manuring	2	0	400
Cost of fertilizer and insecticide	0	808	808
Soil conservation measures	8	0	1600
Fire line tracing	1	0	200
Watch and ward	7	0	1400
Contingency	0	181	181
Sub Total	**21**	**1178**	**5378**
3rd Year			
Weeding and cultural operations	1	0	200
Soil working	1	0	200
Fire line tracing	1	0	200
Watch and ward	7	0	1400
Contingency	0	200	200
Sub Total	10	200	2200
4th Year			
Fire line tracing	1	0	200
Watch and ward and cultural operations	2	0	400
Sub Total	**3**	**0**	**600**
Grand Total	**113**	**3498**	**26098**

10.6.3 Treatment of Plantation overlapping Working Circle: An area of 1500 ha is allotted to this working circle. But from the year 2013 to 2016-17, 245 ha of block plantations already carried out in the proposed compartments. So, t**he 1255 ha** is due for taking up plantation in remaining working plan period. Thus each year in an average **125.5** ha new plantation will be raised. The prescriptions under Plantation Working Circle are in needing budget as per the details furnished in **Table No. 10.6.** Cost for block plantations only has been taken into account.

Table No. 10.6. Requirement of Funds under Plantation Working Circle	
Items of Work with Cost Norm	**Amount in Rs.**
Planting series @ Rs. 67248 /Ha for 1255 Ha.	84,396,240

10.6.4 The breakup of cost norm per hectare for treatment under this working circle is furnished at **Table No. 10.7.**

Table No. 10.7. Cost Norm Per Hectare Plantation under Plantation Working Circle (1600 plants/ Ha.)			
Item of Work	**MDs**	**Material cost**	**Total in Rs.**
0th YEAR			
Survey and Demarcation	2	0	400
Site Preparation	8	0	1600
Alignment and Stacking	2	0	400
Pitting (45 cm^3)	40	0	8000
Nursery cost	44	2939	11739
Sub Total	**96**	**2939**	**22139**
1st YEAR			
Nursery cost	21.5	593	4893
Carriage of seedlings to the site and planting	21	0	4200
Cost of insecticides and fertilizer	0	3232	3232
1st weeding	7	0	1400
Manuring	5	0	1000
2nd weeding	5	0	1000
Soil working	7	0	1400
Soil Conservation Measures	10	0	2000
Fireline Tracing	3	0	600

Watch and ward	7	0	1400
Sub Total	**86.5**	**3825**	**21125**
2nd YEAR			
Casualty replacement	4	1512	2312
Weeding	6	0	1200
Cost of fertilizer	0	2752	2752
Soil working	7	0	1400
Application of fertilizer and insecticide	4	0	800
Fireline tracing	3	0	600
Watch and ward	15	0	3000
Sub Total	**39**	**4264**	**12064**
3rd YEAR			
Weeding and application of fertilizer	7	0	1400
Cost of fertilizer	0	1920	1920
Soil working	7	0	1400
Fireline tracing	3	0	600
Watch and ward	15	0	3000
Sub Total	**32**	**1920**	**8320**
4th YEAR			
Fireline tracing	3	0	600
Watch and ward	15	0	3000
Sub Total	**18**	**0**	**3600**
Grand Total	**271.5**	**12948**	**67248**

10.6.4. Treatment of Protection Working Circle: The total area to be treated under this Working Circle is 5235.495 ha. Total area to be treated is **5235.495 ha**. Annual area to be is 523.5 ha. This division was not allotted with forest protection squad under CAMPA. Hence, proposing one Forest protection squad in Tarasing Range bordering Daspalla range of Nayagarh forest division and One in Central Range.

10.6.4.1 The expenditure is required for protection of forest including cost of raids, POL for jeep in each Range, development of communication network, Arms and ammunitions, engagement of protection squad with hired vehicle and POL etc. as mentioned in the chapter. The annual expenditure on these activities at a modest rate comes to **Rs. 22.6 lakhs.**

Table 10-8 Cost Norm for Forest Protection in Ghumsur North Division			
Sl No.	**Particulars**	**No of Unit**	**Financial outlay/year /lakhs**
1	Wages of 10 personnel engaged in the forest protection squad in two vulnerable site	2	14.4
2	Hiring of Vehicle 16000/per month	2	3.84
3	fuel expenses for vehicles 2 nos to be engaged for forest protection work in 2 Ranges @ 0.72 lakhs each year per vehicle	2	1.44
4	Medical Expenses, , Compassionate amount to the personnel of the forest protection squad 50,000/squad per year	2	1.0
5	Wages of driver engaged for driving vehicle 0.96 lakhs/squad	2	1.92
		Total	**22.6**

Thus the total expenditure under protection working circle comes to Rs. 226.0 lakhs for whole working plan period subsequently rise of 5% every year.

10.6.5. Treatment of Wildlife Overlapping Working Circle. The total area under this Working Circle is 92,048 ha. Prescriptions under Wildlife (Overlapping) Working Circle are in need of average Rs. 33.00 lakhs annually as per the details furnished in **Table No. 10.9.** The annual expenditure has been raised @ 5% in each year during the plan period. The total expenditure will be incurred around 330.0 lakhs for whole working plan period subsequently 5% increases in price.

Table No. 10.9 Proposed Treatment for Wildlife Overlapping Working circle under CAMPA			
Sl. No.	**Item of work**	**Unit**	**Rate**
Wildlife Sector			
1	**Protection Activities**		
1(i)	Wildlife Protection Squads including anti-smuggling operation at specified location including river squads and sea patrolling to prevent fishing and trawler movement for protection of sea Turtles for twelve months	One squad of 10 daily wage workers hiring of vehicle, Boats etc. for 12 months.	10.50
2	**Anti-depredation Activities**		
2 (i)	Anti-depredation squads for indentified belts for twelve months	One squad of 10 daily wage workers hiring	10.50

		of vehicle, POL etc. for 12 months	
2 (ii)	Tracker engagement for twelve months	2 daily wages workers	1.50
3	Creation of water bodies structure 40m length × 30m width × 3m depth @ Rs. 2.5 lakh/- each	2	5.00
4	Renovation of old water bodies @ Rs. 50,000/- each annually	4	2.00
5	Awareness and Cattle Immunization , Weed Eradication	1	2.50
6	Anti Depredation Equipements	1	1.0
		Total	***33.00***

10.6.6 Treatment of N.T. F. P. Working Circle Overlapping Working Circle: The total area under this Working Circle is 92,048 ha. Total area of treatment is 92,048 ha. 7 lakhs will be annually spent for this working circle. For whole working plan period it's comes around 70.0 Lakhs subsequently 5 % increasing price. The treatment along with proposed expenditure statement has given in below **Table 10.10.**

Table No.10-10 Treatment For NTFP Overlapping Working Circle.

Sl. No.	Item of work	Anticipated Expenditure /Year
1	Awareness campaign	0.50
2	Skill up gradation	0.50
3	Training to PRI members	0.50
4	Infrastructure development/Community Centre	2.50
8	Value addition / processing unit Sal Leaf, Medicinal Plants, NTFP Products	3.00
	Total: -	**7.00**

10.6.7. Treatment of Bamboo Overlapping Working Circle: The total area under this Working Circle is 58,970.177 ha. The items of executions are mainly (i) Demarcation of coupes, (ii) Preparation of treatment map (iii) Harvesting i.e. cutting, bundling and transport to depot (iv) Simultaneous silvicultural operation. The harvesting is entrusted to the working agency whereas the rest 3 (three) operations are carried out by the department. Assuming the total requirement of fund for execution of this working circle comes to **Rs.11.79 Crores**. So the financial requirement is assessed for those items of work as detailed below in **Table 10.11**

Table 10.11. Treatment of Bamboo Overlapping Circle -58970 Ha					
Sl. No.	**Item of work**	**Unit**	**Mandays (In No.)**	**Area in Ha**	**Total Mandays**
1	Demarcation of Coupe	Per ha.	0.2	58,970	11794
2	Preparation of treatment map of the Coupe	Per ha.	0.2	58,970	11794
3	Simultaneous Silvicultural Operation	Per ha.	10	58,970	589700
	Total=				**613288 man days, 117963588 lakhs**

10.6.8 Treatment to Joint Forest Management (Overlapping) Working Circle: - Assuming Rs. 11 lakhs as the estimated expenditure per annum the total requirement of fund for execution of this working circle comes to **Rs.110 lakhs**. The prescribed items of work for implementation and the probable cost involvement have been assessed for this working circle as under **Table 10.12.**

Table.10-12. Estimated Annual Expenditure i		
Sl. No.	**Item of work**	**Anticipated expenditure(Lakhs)**
1	Capacity building of VSS	2.00
2	Expansion of JFM	5.00
3	Publicity & awareness campaign	1.00
4	Support for Income Generation Activities	2.00
5	Incentive & Rewards	1.00
Total		**11.00**

10.7 Drifts and Waif Wood: The annual expenditure is on L.S. basis of Rs. 2 lakh and subsequently 5 % rise each year.

10.8 Consolidation: All the 22 RF Blocks included in the plan are to be demarcated by using GPS/DGPS. Similarly all the D.P.F., U.D.P.F. and village forests are to be demarcated by GPS. Similarly old plantations raised during the ongoing plan are to be demarcated. The annual expected expenditure for this purpose is 1 Lakhs with subsequent rise of 5% every year

10.9 Infrastructure Development: Replacement of old vehicle, Maintenance of VHF, Purchase of new sets, expenditure on arms and ammunition other miscellaneous works a lump sum of Rs. 5 lakh per annum, and subsequent 5% raise in each year.

10.10 Maintenance of Boundary

10.10.1 The length of reserve forest boundary is 1206.80 km. In an average boundary clearance to be taken up is 120 Km/year for 10 years. For complete maintenance of boundary in every 5 years the annual target is raised to 240 Km. Maintenance of boundary 240 K.M. x 10 man days x 200 every year in 5yrs rotation comes to Rs. 4,80,000 and subsequent rise of 5% every year.

10.10.2 Maintenance of Pillar: The number of RF pillars in the division is 8001 out of which about 60% pillars are either damaged or not available. Taking 60% of the pillars either to be newly constructed or repaired, the number of such pillars will be 4800 or say 5,000. So annual construction or repair of 500 pillars @ Rs. 1000 per pillar comes to Rs. 5, 00,000/- and subsequent rise of 5% every year.

10.10.3 Total annual cost of boundary line maintenance and pillar construction will be Rs. 9, 80,000/- or Rs. 9.8 Lakhs with subsequent rise of 5% in every year.

10.11.Library, Equipments, Maps and Tools: Annually an amount of Rs. 5 lakhs on lump sum is proposed and subsequent 5% escalation is added for computerization, 1 lakhs for preparation of maps and tools So total requirement is 6 lakhs and thus annually lakhs is kept for expenditure.

10. 12 Control of Forest Fire: - Considering the incidence of fire hazard at present, the requirement of fund for different Ranges as well as Divisional Head Quarters has been assessed as under.

Table 10.13. ESTIMATED ANNUAL EXPENDITURE

Sl. No.	Item of work	Anticipated expenditure(Lakhs)
1	Fire fighting squad 5 Ranges/10 persons	11.25
2	Hired Vehicle for 5 squad (22000)	7.50
3	Publicity & awareness campaign	1.00
4	Fire line maintenance 500 Rkm	8.25
5	Incentive & Rewards	1.00
Total: -		**29.00**

10.13 Assuming Rs.29.00 lakhs as the estimated expenditure per annum the total requirement of fund for execution of this working circle comes to Rs.290 lakhs with successive year wise 5 % hike in expenditure.

10.14. Eco-tourism: For developing eco-tourism lump sum amount of Rs. 10 lakhs per annum and subsequent 5% raise each year. The cost of all the above items are subjected to revision of the labour cost from time to time.

10.15 Miscellaneous Contingencies: A lump sum amount of Rs. 10 lakhs /annum with a subsequent 5% escalation.

10.16 Total Estimated Expenditure: Based on the above analysis, the component wise projected requirement of funds for implementation of the prescriptions is summarized in **Table No. 10.14** for the entire plan period which works out to be **Rs. 166.28 Crores**.

Table No. 10.14: Estimated Cost of Implementation of the Plan Prescriptions (in Rs.)

Sl. No.	Head of Expenditure	Amount
1.	Establishment	347531314
2.	Maintenance of Roads	10437000
3.	Maintenance of Buildings	10000000
4.	Selection Working Circle	113017600
5.	Plantation Working Circle	84396240
6.	Rehabilitation Working Circle	873500060
7.	Protection Working Circle	22600000
8.	Wildlife(Overlapping) Working Circle	33000000
9.	Joint Forest Management working circle	11000000
10	Bamboo Overlapping Working Circle	117963588
11	N.T. F. P. Working Circle Overlapping Working Circle	7000000
11	Forest Consolidation	1000000
12	Boundary Maintenance	2413600
13.	Forest Fire Management	29000000
	Total	**166,2859402**

CHAPTER - XI

MISCELLANEOUS REGULATIONS

11.1 General Considerations

11.1.1 Miscellaneous prescriptions, spelt out in this Chapter, fall in two categories. First, this Chapter includes prescriptions with regard to those important activities that have not been discussed before (e.g., roads, buildings, and boundaries of forest blocks). Second, this Chapter also re-iterates some regulations, already prescribed in the Main Working Circles, for the further emphasis.

11.2 Systems of Sale/Disposal of Forest Produce

11.2.1 All the timber coupes shall be worked by the OFDC Ltd in the Division. However, timber and firewood from wind fallen trees, and materials of illicitly felled trees, shall be salvaged departmentally. Salvaged materials shall be handed over to OFDC Ltd. for sale to the local people. Similarly, confiscated and Undetected Case (UD Case) timbers shall be disposed of through the OFDC Ltd. or through local auctions, as the circumstances may dictate. Saleable thinning materials may, therefore, be disposed of through local auctions or in accordance with the Government policy of JFM depending upon the local circumstances. As regards NTFP, efforts shall be made to encourage local level in accordance with the Government policies on NTFP in currency. The DFO shall also take steps to encourage the local people for value addition in NTFP particularly with women Self Help Groups.

11.3 Irregular Exploitation

11.3.1 In normal course, irregular felling of trees will not be permitted. However, in emergencies or extraordinary circumstances (e.g., natural calamities like fires, floods, cyclones, urgent departmental requirements and socio-religious functions like car festival), it can be resorted to in manner and extent as provided in writing by competent authority.

11.4 Development of Forest Roads

11.4.1 The existing 24 numbers of forest roads are damaged due to poor maintenance for a variety of reasons including paucity of funds, the details of which has been furnished vide **Table No.11.1** These roads are major communication net-works for transportation of forest produce, to effective supervision and to check smuggling, illicit felling and poaching. Local people also use these roads for transportation. Therefore, these are important social capital assets and required to be properly maintained. Therefore, all forest roads should be provided with good drains (at least of size 30 cm wide and 45 cm deep) on either side. The side drains should be periodically cleared to allow surface runoff smoothly. Cross-drains should be provided before onset of

monsoon especially in high slopes. Existing causeways and temporary bridges should be improved. Light murum turfing of road should be done periodically so as to prevent soil loss and erosion because of surface runoff and constant use. Roads should be repaired generally during November and December.

11.4.2 The concerned Range Officer will prepare a plan and estimate for annual repair/special repair after physical verification of forest roads and obtain the approval of the competent authority prior to execution of the work.

11.4.3. The Divisional Forest Officer shall draw a plan of action for execution during a financial year depending on the availability of funds. Further he should make effort to mobilize resource from different sources to ensure the execution of these works during the plan period. Besides these works, annual maintenance shall be taken up for all the roads on priority basis.

Table 11.1 R.F wise List of Forest Road of Ghumsur North Division (Bhanjanagar)

Sl no.	Name of forest block	Name of forest road	Distance of forest road in km.
1	2	3	4
1	Gallery RF	Mujagad to Dhaumundia	18
2	Gallery RF	Mujagada to Langalakhola	9
3	Darpangia RF	Langakhola to Birikote	7
4	Baiballi RF	Birikote to Baiballi	7
5	Darpangia RF	Darpan gia to Mundagaon	12
6	Baiballi RF	Baiballi to Dhaumundia	5
7	Darpangia, Odinbadi	Rambha to Kupati	11
8	Gallery RF	Rambha to Brahmanapadar	8
9	Darpangia RF	Durgaprasad to Darpangia	18
10	Ragada & Tiliki RF	Ragada to Tiliki	9
11	Kaliamba & Ragada RF	Saluapalli to Tinikhandia	8
12	Kaliamba & Tiliki RF	Tiliki to Kaliamba	10
13	Ragada & Kaliamba RF	Ragada to Bankanedi	8
14	Ragada RF	Lathipada to Ragada	8
15	Ragada RF	Tiliki to Dhobadi to Nuagaon	10
16	Kaliamba RF	Kaliamba to Bankanedi	6
17	Brahmanasahi RF	Tarasingi to Banta	14
18	Jagannath Prasad RF	Jagannath Prasad to Gereda	19
19	Tiliki, Dumudumi & Kaliamba RF	Budhakendu to Gudiamba	1.5

20	Brahmanasahi & Paichhelia RF	Tirikumpa to Banta	8
21	Ambajhara & Gundribadi RF	Gayaganda to Gundribadi	15
22	Ambajhara & Gundribadi RF	Rudhapadar to Gundribadi	12
23	Chandragiri RF	Cox-Corner Road	12
24	Chandragiri & Ambajhara RF	Kathachira to Siuli	13
Total			**252.5**

11.5 Buildings

11.5.1 Most of the buildings have been constructed since long and the condition is also precarious. Regular maintenance is very inadequate due to paucity of funds. Considering the condition of the buildings, following prescriptions shall be adopted. However, under support of CAMPA APO fund new buildings such as Forest Guard Quarters, Forester Quarters, Range Office building, seizure yards, staff barrack, compound wall, etc have been constructed in different Ranges in different years.

11.5.2 Maintenance

11.5.2.1 All the habitable buildings shall be maintained. The works like white washing, flooring and plastering maintenance, door and window repair, the maintenance of water supply, sanitary system, electrical fittings, and repair of roof if necessary etc. constitute the annual maintenance work. The Divisional Forest Officer shall approve the annual maintenance work of the buildings prepared by the Assistant Conservator of Forests basing on the recommendations received from the Range Officers. It is observed that attentions are focused on some buildings while others are ignored for years together. Such discrimination in maintenance leads to depreciate the longevity of the buildings. So care must be taken to provide maintenance to all the habitable buildings at earliest opportunity considering the availability of funds.

11.5.3 Renovation

11.5.3.1 Renovation consists of repair of collapsed / inhabitable buildings etc. In other words it is the special maintenance to make the building having potential longevity habitable. It is found that most of the buildings constructed in the past are made of mud mortar and sun dried un-burnt bricks. Hence it is necessary to make a cost benefit analysis prior to taking up such works. It is advisable to go for new construction in the event of the anticipated expenditure is nearing the cost of fresh construction after dismantling the old dilapidated buildings. The condition of the building in terms of further longevity shall be assessed. The procedure prescribed for assessing the maintenance shall be applicable for renovation work.

11.5.4 Up-gradation

11.5.4.1 This consists of replacement of roof structure, extension / addition to the existing structure etc. Sometimes some additional floor space is necessary to accommodate the increased requirement and the annual roof maintenance being recurring in nature requires a sizable

amount. Considering the condition of the foundation and super structure, the tile roofs should be replaced with RCC ones to enhance the longevity of the building as well as to prevent the recurring annual maintenance cost. Similarly existing building if permissible can be extended to provide additional accommodation instead of construction of new buildings which requires more funds. The modality assessment for this work shall be same as prescribed for maintenance.

11.5.5 New Construction

11.5.5.1 As already indicated earlier, it is wise to go for new construction when the renovation cost is approaching that of fresh construction. Apart from that the requirement of buildings vis-à-vis the existing ones shall be assessed to determine the number of new buildings to be constructed.

11.5.5.2 Divisional office is functioning in very small building and its century old. The adequate space for construction of new division office is also not available. So DFO shall prepare a estimate for new construction of Division office to competent authority for smooth management of office.

11.5.6 Provision for Water Facility

11.5.6.1 Provision of safe drinking water is a must for the staff working in the interior area to keep their health in good condition. Very often staffs suffer from water born diseases. Earlier wells were dug to provide water facilities to the staff. Drainage of such wells is necessary each year to ensure its longevity. For provision of water supply tube well is to be preferred.

11.5.7 Provision for Compound wall and Electricity

11.5.6.7.1 Provision of compound wall is a must for the each beat, section and Range residents. Nowadays most of the lady forest officers are recruited in the forest department. So for the safe and make comfortable living of forest officers, compound wall is essential to improve the working of the staffs. Electrification of all the buildings in remote Beats and Sections, where such facilities are available, should be taken up. In remote areas if electricity facility is not available, solar light provision may be preferred.

11.6 Forest Consolidation

11.6.1 Consolidation of forest blocks shall be given due attention on priority basis. A phased programme is required to be drawn and resolutely pursued by the DFO (T), for notifying the identified DPF and UDPFs and other forest lands if identified in future having good biotic potential into Reserved Forests under the Orissa Forest Act 1972. The DFO (T) shall take steps to finalize the present proposals of DPF, UDPFs and DLC Lands. New forest blocks, having good forest crop, shall be demarcated and proposed for reservation. New forest blocks need to be surveyed, demarcated and mapped.

11.7 Maintenance and verification of Boundary

11.7.1 The boundaries of various forest blocks are in poor shape due to a variety of reasons

including paucity of funds. A field staff is often not aware of correct boundary of forest blocks under his jurisdiction. During field verification, most of the boundary pillars were found missing. Hence, boundary pillars are required to be periodically repaired and numbered. Boundary lines are also required to be cleared and properly maintained. A five year cycle of maintenance of boundaries and boundary pillars is prescribed. Details of block boundaries, e.g., length of forest boundary, number of pillars, pillar to pillar bearings and distances, and a record of maintenance of boundaries are meticulously maintained in the Divisional Office. Efforts shall be made to determine the geo-reference of boundary pillars in respect of all forest blocks, so that it will be easier to locate the missing pillars. Some of the new masonry pillars are constructed near the original pillar, this need to be rectified by the DFO (T) as in the long run it is bound to affect the records. If required stone cairn pillars in interior forest areas may be constructed where construction, curing and maintenance of masonry pillars is difficult.

11.7.2 Intermittent verification of RF boundary is very essential to keep a check on the encroachment and for the ground staff to remain familiarized with their area of jurisdiction and control. For that the verification of the boundary in accordance with the OFD code by all authorities starting from the forest guards to the DFO. During verification, the notified Reserve forest map and the field book appended to it has to refer and ground truthing has to be carried to ascertain whether the boundary pillars are in their original location or have they been shifted. In case of such an eventuality that the notified Reserve forest map or the field book is not available in the division, steps need to be taken by the DFO to obtain such maps from the Revenue and Disaster management department. If the same for instance is not available, the boundary line and the location of the pillars has to traced in the field by referring to the cadastral maps in consultation with the revenue department officials as a means of last resort to maintain the integrity and the sanctity of the Reserve forest provided by law.

11.7.3 Boundary line is to be cleared of all the growth and debris at the rate of 25 man - days per km and the stone-cairns are to be repaired at the rate of 5 man-days per cairn. In case of missing pillars the same shall be replaced with stone cairns at the rate of 5 man-days per cairn. The wooden post at the center of the pillar is to be charred at the base and painted with coal-tar and numbered with white paint. Sign boards indicating the name of the Forest Block and Compartment No. shall be displayed at prominent places. The annual requirements of funds for this proposed in Chapter 10 of Part – II.

11.7.4 All RF boundary lines, inter divisional boundary lines shall be cleared every year as prescribed in the O.F.D. Code 1979 subject to availability of funds. In **Table 11.2** has given the detail below the position of boundary pillars in the field.

Table 11.2 Position of Boundary Pillars in the Field										
Sl. No.	Name of R.F Block	Name of Range	Total No. of Compartments in the R.F.	Length of boundary in Rkm.	No. of Pillars as per notification	No of pillars traced out & verified	Good conditions		Damaged	
							Concrete	Stone Cairn	Partly	Fully
1	2	3	4	5	6	7	8	9	10	11
1	Odinabadi R.F	Mujagada	1	17	15	71	0	6	58	7
2	Vinjigiri RF	Central Range	4	44.22	302	124	33	10	46	35
3	Brahamansahi RF	Tarsingi	6	42.47	348	299	0	63	133	103
4	Jagannath prasad RF	Jaganath prasad & Mujagad	11	113.58	791	726	103	130	364	129
5	Rambha RF	Mujagada Range	7	37	574	390	34	53	121	182
6	Ragada RF	Central Range	10	83.5	607	255	13	4	164	74
7	Chandragiri RF	Gallery & Tarasingi	12	71.665	544	425	135	38	85	167
8	Dumudumi (E) RF	Central Range	1	23.14	74	72	68	1	3	0
9	Dimirijholi RF	Gallery Range	2	33.38	376	224	34	13	39	138
10	Paichelia RF	Tarasingi & Jaganath prasad	5	57.3	483	201	-	30	163	8
11	Baiballi RF	Mujagada Range	12	65	478	286	0	93	87	106
12	Ambajhara RF	Gallery & Tarasingi	19	112.13	528	303	63	25	35	180
13	Malati RF	Central Range	1	25.77	100	88	41	18	4	25
14	Ghogoda RF	Tarsingi	6	62.75	301	177	2	22	61	92
15	B.Gundurubadi RF	Tarasingi	4	44.12	230	73	0	8	0	65
16	Kaliamba RF	Central Range	6	57	299	249	23	32	102	92
17	Chadhiapalli RF	Gallery	1	7.5	60	42	6	0	27	9
18	Tiliki RF	Central /Mujagada Range	6	72.58	274	120	64	54	40	80
19	Kullada RF	Mujagada Range	4	20	100	62	17	0	18	27
20	Gallery RF	Mujagada & Gallery	23	124.37	875	230	30	200	20	210

21	Dumudumi (W) RF	Central Range	1	24.33	90	25	12	13	11	14
22	Darapangia RF	Mujagada Range	12	68	552	403	0	262	44	97
Total			**154**	**1206.805**	**8001**	**4845**	**678**	**1075**	**1625**	**1840**

11.7.5 The Inter-division boundaries shall be cleared to a width of 15m, external boundaries and common block boundaries to a width of 8m and interior village ring lines to 5m. Compartment lines where they do not follow natural features like nallah, road, bridges etc., shall be cleared to a width of 6 m.

11.7.6 The Divisional Forest Officer, the Assistant Conservator of Forests, Range Officer, Forester and Forest Guard shall inspect the boundaries regularly as per Codal provisions. Every Forester shall submit quarterly certificate of having inspected the boundaries of all the RFs within their respective jurisdictions to the Range Officers concerned, for transmission of the same to the Divisional Forest Officer on 1st January, 1st April, 1st July and 1st October each year. Similarly, every Forest Guard shall submit a monthly certificate of verification of boundaries of all reserved forests under his charge and it shall be reflected in his tour diary.

11.7.7 Encroachment, if any, shall be evicted as per law. The affected area shall be demarcated and pillars posting done to avoid further encroachment. Re-survey, demarcation and construction of permanent boundary pillars are absolutely necessary to check this growing problem. GPS instrument should be used in course of field survey. There are encroachments due to shifting cultivation which is continuing since long in the Division. Effective measures shall have to be taken to control shifting cultivation.

11.7.8 Agave (*Agave sisalana*) plantation can also be taken up on the boundaries at 1m x 1m spacement in 3 staggered rows. It acts as boundary and natural barrier, and its matured leaves give extra economic return to local people. The plantation provides dwelling place for ground nesting birds too.

11.8 Maintenance of Records

11.8.1 Control Forms shall be filled up and properly maintained by the DFO as per National Working Plan Code provided in Chapter 13 of Part II. Compartment histories must be updated from time to time. A separate binded Control book shall be maintained by the DFO to reflect records of those important activities of all working Circles e.g. Activities like VSS/JFM, micro-planning, RDF work, Felling, crop condition, regeneration status and other deviations/shortfall of prescribed details should also be entered regularly. Maps and other records including a register of reserved forests and other legally constituted forests shall also be maintained and kept in safe custody which has been elaborated in Chapter 13 of Part II.

11.9 Monitoring of Old Plantations

11.9.1 Old plantations shall be monitored from time to time with regard to survival percentage, growth characteristics, injuries to the crop and other indicators. Observation of monitoring and inspection shall be reported in the journals.

11.10. Forest Check Gate

11.10.1 To prevent and control illegal transportation of timber and other Forest produce, Forest Check Gates have been established at vulnerable points of road network of the division. After reorganization, depending upon staff strength and relative importance some of them are not upgraded under CAMPA but all are fully functioning. The lists of forest check gates of this division are mentioned in the following table.

TABLE 11.3 LIST OF FOREST CHECK GATES OF THE DIVISION

Sl No	Range	Location	Remark
1	Mujagada	Lalsingi Check Gate- End of the Bhanjangar town towards philbani road	Functioning and Upgraded under CAMPA
2		Durgaprasad Gate – On phulbani road in the foothills of Durgaprasad RF in Phulbani road	Functioning and Upgraded under CAMPA
3		Kullada	Functioning
4	Gallery	Dholpita	Functioning
5	Central	Gangapur In gagngapur Vilage. Nearby Aska.	Functioning
6	Tarasingi	Ghogodo. Towards daspalla road	Functioning
7		Tarasingi	Functioning

11.10.2 Strengthening of Forest Check Gates under CAMPA APO

In order to promote forest protection, under CAMPA APO, there is provision for strengthening of the forest check gates under the following components- DFO shall ensure the up-gradation of all check gates in the division by CAMPA.

TABLE 11.4 STRENGTHENING OF GATES UNDER CAMPA

Sl No	Item of works	Units	Unit cost (Rs. in Lakhs)	Estimated cost (Rs. In Lakhs)
A)	**Establishment Expenditure**			
1	Construction of the Gate operating house with RCC roof including stone masonry @121 sqft each	Sq.ft		1.00

2	Construction of Rest shed with Latrine & bath @ 207Sq.ft (RCC roof)	Sq.ft		1.75
3	Construction of Barricade 2 nos with radium stickering	2 no's	0.15	0.30
4	Construction of one iron bar with posts	1 no	0.25	0.25
5	Radium signage 2 nos of size (6'X4')	2 no's	0.10	0.20
6	Search light & spot light (2 nos each)	2 no's each	0.08	0.16
7	Networking system (Provision of Cell Phone) 2 nos	2 no's	0.025	0.05
8	Alternative lighting system (Solar/Inverter)		LS	0.15
9	Bore well with hand pump	1 no	0.75	0.75
	Total (A)			**4.61**
B)	**Recurring Expenditure**			
1	Wages for 3 nos watchers for 12 months		0.08325 per month	0.999
2	Contingency			0.048
	Total (B)			**1.047**
	Grand Total (A+B)			**5.657**

11.11 Forest Fire Management

11.11.1 Analysis of causes of forest fire, its extent and damage done to forest has been explained in the **Chapter 2A of Part -I**. Every year DFO shall prepare a Fire Map and develop strategy, Special plans to prevent fires in these blocks have to be prepared and implemented. The community around these blocks has to be made aware and with their assistance the occurrence of fire in these blocks is to be reduced. In these villages, the village level committees or VSS need to be formed and each committee is to be given incentive for three months (March, April and May) for preventing the incidence of fire and they should be motivated to protect the forests from fire. The following fire protection measures are suggested:

i. All Range Officers shall maintain annual fire maps on 1:25,000 scales of their respective ranges showing incidence of fire, in order to enable them to take advance fire protection measures in fire prone areas.

ii. Annual fire line clearance of 1 to 2-chain width in fire sensitive areas, coupled with controlled burning shall be done under the personal supervision of forester. Moreover, old fire lines, forest roads, boundary lines, village ring shall be kept clean by taking up control burning in 1-chain strip on both sides of it.

iii. The Orissa Forest (Fire Protection) Rules, 1979 and the fire protection measures provided in the O.F.D. code shall be followed in these forests. The forest fringe village where there

is high fire vulnerability is to be identified. In these villages, the village level committees/VSS need to be formed and each committee is to be given incentive for three months (March, April and May) for preventing incidents of fire and motivate them to protect the forests from fire.

iv. Public awareness campaign should be organized in winters ahead of dry season to educate people especially in the fire prone areas not to resort to burning of ground flora to collect NTFP including kendu-leaf. Besides, VSS shall be actively involved in fire protection including extinguishing of fire in their allotted area. Incentives should be announced to both public (including VSS) and staff to protect the forests from fire. Funds for this purpose should be provided in budget.

v. Fire fighting teams consisting of Section Forester, beat guard and fire watchers should be formed in areas vulnerable to fire. Incidence of annual fire should be entered in the compartment history.

vi. Imparting training to forest staff, VSS members and workers on modern forest fire management. Better communication facilities like wireless sets, vehicles etc. will be of great help to combat the menace.

vii. Fire fighting Cell shall function both at Division Office and Range Offices during the aforesaid period to keep constant vigil on the menace and take instant action to extinguish the fire. In each fire fighting cell that should be the provision of a vehicle engaged on hire basis along with a fire fighting squad.

viii. Fire protection has to be attended as top priority in the Division. The fire incidences should be also monitored by the DFO through database facility and plan accordingly.

11.11.2 Fire records: Fire records and squad movement register and log book of vehicle engaged under scheme shall be maintained range level. The records and Register shall be checked by DFO/ACF fortnightly to ensure the squad and vehicle movement. All above documents shall be communicated to the Regional chief conservator of forest, berhampur for maintenance of circle level database.

11. 12 Grazing

11.12.1 Estimation and analysis of grazing problem has been discussed in **Chapter 2A of Part – I.** Due to heavy cattle population pressure in the Division, adequate regeneration is affected in the forest areas. For better fodder availability following measures may be adopted.

(i) People may be motivated with the help of veterinary department, to minimize the

number of unproductive cattle. They should rather go for better quality cattle and stall-feeding

(ii) Plantations of fast growing fodder species and development of silvi-pasture plots in the selected high-density cattle areas be taken up

(iii) Rotational grazing shall be adopted basing on the carrying capacity of the area for which the VSS shall be trained.

11.12.2 *Acacia nilotica* (Babul), *Albizia lebbeck* (Sirish), *Gliricidia spp, Sesbania egyptica* (Agasti), *Leucaena leucocephala* (Subabul), *Albizia procera*, (Tentra) *Grewia oppositifolia* are some suitable fodder tree species. Similarly, *Dichanthium annulatum*, *Cenchrus ciliaris* (Anjan), *Andropogon ascinodis*, *Themeda arundinacea*, *Setaria pumila, Eleusine indica* are some suitable fodder grasses for the Division.

11.12.3 To control the damage caused by indiscriminate grazing of forests, the Government has framed the Orissa Forest (Grazing Cattle) Rules 1980. To minimize damage caused by indiscriminate grazing and browsing, following measures shall be adopted by Divisional forest officer

(i) Grazing will be allowed strictly basing on the carrying capacity of the area e.g. Lopping of trees for fodder is to be discouraged.
(ii) Grazing should not be allowed in over-grazed areas, regenerating areas and where cleaning have been carried out.
(iii) All plantations shall remain closed for grazing for a period of 5 years including the year of planting. No grazing should be allowed in areas where bamboos are raised under plantations.
(iv) Coupe areas should be closed for grazing for at least 8 years, i.e. three years prior to felling and five years following the year of working. In areas where there is no regeneration, it should be totally closed to grazing.
(v) The grazing year shall be from 1st July to following 30th June. All grazing permits shall expire on 30th June.

11.12.4 To control the damage caused by indiscriminate grazing of forests, the Government has framed the Odisha Forest (Grazing of Cattle) Rules, 1980, but the implementation of these rules at the field level is becoming increasingly difficult due to local conditions and lack of adequate staff. On the other hand, cattle population is increasing day by day as the human population expands, which further aggravates the situation. Therefore, during this plan period, proper implementation of grazing rules should be ensured.

11.13 Forest Based Industries

11.13.1 There is only one saw mill sanctioned in the Division to meet the local timber

requirements of people.

11.14 Maintenance of Control Forms and Records

11.14.1 Control Forms

11.14.1.1 Standard control forms will be used and maintained as per Rule 132 of the O.F.D. Code and Code of Working Plan and direction from higher authorities.

11.14.2 Fire Maps

11.14.2.1 They shall be maintained as per Rule 283 (22) of the Orissa Forest Department Code. The records should be submitted annually in code Form No.39, along with fire map (on a trace copy of Working Plan map scale 1:50,000), to the Conservator of Forests. Burnt area shall be shown on a trace copy of compartment map and details shall be given in respective compartment history form.

11.14.3 Compartment Histories

11.14.3.1 The Compartment Histories update have been neglected and in all cases. Much effort have gone in collection of reliable data for drafting Compartment Histories files of all forest blocks which was extremely time taking. This is the revised Working Plan therefore Compartment History files for all the compartments of forest blocks have been prepared de-novo in three sets, so that one set could be kept in the Division Office and other given to the Range Officer concerned for maintenance, in accordance with the standard instructions contained in the O.F.D. Code. A map on 1: 25,000 scales showing growing stock of the compartment has been attached to each file. Entries in the Compartment Histories should be completed by Range Officer before 30th of June every year and set to the Divisional Forest Officer for onward transmission to then Conservator of Forests, for perusal within 31st July. During office inspection maintenance of compartment histories shall be checked. Divisional forest Officer must check the Compartment History file during field inspection.

11.14.4 Boundary Repair Register

11.14.4.1 The Divisional Forest Officer, Ghumsur North Division shall maintain a permanent register allotting 2 to 3 pages to each block and details of all repairs carried out each year should be entered in the register. It helps to know the exact updated position of boundaries and the repairs carried out to them. Also this should have GPS co-ordinates for reference.

11.14.5 Plantation Journal

11.14.5.1 Journals will be maintained for the plantations raised in a range showing details of operations and their cost, in the forms prescribed in Orissa Forest Plantation Manual 1977.

11.14.6 Plantation Register

11.14.6.1 A plantation register shall be maintained at the division level giving details of every

plantation carried out in the Division like year of plantation, location, area, species planted and agency which planted. Entries should be made in this register at the end of every year. A unique index number will be assigned to individual plantation, and a separate serial shall be adopted for each Block and some pages will be assigned to it in the register to have room for later entries. This register should not show any detail of operations, which will be shown in the plantation journals. The plantation register should be maintained as prescribed under Plantation manual 1977. Maps of the plantations along with photos taken in different period with all details will also be kept in the plantation register.

11.14.7 Register of Reserved Forests

11.14.7.1 Maintenance of this register needs much care and immediate attention. It should preferably contain the original notification (or an attested copy thereof) declaring the blocks and reserved forests. Accurate maps of the block delineating the boundaries and showing the position of the boundary pillars as they exist on the ground and other details like boundary lengths, number of pillars, their coordinates etc. should also be kept as part of this register. DFO shall keep on trying to obtain copies of reservation notifications and original maps etc. Detail list of DLC record pertaining to Ganjam District is appended in **Annexure - XXXXIV**

11.14.8 Divisional Journal

11.14.8.1 This should be maintained as per Rule 134 of the Orissa Forest Department Code, 1979, by the Divisional Forest Officer. Other publications on special projects and activities of FDA, JBIC, World Food programs, wild life conservation women participation in JFM in the Division and livelihood based approach, success stories of all schemes should also be documented annually or half yearly.

11.14.9 Survey and Maintenance of Maps

11.14.9.1 The following maps have been prepared during the Working Plan field exercise and compilation of the Plan.

11.15 Maps

11.15.1 Stock Maps

11.15.1.1 Three sets of stock maps have been prepared with GIS technology in 1:75,000 and 1:50,000 scale giving details of crop composition for both RFs and PRFs of the division. Stock map for each compartment have been pasted in the compartment history file. One set will be retained in the office of the Working Plans Officer and the remaining sets will be kept in DFOs office.

11.15.2 Index Map

11.15.2.1 Digitized Administrative layer has been prepared on 1:75,000 and 1:50,000 scale with GIS technology. The map depicts the important towns, roads, forest blocks, river system, range headquarters, beat headquarters, section headquarters, important villages etc. of the Division

includes all administrative jurisdictions i.e. Division, Range, Section, Beat boundaries in the layer.

11.15.3 Management Maps

11.15.3.1 Three sets of management maps have been prepared on 1:25,000 scale topo-sheets. Annual coupes with coupe number in each Working Circle have been shown. One set of management maps will be sent to the Working Plans Office and two sets will be kept with the Divisional Forest Officer, Ghumsur North.

11.15.4 Working Plan Maps

11.15.4.1 Five copies of the digitized Working Plan map or management have been prepared on 1:50,000 scale in consultation with the authorized map preparing agency. The map shows different Working Circles, felling series, Rehabilitation series etc. It also shows the permanent features, territorial boundaries, name of the block, number of compartments etc. Three sets will be retained with Divisional Forest Officer, Ghumsur North for use in Division Office and Range office. One set will be supplied in the office of Working Plans Officer and one set will be given to the Conservator of Forests.

11.16 Capacity Building of Forestry Personnel

11.16.1 The skill and the information requirements of the staff at the beat, section and range level has undergone a lot of change in the last two decades. The interaction of these levels of staff with the public, people's representative, NGOs and officials of other department has increased manifold. The following proposal may be considered by the DFO for improving the efficiency and performance of the field staff at

i. Proper training and regular refresher courses for the field executives.

ii. Good communication skill training to the FG/FR level

iii. Regular in-house discussion to update knowledge of the field staff. Important relevant rulings of different Courts should be discussed & changes brought about in Forest Act and Rules in recent years should be brought to their notice. New techniques of plantation, nursery raising etc be demonstrated to the field staff.

iv. Monthly meeting at the Range level should give opportunity to Foresters and Forest Guard to express views and opinion on various current issues. Successful tackling of situations should be discussed and analysed.

v. Important circulars and changes in methods/ technology/approach should be discussed at length by the DFO during monthly meeting of Range Officers.

vi. Supply of firearms to all Range Officers, Section foresters and Guards and impart arms training to them.

vii. Frequent raids and surprise checks should be conducted in the smuggling prone areas and check gates.

viii. Awards/Incentives should be given to the field staff for exemplary work in the protection and development activities.

ix. Malkhanas to keep seized produce should be available in all smuggling prone areas.

x. Personal entitlements of filed staff especially those posted in remote areas should be disbursed at the earliest.

11.16.2 Some of the administrative changes as stipulated below may also be considered by the authorities concerned

i. Promotional opportunity to the field staff should be increased. At present most of the FGs/Foresters who are at the cutting edge of the territorial administration, are disgruntled as they are retiring without any promotion. Minimum of one promotion should be assured.

ii. Power of Executive Magistrate be given to the ACFs and DFOs for eviction operations and forest raids/search

iii. Secret Service Funds should be provided to the DFO to collect intelligence about timber smuggling, poaching etc.

iv. Attractive compensatory/ rehabilitation package be given to the families of field staffs laying their life or getting badly injured on forest protection duty.

11.17 Forest Conservation Act and its Implementation

11.17.1 Under the forest conservation Act 82.837 hectares of forest land has been diverted for different Minor and Major irrigation Project and transmission line in the Division. In lieu of diverted forest land, equivalent extent of non forest land has been identified in the area of Ghumsur south Division. Hence the question of taking up compensatory afforestation within the premises of this division does not arise.

11.18 Eco-tourism

11.18.1 Eco- tourism should be encouraged in all potential areas in order to create awareness and increase revenue. The DFO shall select Eco-scouts from local people to guide the tourist. Buildings for accommodation/ lodges may be constructed at the Bhanajangar and Daha dam site and other places of natural scenic beauty preferably in Mujagada Range. The VSS and EDC should not only be encouraged to provide decent catering services and other hospitality related services to the visitors but also should take active participation in maintaining and enhancing the facilities at the eco-tourisim sites and also take active participation in protection, conservation and show casing the natural beauty and amenities of the area. The Range Officer will be entrusted of getting the

training imparted to the people from the Tourism Department. Nature trail, interpretation centers, hiking, picnic; trekking shall be organized and monitored in each Range. This activity should be an alternative livelihood base program for rural people.

11.19. Fuel wood Management

11.19.1 Firewood is legally supplied by the O.F.D.C. Ltd. only. This supply is very limited and is delivered by the Forest Department for sale through O.F.D.C. Ltd. retail sale Depots. The production is hardly any match to the assessed requirement; it is not even 1% of the total requirement. Though some other sources like LPG, Agricultural Waste, Kerosene, cow Dung are also available & used as a cooking fuel, firewood continues to be the major cooking fuel thereby exerting tremendous pressure on the forests of this Division. Keeping in view the limited availability of alternative fuels, the removal of firewood cannot be stopped completely as this domestic energy is an essential daily requirement of majority of the populace of the tract.

11.19.2 To reduce the heavy pressure on the existing forests, the following measures may be adopted:-

- Extensive plantations of short rotation fuel wood species should be raised on community & other barren lands.
- Encouragement of Agro Forestry and Farm Forestry in large scale.
- Motivation of people through formation of V.S.S. to regenerate degraded patches of forests to meet their fuel-wood requirement, instead of depending on existing forests.
- Distribution of fuel-efficient smokeless chullahs (it can reduce consumption by 30%) to all the villagers at concessional rates to reduce the consumption of fuel wood. Even, optimal utilization of firewood shall be ensured without wasteful burning.
- Use of firewood in commercial establishments like hotels; restaurants; Brick kiln etc shall be strictly prohibited.

11.20 Encroachments

11.20.1 Earlier encroachment in the Forest land was very common. Due to the stringent provision of Forest Conservation Act as stumbling block in regularisation of such cases and moreover it being beyond the purview of the State Government, the hope and aspiration of the encroachers to grab the land have been frustrated which discouraged this activity to some extent. But in anticipation of passing of Scheduled Tribe and Other Forest Dweller (Recognition of Forest Rights) Act 2006 some unscrupulous tendency has cropped up to grab forest land by taking advantage of this Act through resorting to encroachment. So it is essential to keep a constant vigil on this matter along with pursuing the process of eviction of ineligible encroachers vigorously with the help of District Administration.

11.20.2 Efforts should be made to motivate the local people for persuading the encroachers to relinquish the encroached area which shall be assigned to the VSS for Joint Forest Management simultaneously. Plantation / Silvicultural operations as per the need shall be taken up over the said area to restore the vegetal cover. This process of recouping the encroached area to the fold of Forest Department though considered as an effective and lasting solution but a great degree of risk is involved in it. Damage to the plantation by cutting, uprooting, burning etc. is usually resorted to by some unscrupulous persons.

11.21. Research Plots

11.21.1 Permanent sample plots maintained by the state silviculturist had earlier been laid down throughout the division. But the plots are not maintained and also damaged by natural calamity ie. Philine, Hud hud . State Silviculturist in consultation with The Divisional Forest Officer shall rehabilitate the old plots and new plots may be find out in the division.

11.22 Bamboo Artisan

11.22.1 In this Division, Bamboo Artisan distributed all over the Ranges. Mujagada, Jaganathprasad range is having good number of artisan who used to make the bamboo products. Viz, Gabion, Handicrafts. But there is no awareness about the demand of bamboo products in country. Here by proposing two numbers of trainings in each range. 1. Technical Training, 2. Awareness meeting. The detail list of Bamboo artisans in the division is given in **Annexure-XXXXV**

11.23. Monitoring and Evaluation of Implementation of Plan prescriptions

11.23.1 Monitoring and Evaluation is highly essential to assess the impact of plan prescription so that necessary intermediate revisions can be made if necessary. Further the shortcomings/ bottlenecks observed can be removed through remedial steps. The National Working Plan Code, 2004 envisages the use of Criteria and Indicators for monitoring and evaluation of Sustainable Forest management. The criteria and indicators as devised by Indian Institute of Forest Management (IIFM), Bhopal and the location of information for indicators as published in “Incorporation of Criteria and Indicators in Forest Working Plans” by the said Institute has been adopted for this purpose in respect of this division. The Divisional Forest Officer in consultation with the Regional Chief Conservator of Forests will select at least one point where Sample Point Inventory (0.1 ha.) has been carried out in each Felling / Rehabilitation Series for periodical assessment of various parameters including the change in vegetation to evaluate the result of implementation of the prescription of the Working Plan.

CHAPTER - XII

ESTABLISHMENT AND LABOUR

12.1 General Consideration

12.1.1 Human resource is an integral part of any management system and plays a vital role in this regard. In forestry both technical expertise and experience of the workers are essential. Regular establishment consists of mostly technical personnel and partly supporting ministerial staff while the work force required to carry out various operations in forest areas is pulled from the forest fringe villages which constitutes unskilled, semi skilled and skilled persons. Technical competency of the regular staff coupled with the skill of the local people can translate the plan into action successfully.

12.2 Establishment

12.2.1 Revision of Cadre Strength: Establishment consists of sanctioned regular posts under non-plan only in this division. The cadre strength is inadequate to shoulder the multifarious responsibility as emerged in the present situation. Moreover the work load is not only heavy but also very tough in view of the need to strike a balance between enforcement of Forest Act and Rules and simultaneous development of forest ensuring the active participation of local people through VSS. It is absolutely essential to bridge the gap between the present strength and required strength of Forest Officers as well as ministerial staff. Protection through enforcement of law and creating awareness among people is to be emphasised at the same time. Field units like Beat, Section and Range are the cutting edge of the forest administration. The reduction in the jurisdiction is a bare necessity for effective functioning. Hence there is need of enhancing the cadre strength of both field functionaries and the ministerial staff.

12.2.1 The cadre strength of the Division is changed after re-organization of Forest Department in October 2003. The Cadre strength for all Divisions were revised vide Memo No.4100 dated. 24.02.2004 of the Principal Chief Conservator of Forests, Odisha. Further, the Cadre strength of Deputy Ranger and Forester was again revised by the Principal Chief Conservator of Forests, Odisha vide his office order No. 1356 dated. 09.10.2009 & O.O. No. 1391 dated. 16.10.2009 respectively. The **Table No.12.1** given below shows the Sanction strength of posts and employees in position as on 31.05.2016 in Ghumsur North Forest Division.

Table No.12.1. Cadre Strength , Staff Position and Vacancy Position as on 31/05/2016					
Sl. No.	**Name of Post**	**Sanctioned strength**	**Staff in position**	**Vacancy position**	**Remarks**
1	***2***	***3***	***4***	***5***	***6***
1	DFO	1	1	0	
2	ACF	2	1	1	
3	Forest Ranger	7	4	3	
4	Dy. Ranger	6	2	4	
5	Head Clerk	1	1	0	
6	Jr. Accountant	7	5	2	
7	Jr. Stenographer	1	1	0	
8	Jr. Clerk	9	7	2	
9	FEO	2	0	2	
10	Forester	36	25	11	
11	Forest Guard	103	77	26	
12	Driver	2	2 + 1 (*)	0	*.1- excess as per O.A.T. Order
13	Mali	1	1	0	
14	Office / Orderly Peon	2	1	1	
15	Office Chowkidar	2	2	0	
16	Chowkidar-cum-Sweeper	1	1	0	
17	Temporary status	10	8	2	
	T O T A L	**193**	**139 + 1 (*)**	**54**	

12.2.2 Prescribed Cadre Strength: Considering the aforesaid requirement it is felt that the forest area of a Beat should not be more than 10 Sq. Kms. in view of increased biotic interference due to galloping rise in the population. Similarly Forest Check Gates are to be strengthened. Taking all such aspects in to account the cadre strength for this division is prescribed in the **Table No.12.2** given below.

Table No.12.2: Cadre Deployment & Cadre Changes Required					
S. N.	**Category of Staff**	**Sanctioned Strength**	**Proposed Strength**	**Increase in Strength**	**Remarks.**
1.	Asst. Conservator of Forests	2	0	0	NIL
2.	Range Officers.	7	8	1	1 Range officer for DAHA Wetland Conservation Project and other Eco-tourism Projects
3.	Dy Ranger	6	0	0	NIL
4.	Foresters.	36	37	1	1 Forester for Divisional Mobile Unit

5.	Forest Guards	103	106	3	3 Forest guards for Divisional Mobile Unit
6.	Junior clerks	9	14	5	One Junior clerk to each Range to assist respective Range officers to maintain Records and files due to increased paperwork & workload.
7	Accountant	7	12	5	One Accountant to each Range to assist respective Range officers to maintain Accounts and other records.

12.3 Capacity Building of the Staff

12.3.1 The enhancement of knowledge and expertise of the staff is indispensable to cope with the current emerging situation as well as for the future. As already described earlier, the task is very tough to discharge both regulatory and development functions simultaneously. So the capacity building of the staff is imperative. Following prescriptions are made for this purpose.

i. Regular refresher courses shall be conducted for field executives.

ii. Fire arms training to Forest Guard, Forester and Range Officer for proper and effective handling.

iii. Training on legal matters at frequent interval at least once in a year for ensuring prosecution rightly.

iv. Training on communication skill for Joint Forest Management.

v. Training on modern fire fighting technique particularly tackling the fire hazard on steep hill slopes.

vi. Training to contain elephant depredation and wildlife human conflict.

vii. Secret Service Funds should be provided to the DFO to collect intelligence about timber smuggling, poaching etc.

viii. Awards should be given to the field staff for exemplary work in the protection & Afforestation activities.

ix. Quarters of field staff should be constructed on priority basis.

x. Power of Executive Magistrate shall be given to the ACFs and DFOs of territorial wing to issue eviction orders in respect of encroachments in Reserved Forests and for search operation.

xi. Malkhana's to keep seized produce should be available in all smuggling prone areas.

xii. Forest department should have its own lawyers to contest cases in the courts.

xiii. Attractive compensatory/ rehabilitation package shall be given to the families of field staffs laying their life or getting badly injured on for forest protection duty and Left Wing Extremist areas.

xiv. Training on Remote Sensing and GIS, Computer Application should be conducted in range level for the benefit of the field executives.

xv. Exposure visit of the field staff in side & outside of the state should be taken up regularly to broaden their knowledge.

xvi. Training on wildlife management should be provided by engaging eminent wildlife Personalities to Field Executives.

12.4 Amenities to the Staff

12.4.1 Subordinate field functionaries like Forest Guards and Foresters are mostly residing in interior, inaccessible and inhospitable areas and very often susceptible to different diseases. Being the cutting edge of forest administration, they are required to be in sound health to discharge arduous duties. Therefore basic amenities like safe drinking water, good accommodation, proper sanitation, provision of health kit etc. should be provided to them departmentally. Further they should be brought under fabulous health insurance. Apart from that they become the victim of encounter with smugglers / poachers/ L.W.E while discharging the protection duty. At present the life insurance cover for these employees are at par with other Govt. servants. It is necessary to hike their life insurance cover. There is also discontentment among the forest staff due to the disparity in pay, allowances and perquisites etc. with that of police staff. Hence it is prescribed that effort should be made to equate the police and forest staff in this regard.

12.5 Intelligence Network

12.5.1 In order to combat the smugglers and poachers successfully, building of an intelligence network is of utmost importance. It should be created and developed at both range and division level. Secret service funds should be provided to the Divisional Forest Officer for collecting intelligence to strike the crime effectively.

12.6 Power of Executive Magistrate

12.6.1 Very often difficult situations are faced in conducting raids / search / eviction in absence of the Executive Magistrate in time. So it is essential to provide such power of Executive Magistrate to the officers not below the rank of Assistant Conservator of Forests in the greater interest of protection of forests.

12.7 Labour Supply (Work Force)

12.7.1 Skill upgradation

12.7.1.1 Daily wage workers more precisely the work force is also equally important to augment the regular establishment for effective functioning of the department. Most of the forestry operations like cutting of bamboo, harvest of timber, nursery raising, plantation activities etc. needs some skill and expertise. As already described in Part-I, the labourers are procured from neighboring district for cutting of bamboos. So the efforts shall be made to promote such workers to cater the need. Further anti smuggling / anti poaching / fire fighting watchers are to be engaged as per the prescription in the concerned working circles and miscellaneous regulations. Such work force should be groomed with some training so that they can assist the forest personnel in a better way. Another important requirement is the skill up-gradation local people in handling the elephant depredation satisfactorily so that loss to human life and property can be prevented.

12.7.2 Incentive

12.7.2.1 It is highly essential to ensure the steady supply of adequate labourers for different forestry activities most of which are time bound in nature. Unless the work is executed in time there will be tremendous adverse effect in future. Very often it is experienced that there is a stiff competition in the locality to get required number of labourers for plantation activity which coincides with the time of paddy and other agricultural crop cultivation. Further the work in forests is not only arduous but also inhospitable. In order to allure the labourers for forestry operations, it is necessary to provide some incentives like provision of food commodities at subsidized rate, supply of free medicines for some easily prone diseases like malaria, diarrhea, dysentery etc. should be considered.

12.7.3 Welfare programme

12.7.3.1 Provisions of safe drinking water through digging of tube well, bore well, health camp for free medical checkup and distribution of medicines at frequent interval, provision of Non Formal Education centre for forest based workers in remote area, communication net work for such people staying at inaccessible locality, etc. shall be considered in the forest fringe villages not only to ensure the availability of the work force for forestry operations but also to obtain their active participation in protection and development of forests.

CHAPTER-XIII

CONTROL AND RECORDS

13.1 General Consideration

13.1.1 Monitoring is the most crucial aspect to ensure proper implementation. It is necessary to assess the implementation at periodical intervals. It must be in an objective manner to record the findings in a properly documented procedure. So various records are prescribed for maintenance not only to indicate the outcome of implementation but also to form a database for future planning. As envisaged in National Working Plan Code 2004 control forms should be prepared to regulate all the important operations prescribed in the Working Plan.

13.2 Maintenance of Records

13.2.1 Register of Forest Blocks

13.2.1.1 Registers of Reserved Forests, Proposed Reserved Forests, and Demarcated Protected Forests are to be maintained properly as per codal provisions. These registers should contain copies of the original notification (or an attested copy there of) declaring the forest blocks under the category that belong. Accurate maps of the block delineating the boundaries and showing the position of the boundary pillars as they exist on the ground and other details like boundary lengths, number of pillars, GPS readings of the pillars etc. should also be kept as part of this register. All changes / modification in area due to diversion, de-reservation along with copies of such notifications should also be maintained in the register.

13.2.2 Compartment Histories

13.2.2.1 For want of updated compartment histories during the preceding Plan period it has become difficult to collect reliable data for revision of the Plan. Compartment History Files for all the compartments of the forest blocks have been prepared in three sets which will be kept in the Working Plan Office, Divisional Forest Office and at the Forest Range Office for maintenance, in accordance with the standard instructions contained in the O.F.D. Code and National Working Plan Code 2004. A stock map on 1:25,000 scales showing growing stock of the compartment has been attached to each such file. Compartment Histories must be updated from time. Entries in the compartment histories should be completed by Range Officer before 30th of June every year and sent to the Divisional Forest Officer for onward transmission to the Conservator of Forests for perusal within 31st July. During office inspection, maintenance of Compartment Histories shall be checked.

13.2.3 Plantation Journals

13.2.3.1 Journals for plantations shall be maintained for each plantation / rehabilitation work taken up in the Division showing details of operations and their cost, in the forms prescribed in Orissa Forest Plantation Manual 1977. Maps of the plantations with all details shall also find place in the plantation journal.

13.2.4 Plantation Register

13.2.4.1 A plantation register shall be maintained at the Division level giving details of every plantation carried out like year of plantation, location, area, species planted and agency involved. A unique index number will be assigned to individual plantation, and this will also be shown in the Plantation journal. This register should not show any detail of operations, which will be shown in the plantation journals. The plantation register should be maintained as prescribed under Plantation manual 1977. The plantations taken up should be reflected in the GIS database for the Division in the Divisional office and the database in the GIS lab of the Principal Chief Conservator of Forests, Orissa should also be updated in October / November each year.

13.2.5 Register of Silvicultural Operations

13.2.5.1 A register shall be maintained at the Division level and Range level to control book giving details of subsidiary silvicultural operations carried out in Selection, and Bamboo coupes. Details of the Coupe, forest block, area covered, clumps trees attended to etc shall be covered. The same shall be maintained and regular update must be made to the Working Plans Officer. This will facilitate revision of Plans greatly in the future.

13.2.6 Fire Maps

13.2.6.1 Fire maps shall be maintained as per Rule 283 (22) of the Orissa Forest Department Code and National Working Plan Code 2004. The record should be submitted annually in code Form No. 39, along with fire map to the Conservator of Forests. Burnt area shall be shown on a trace copy of compartment map and details shall be given in respective compartment history.

13.2.7 The incidents of fire and the area burnt should be reflected in the GIS database at the Divisional level and in the GIS lab in the O/o the Principal Chief Conservator of Forests, Orissa. The Divisional Forest Officer should also obtain satellite data's on fire frequency and sites for effective monitoring.

13.3. Control Forms

13.3.1 Two formats of control forms are prescribed namely Coupe Control Form for control of all silvicultural operations such as cleaning, thinning, burning, subsidiary silvicultural operations, petty felling etc. and Felling Control Form for controlling and maintaining a record of all trees marked for felling and trees retained as seed bearers or to safeguard future yield.

13.3.2 These two forms are reproduced below from National Working Plan Code 2004 and the same will be maintained in accordance with the provisions of Para-78 of the aforesaid code and the instructions issued in this regard from time to time.

a. Coupe Control Form

Working Circle Periodic Block		Felling Series Cutting Section	Localities prescribed / Localities suggested				COUPE CONTRL FORM		
							Coupe No.	Page	
Prescription in brief	W.P. para	Year due	As carried out				Excess (+) or Deficit (-)		Remarks & Sanction
			Year	Block/ Comptt.	Area	Volume	Area	Volume	
1	2	3	4	5	6	7	8	9	10

b. Felling Control Form

Working Circle periodic Block		Felling Series Cutting Section		Localities prescribed / Localities suggested				COUPE CONTRL FORM	
								Coupe No.	Page
Block & Comptt.	Area	Species	Diameter Class	Trees marked	Unit factor	Volume marked	Trees retained	% Trees retained	Remarks
1	2	3	4	5	6	7	8	9	10

Apart from the above-mentioned 2 (two) formats as prescribed in National Working Plan Code 2004, it is also necessary to prescribe control forms to maintain the abstract of operations carried out each year for every working circle to monitor the progress in implementation of the prescriptions made for the concerned working circle. Accordingly the control forms for each working circles is furnished below. These forms will be maintained at Division level.

1. Selection Working Circle

CONTROL FORM NO.

FELLING PROVISIONS OF THE WORKING PLAN

WORKING CIRCLE…… Selection

FELLING SERIES…… …… Selection Felling Series

Nature of felling: Selection Felling

Units to be marked annually:

SUMMARY OF UNITS MARKED				
Year	Units marked	Excess or deficit	Running excess or deficit	Remarks
1	2	3	4	5
2015 – 16				
2016 – 17				
2017 – 18				
2018 – 19				

2019 – 20				
2020 – 21				
2021 – 22				
2022 – 23				
2023 – 24				
2024 – 25				

2. Rehabilitation Working Circle

CONTRL FORM NO.

REHABILITATION CONTROL

WORKING CIRCLE: Rehabilitation **Rehabilitation Series**

…… Rehabilitation Series

Year of Treatment	Area prescribed					Achievement (in Ha.)		
	Coupe	Forest Block details				Area	Running	Remarks
1	2	3	4	5	6	7	8	9
2015 – 16	I							
2016 – 17	II							
2017 – 18	III							
2018 – 19	IV							
2019 – 20	V							
2020 – 21	VI							
2021 – 22	VII							
2022 – 23	VIII							
2023 – 24	IX							
2024 – 25	X							

3. Plantation Working Circle

CONTRL FORM NO.

PLANTATION WORKING CIRCLE (CONTROL OF TENDING OPERATIONS)

WORKING CIRCLE: Plantation (Overlapping) **PLANTATION SERIES:**

Reference Paragraph:

Prescription							
Year	Coupe No.	Forest Block	Status	Comptt.	Area in Ha.	Years in which actually done	Remarks
1	2	3	4	5	6	7	8
2015 – 16	I						
2016 – 17	II						
2017 – 18	III						
2018 – 19	IV						
2019 – 20	V						
2020 – 21	VI						
2021 – 22	VII						
2022 – 23	VIII						
2023 – 24	IX						
2024 – 25	X						

4. Protection Working Circle

CONTRL FORM NO.

PROTECTION WORKING CIRCLE

WORKING CIRCLE: Protection (Overlapping)

…… Protection Units

Year of Treatment	Area prescribed					Achieve-ment area (in Ha.)	Running Excess/ Deficit	Remarks
	Coupe No.	Forest Block	Status (RF/PRF/ DPF)	Compt.	Area in Ha.			
1	2	3	4	5	6	7	8	9
2015 – 16	I							
2016 – 17	II							
2017 – 18	III							
2018 – 19	IV							
2019 – 20	V							
2020 – 21	VI							
2021 – 22	VII							
2022 – 23	VIII							
2023 – 24	IX							
2024 – 25	X							

5. Bamboo (Overlapping) Working Circle

CONTRL FORM NO.

FELLING PROVISIONS OF THE WORKING PLAN FOR VOLUME YIELD

WORKING PLAN: Bamboo (Overlapping) **Felling Series: ……**

Nature of Felling: Culm selection cum Clump improvement

Units to be marked annually:

Summary of Units Marked					
Year of Working	Annual Coupe	Units Marked (SU)	Excess or Deficit	Running Excess or	Remarks
1	2	3	4	5	6
2015 – 16	D				
2016 – 17	A				
2017 – 18	B				
2018 – 19	C				
2019 – 20	D				
2020 – 21	A				
2021 – 22	B				
2022 – 23	C				
2023 – 24	D				
2024 – 25	A				

6. NTFP (Overlapping) Working Circle

CONTRL FORM NO.

NTFP CONTROL

WORKING CIRCLE: NTFP (Overlapping)

Year of treatment	Boundary Line Plantation (in RKM)					Other activities done		Remarks
	Blocks	Species	Species	Species	Total	Location	Type of work	
1	2	3	4	5	6	7	8	9
2015 – 16								
2016 – 17								
2017 – 18								
2018 – 19								
2019 – 20								
2020 – 21								
2021 – 22								
2022 – 23								
2023 – 24								
2024 – 25								

7. Wild Life (Overlapping) Working Circle

CONTRL FORM NO.

WILDLIFE CONTROL

WORKING CIRCLE: Wildlife (Overlapping)

Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

8. Joint Forest Management (Overlapping) Working Circle

CONTROL FORM NO.

JFM CONTROL

WORKING CIRCLE: **Joint Forest Management (Overlapping) Working Circle**

Reference: Paragraph No:

Year	Activities Done		
	No. of VSS	Microplans Done	Remarks (activities done etc.)
1	2	3	4
2015 – 16			
2016 – 17			

2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

CONTROL FORM NO.

JFM CONTROL

WORKING CIRCLE: Joint Forest Management (Overlapping) Management of Village Forests
Reference: Paragraph No:

Year	Activities Done		
	No. of VFs	Work Done	Remarks
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

9. Miscellaneous Regulations

CONTROL FORM NO.
MISCELLENEOUS CONTROL

WORKING CIRCLE: Miscellaneous Regulations Forest Consolidation Reference Paragraph No:

Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

WORKING CIRCLE: Miscellaneous Regulations Area discrepancy & reconciliation Reference Paragraph No:

Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2015 – 16			

2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

WORKING CIRCLE: Miscellaneous Regulations System of Sale & Disposal Reference Paragraph No:

Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

WORKING CIRCLE: Miscellaneous Regulations Irregular Exploitation Reference Paragraph No:

Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

WORKING CIRCLE: Miscellaneous Regulations Maintenance of Block Boundary

Reference Paragraph No:

Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			

2022 – 23			
2023 – 24			
2024 – 25			

WORKING CIRCLE: Miscellaneous Regulations Forest Fire Management

Reference Paragraph No:

Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

WORKING CIRCLE: Miscellaneous Regulations Grazing & Fodder Management Reference Paragraph No:

Year of Treatment	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

WORKING CIRCLE: Miscellaneous Regulations Maintenance of Records

Reference Paragraph No:

Year of activity	Activities Done	
	Types of records maintained	Remarks
1	2	3
2015 – 16		
2016 – 17		
2017 – 18		
2018 – 19		
2019 – 20		
2020 – 21		
2021 – 22		
2022 – 23		
2023 – 24		
2024 – 25		

WORKING CIRCLE: Miscellaneous Regulations Development of Forest Roads

Reference Paragraph No:

Year of Work	Road Details		
	Name	Length Done (in Kms.)	Remarks
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

WORKING CIRCLE: Miscellaneous Regulations Development of Buildings/Wells
Reference Paragraph No:

Year of Work	Building / Well Details		
	Name	Work Done	Remarks
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

WORKING CIRCLE: Miscellaneous Regulations Encroachment Reference

Paragraph No:

Year	Activities Done		
	Location	Type of Work	Remarks
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

WORKING CIRCLE: Miscellaneous Regulations Titles issued under FRA

Reference Paragraph No:

Year	Activities Done		
	Location	Status of the forest	Area in Ha.
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

WORKING CIRCLE: Miscellaneous Regulations Illicit Felling & Prosecution

Reference Paragraph No:

Year	Activities Done		
	Action Taken	Results	Remarks
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

WORKING CIRCLE: Miscellaneous Regulations Communication system & Mobility
Reference Paragraph No:

Year	Systems Developed		
	VHFs	Vehicles	Remarks
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

WORKING CIRCLE: Miscellaneous Regulations Human Resources Development Reference Paragraph No:

Year	Actions Taken		
	Trainings	Other Activities	Remarks
1	2	3	4
2015 – 16			
2016 – 17			
2017 – 18			
2018 – 19			
2019 – 20			
2020 – 21			
2021 – 22			
2022 – 23			
2023 – 24			
2024 – 25			

13.4 Deviation Statements: Deviation statements shall be maintained by the Divisional Forest Officer as per Rule 132 of the O.F.D. Code and para 81 of the National Working Plan Code, 2004. The format for submission of the deviation statement is given in the Table 13.4 below. The DFO will forward through the Circle Conservator, every year, copies of this form in triplicate along with the copy of the Control forms. One copy of the statement will be returned to the DFO and another to the CF after the deviations have been sanctioned by the PCCF. **Detail Statement of Deviation has given in Annexure**

D. Format of Deviation Statement

Table 13-4:Format of Deviation Statement				
Serial number of deviation	Control book Name, form no. Page	Reference to *Working Plan*		Nature of deviation requiring PCCF's sanction
		Paragraph	Nature of prescription	
1	2	3	4	5

CHAPTER-XIV

SUMMARY OF PRESCRIPTIONS

14.1 General Constitution

14.1.1 The abstract of different facts, figures, and prescriptions under different Chapters of Part II i.e. different working circles are given in this Chapter to be used as a quick reference to all the Chapters. Total Plan area, 92048.74ha.

CHAPTER – I of Part II

I. BASIS OF PROPOSALS

Headings	Particulars of Prescriptions	Para
General Consideration	Forests should be managed primarily to maintain environmental stability through the preservation of the natural vegetation and wherever necessary by restocking of depleted forests. Thus, the forests are to be created as a renewable resource, which should provide in a sustainable manner to the extent possible the needs of the society without depleting itself and its ability to provide environmental stability and ecological balance. This vital natural resource should be managed with the active involvement of the people living in the vicinity of the forests in a conservation-oriented approach and in conformity with national Forest Policy 1988.	Para 1.1
General objectives of Management	• To maintain permanent closed canopy on hill slopes and in catchments of lakes and reservoirs and rivers for maintaining hydrological balance and to regulate water yield and checking soil erosion • To prevent further degradation of ecosystem by regulating felling of trees and taking adequate steps in conserving flora and fauna of the forests. • To restock the barren, degraded and depleted forests by low cost technologies. • To enlist people's participation on a major scale. • To improve the conditions of forests by increasing investment with appropriate management. • To conserve wild life resources in the Division and enrich biodiversity. • To supplement the needs of local population in keeping with the aforesaid environmental	Para1-1.2

	imperative, the local community depends on forest living in and around. • To improve condition, composition and productivity of these forests by increasing investment and through appropriate systematic management. • To provide increasing employment opportunities to rural people in general and weaker sections, including scheduled castes, tribals and women in particular. • To identify rare and endangered species of fauna and flora and take adequate steps for its conservation.	
Method of Treatment	Forest blocks retrograded from good density class and the degraded forests shown substantial improvement need special treatment particularly protection for smooth and early passing to higher density class.	Para 1.3
Constitution of Working Circle	As per recommendation of State Working Plan Committee 8 Working Circles are prescribed in this Division as follows. 1. The Selection Working Circle 2. The Rehabilitation Working Circle 3. The Plantation(o) Working Circle 4. The Forest Protection(o) Working Circle 5. The JFM(o) Working Circle 6. The Bamboo(o) Working Circle 7. The N.T.F.P.(o) Working Circle 8. The Wildlife(o) Working Circle	Para 1.4
Allocation of area to different working circles	Total 92048.74 Ha. of area over 22 forest blocks comprising of 308 compartments/sub-compartments has been taken as management area of the Division	Para 1.5
Period of Working Plan	This Working Plan has been prescribed for a period of 10 years i.e from 2015-16 to 2025-26.	Para 1.6

CHAPTER-II

II. SELECTION WORKING CIRCLE

General Constitution	The forest blocks allotted to this Working Circle, include 11 blocks and all of them are Reserve forests with an area of **51842.906** hectares as compared to 71469.139 hectares in the outgoing plan including 16 reserve forest blocks. These blocks were previously managed under Selection Working. Most of the forest blocks are mixed miscellaneous type and are areas dominated by Sal. Well stocked forest	Para 2.1

	blocks having a crown density more than 0.4, and with matured crop have been included in this Working Circle and the areas have moderate to excellent regeneration having a higher degree of biodiversity.	
Special objective of Management	**2.3.1** The special objective of management of this Working Circle are as follows: • To improve the density and composition of the forest crop as well as stand structure by suitable silvicultural operation including soil & moisture conservation measure. • To remove matured and silviculturally available trees before they become unsound. • To carry out subsidiary silivicultural operations so that conductive situation is created for better growth of existing crop and the upcoming natural regeneration. • To build up growing stock and to obtain sustained yield from those forests through proper management practices giving importance to the growth of the crops of lower girth class..	Para 2.3
Allotment of Area and Felling Series	Total area allotted to this Working Circle is 51842.906 ha. 11 Forest Blocks. The total area of the felling series was divided into 10 felling series like Western, Darpangia, Rambha, Baibali, Gallery, Central, Tarasingi, Eastern, Ghogoda and Ambazora and each felling series divided into 10 equiproductive coupes.	Para 2.4
Analysis and valuation of crop	Enumeration result reveals that sal emerges as the main species with good growth of miscellaneous. Major canopy density of these blocks is classified under > 40%. Sampling has been carried out by using systematic strip enumeration method. The number of Sal representation is good. *Dalbergia sissoo* is rarely observed. Bamboo occurs gregariously in many of the blocks allotted to this Working Circle.	Para 2.5
Silvicultural System	The silvicultural system prescribed in this Working Circle is Selection cum improvement system.	Para 2.6
Choice of species	No species shall be preferred at the cost other species. All species are given equal importance for conservation of species biodiversity and development.	Para 2.7
Felling Cycle	Felling Cycle has been fixed at 10 years which synchronizes with revised Plan Period.	Para 2.8

Calculation of Yield	Yield will be regulated by area as calculated in synthesis. Safe guarding formula.	Para 2.11
Sequence of Felling	Each felling series divided into 10 annual coupes so that the entire area is covered during plan period. The work will commence from 2015-16 from coupe No.1 and serially go on.	Para 2.12
Method of Execution of Felling	Demarcation of annual coupes	Para 2.13
Marking Rules	The following marking rules should be adopted by an officer not below the rank of Range Officer and the operation to be carried out by OFDC Ltd. • The Marking Officer shall assess the illicit felling and the wind fallen trees uprooted due to the cyclonic storms inside the annual coupes prior to marking. The quantum of marking shall be reduced by the extent of such trees found inside the coupe. Thus the net trees to be marked should be difference between the permissible number of trees due to marking and the number of wind fallen trees and the trees illicitly felled during the period between last felling and the subsequent felling. In case the difference is nil or negative, then no marking shall be done in that coupe. • All dead, dying, seriously diseased, uprooted and fallen trees shall be marked for felling. A tree whose top one third is already dead shall be treated as a dying tree. However, 2-3 such trees per hectare shall be retained for shelter to the wildlife like birds, Lizards etc. Careful and selective marking of the trees is warranted here and all those dead or dying trees being used by wild life or have the potentiality of being used due to the presence of certain type of wild life in that area or in the vicinity should not be removed and be left alone. • Out of the trees above exploitable girth class available, the trees limit of Sal per 1 ha and 1 Non-Sal/ha **(as per Table 2-6)** shall be marked for felling. During marking the map shall be consulted for better guidance where marking can be planned. • The trees retained (reserved trees) should be	Para 2.13.2

	well grown and vigorous. They shall be painted with single white paint ring at breast height and at the base, and shall be serially numbered in each coupe. The list of such trees shall be maintained in the compartment history and coupe register. • If a tree is forked below the breast height, it shall be taken as two trees; if it is forked above the breast height it shall be taken as one tree. • All trees to be marked for felling shall be given two blazes of size 15 cm x 15 cm, one at breast height and the other at a place as close to the ground as possible and marked with a marking hammer and numbered serially. • Marking shall not be done within 50 meters of roadside and either side of nallah banks. Similarly, marking shall not be done within 50-meter radius of the key habitat of wild animals such as den, salt lick, wallows, game tank and water holes. • If a tree is marked for felling, no other tree shall be marked within 15 meter radius of that tree. • Marking should not be done in areas where the slope of terrain is more than 30°except for dead and uprooted trees. • Only those trees shall be marked whose removal will not create a permanent gap in the canopy and will not affect regeneration of the flora. • Fruit bearing trees such as mahua, mango, tamarind, amla, char, kendu, harida, bahada, bela, kusum etc shall not be marked for felling. • All climbers shall be cut prior to marking. • No trees in the approach class shall be marked except for the removal of the dead trees and definitely defective trees (trees infected by *Polyporus shoreae* i.e. Sambara akhia and *Fomes caryophylli* i.e heart wood rot) only.	
Execution of Marking and Felling	Marking shall be done by a Forest Officer, not below the Rank of Range Officer. Felling should be done	Para 2.13.4

	through OFDC, Ltd.	
Subsidiary Silvicultural Operation	Subsidiary Silvicultural Operation should be carried out after completion of felling and removal of timber and fire wood from the site in the following manner : • A systematic approach shall be adopted through preparation of treatment plan and treatment map of the coupe well in advance. • All fallen pieces of branches, lops and tops, small woods left during the main felling which would cause fire hazard shall be removed. • All marked trees left standing shall be felled and removed. • All the trees damaged in the main felling and having no scope for survival shall be felled and removed. • All high stumps shall be cut flush to the ground • The left over climbers creating hindrance to the growth of the crop shall be cut. • Soil and moisture conservation measure shall be taken up after assessing the requirement for individual nalla / stream basis. Loose boulder check dams / dry stone packing / gully plugging etc. shall be taken up starting from the upper end of the nalla towards down side	Para 2.14
Control	Maintenance of Compartment Histories and records as per National Working Plan Code. Annual return of Coupe Mark and work shall also be send to Working Plans wing for record.	Para 2.15
Misc. Regulation	Fire Protection, Grazing, Rights and concession.	Para 2.16.2
Interim Revision	Interim revision is not anticipated.	Para 2.16.5
Cost of Working	Total cost of working is estimated to be Rs. **2,99,90,899**.	

CHAPTER-III

III. REHABILITATION WORKING CIRCLE

General Constitution	In this working circle, broadly two types of areas have included in this working circle. They are- **Degraded forest blocks, Existing Old and new plantation areas.** The total area allotted to this working circle in the outgoing plan period was 20,579.337 hectares which in this revised plan now stands at **33470.072** hectares which includes plantations previously raised prior to outgoing plan period, **3888** hectares of block plantations raised from 1995-96 to 2012-13, **850** hectares of bamboo plantation and **13,384** hectares of gap plantation totally amounting to **18,122** hectares.	Para 3.1

General Observation of vegetation	These forests are mostly open mixed miscellaneous forest in various stages of degradation. The crop density would vary from 0.1 to 0.4 and these forest blocks are generally found in close proximity to human habitation. Major forest area falls under: Group 5: Tropical Dry Deciduous Forests, sub-Group 5B: North tropical Dry Deciduous Forests C_{1c} Dry Peninsular Sal Forests,C_2 Northern Dry Mixed deciduous Forests. Vegetation consist of Sal & its associates, Asan, Dhaura, Kasi, Bandhan, Dhamana etc..	Para 3.2
Special objectives of Management	The special objectives set for this working Circle are • To enhance soil productivity through moisture and soil conservation measures. • To boost up the existing natural growth by appropriate cultural operations. • To re-stock barren areas (of course, invariably small in extent) through artificial regeneration of most desirable species. • To meet the bonafide requirements of local inhabitants through the concept of JFM.	Para 3.3
Area and allotment.	Area allotted to this Working Circle is 33470.072 ha. Out of 22 forest blocks, 21 forest blocks have been included in this working circle.	Para 3.4
Analysis and valuation of Crop	The entire working circle has been stock mapped and the stock maps have been attached to the respective Compartment History files. The average density of the crop included here from 0.10 to over 0.40.	Para 3.5
Constitution of Rehabilitation Series and Cycle	Rehabilitation Series have been constituted after detailed field verification, and each series is further divided into annual rehabilitation coupes. . While constituting such series, care has been taken to restrict the series as far as possible within the Range jurisdiction to which the particular forest block belongs; this has been done mainly for administrative convenience and better implementation of the prescriptions. In all, 6 (Six) number of rehabilitation series have been constituted.	Para 3.7
Rotation, Yield and regulation	As timber production is not a consideration in this working circle, no rotation period is prescribed. Further no yield regulation is required. However, removal of illicitly felled and fallen trees and thinning in congested crop areas is prescribed here.	Para 3.8
Methods of Execution	Stage of degradation of treatment area has been divided into **Category 1**: includes areas where the	Para 3.10

	forest has moderate to good regeneration of the major species and good rootstock. **Category 2**: includes those areas where forest growth exists, but the density of forest crop and regeneration status of many species is poor. Category 3 : Includes areas where large gaps are available and the sites are badly eroded or degraded. The method o0f execution includes, demarcation of annual coupes, preparation of treatment plan and execution of rehabilitation operation methods.	
Treatments for degraded Forest areas	A site specific treatment plan has to be developed. Micro plans for VSS allotted areas form part of the rehabilitation treatment area. The following prescriptions should be undertaken, • High stumps will be cut flush to the ground to encourage coppice shoots. • Singling out of multiple shoots to retain the most promising one. • Removal of congestion by cleaning operations aimed at encouraging the growth of locally desirable species. • Removal of invasive weeds. • Whenever there is heavy congestion in the forest crop, thinning operation shall be undertaken to encourage further growth. • Soil and Moisture Conservation measures: shall form the main component of rehabilitation measures.	Para 3.11
Soil and moisture conservation measures	Since most of the areas have been badly affected by soil erosion, appropriate soil and moisture conservation measures shall be taken up. Measures like gully plugging check dams, contour bunds, nallah bonding, percolation pit and vegetative bunds are prescribed.	Para 3.12
Fencing	Trench fencing, Barbed wire fencing, Stone wall fencing, and Vegetative fencing should be adopted in the site specific manner to arrest soil erosion and runoff of rain water.	Para 3.13
Treatments of Existing Plantations	Special treatment is necessary for the old existing plantations where growth is not uniform. Tending operation for old teak plantation is absolutely necessary to have uniform growth of the crop.	Para 3.14
Operations in Miscellaneous Tending	Growth of the miscellaneous plantations tends to become bushy and branchy for want of post planting operation. The following tending operations shall be carried out in miscellaneous plantation tending series as listed below,	Para 3.15

	• Weeding and regular pruning shall be done till the 8th year of plantation • All climbers shall be cut • All dead trees shall be removed departmentally • Thinning shall be done in the congested crop on the lines of 'A' grade and 'B' grade thinning only • Gap plantation shall be done where ever required.	
Misc. Regulations	Maintenance of Records: Plantations journals, compartment histories and other records shall be maintained for each rehabilitation coupe/ series separately in accordance with the provisions of Odisha Forest Plantation Manual or as per the directions given by the Regional Chief Conservator of Forests, Berhampur and /or the Conservator of Forests, Working Plans Circle, Bhanjanagar.	Para 3.16
Rights and Concessions	Rights and concessions in this Working Circle shall be regulated in accordance with the provisions of the relevant gazette notifications of the respective forest blocks and the Govt. of Orissa Policy with regard to JFM.	Para 3.16.4
Cost of Norm	The cost norm for implementation of prescription and the total estimated cost of working under this Working Circle is discussed in **Chapter - 11 (Financial Forecast and Cost of the Plan).**	Para 3.17
Intermediate Revision	No interim revision is anticipated. Any deviation suggested, however, shall be subject to the approval of competent authority.	Para 3.18

CHAPTER - IV

IV. PROTECTION (OVERLAPPING) WORKING CIRCLE

Headings	Particulars	Para
General Constitutions	This working circle comprises all those blocks which need special protection measures from biotic interferences, besides the blocks and compartments existing in ecologically fragile areas and those which form part of major rivers. It would also include catchment area of nallah/reservoir and steep precipitous slope with high altitude which are potentially vulnerable to scouring activities by rain, wind and surface run-offs. The areas under this circle are mostly having steep gradient requiring protection and crop improvement	Para 4.1

	measures without much intervention.	
General Observations and Vegetation	Regular biotic interference has led to decrease in vegetative cover leading to high run-off, rapid soil erosion and even flash floods in low lying areas yielding in very low soil depth and generally devoid of the fertile top soil. Majority of the forest blocks included here are ones which have been badly affected due to regular removal of biomass and the crop is prone to windfall activity. These types of blocks need intensive protection measures so that pressure of biomass removal is reduced substantially so that other silvicultural operation prescribed in the main working circle will yield the desired results.	Para 4.2
Special objectives of Management	The special objective of management area as follows • To keep delicate and eco-fragile areas ecologically intact by maintaining adequate vegetative cover. • To arrest further degradation and enhance the natural regeneration adopting strong protection measures to minimize biotic interference. • To protect these forests from fire and grazing and also to provide strict vigil against illicit felling, encroachment, poaching and shifting cultivation • No felling is recommended. Uprooted, wind fallen trees are not recommended to remove from the field by keeping in the view of wildlife. • Suitable gaps of more than 0.4 ha. Will be planted with preferably indigenous species. • Strengthening of Forest Protection measures through deployment of squad, para staff, effective mobility, communication network, infra structure development and capacity building of front line staff.	Para 4.3
Area and Allotment	A total area of 5235.495 ha. is allotted which forms 5.68 % of the total Forest area of the Division.	Para 4.4
Analysis and Valuation of Crop	The blocks included in this circle have either degraded forest or high forest which needs intensive protection along with soil and moisture conservation measures. Protection to high forest blocks will ensure check on depletion in forest cover and environmental degradation. Protection from grazing and fire will ensure improvement in the regeneration status of these blocks.	Para 4.5
Silvicultural System	**1** No felling is proposed. The protection working circle will cover the areas of the different forest blocks considered as	Para 4.6

	ecologically fragile catchment area and steep precipitated slopes with high attitude. Adequate SMC measures shall be adopted like check dams, loose bolder check dams, dry stone check dams, vegetative check dams, staggered trenches, gully plugging, and percolation tanks, in these areas depending upon in the site condition. No felling is proposed in this Working Circle, dead, dying and wind falling are not to be removed for fauna point of view. Hence no specific silvicultural system is prescribed.	
MEASURES TAKEN TO IMPROVE PROTECTION OF FORESTS	The following measures have been taken up to step up forest protection in the Division. ✓ Joint Forest Management has been strengthened. 223 numbers of VSS have been formed so far in the Division adjoining different Forest Blocks and revenue forest area who have been assigned an area of 31597.79 Ha forest land for forest protection. ✓ Forest Protection Squads comprising 10 local youths in each squad supplemented by vehicle are engaged in the protection activity in different vulnerable pockets of the division ✓ GPS survey has been covered in maximum Forest Blocks of the division and maps have been prepared for all such blocks. ✓ 61 nos. of Eco Clubs are functioning in the division creating awareness and motivation of the forest fringe dwellers in the field of Forest & Environment protection. In each Range infra structure developments, under the assistance of CAMPA APO, have been created which mainly includes construction of Range Office along with seizure yard, hazrat, malkhana, construction of Foresters Quarters & Forest Guard Quarters, Compund wall for the quarters. The Forest Protection is further strengthened by provision of squad, vehicle, arms & ammunitions.	Para 4.7
Protection Unit and cycle	Different Protection unit has been created for the purpose of special protection. A protection cycle of 10 years is prescribed so that these vulnerable areas will be treated during the entire plan period.	Para 4.8
Methodology and Execution of Operation	The Methodology and Execution of Operation rests on the following parameters, 1- Improvement in performance of field staff, 2- Engagement of anti smuggling squad, 3- Strengthening of infrastructure	Para 4.9

	4- Fire protection measure 5- Communication system 6- Intelligence network 7- Reward 8- Incentive	
Miscellaneous Regulations	• Besides the prescriptions provided in the foregoing paras, some other regulations are necessary to augment the former for effective results such as **Evaluation, People's Participation, Maintenance of Records.**	Para 4.10
Soil & Moisture Conservation Measures	Soil and moisture conservation measures should form in the form of gully plugging, loose boulder check dams, contour bunds, nalla bonding and vegetative bunds and percolation pit, staggered trench etc. should be adopted in the site specific manner to arrest soil erosion and check runoff of rain water.	Para 4.11
Interim Revision and Cost of Norm	Cost norm for implementation of the prescription of this working Circle will be used for various prescribed works in the circle, The cost norm of this Working Circle has been given in **Chapter –X of Part-II.** Total Financial Forecast of this working circle was estimated to be **2,99,90,899.**	Para 4.15

CHAPTER - V

V. PLANTATION (OVERLAPPING) WORKING CIRCLE.

Headings	Particulars	Para
General constitution	This working circle (Overlapping) includes all forest blocks that have old existing plantations raised during and/or prior to the outgoing plan period. The existing plantations overlap a total area of 1500 ha.	Para 5.1
General Observation and Vegetation	With the introduction of fast growing species including genetically improved clone planting stock, management of plantations has become increasingly more intensive. Bamboo plantations will also be taken up in those areas where the neighboring areas show signs of bamboo availability. However, the major area under this working circle is of following category • Northern Dry Mixed Deciduous Forests ($5B/C_2$) • Tropical Moist Deciduous Forest • Moist Mixed Deciduous Forest	Para 5.2
Special Objectives of	The special objectives of management under this working circle are within the ambit of the general	Para 5.3

Management	objectives of management outlined for the revised Working Plan, • To restock the barren and permanent blanks besides encroached areas by raising plantations of suitable species through artificial regeneration. • To nurse the existing old plantations by appropriate tending operations followed by plantations. • To augment fodder, fuel wood, and small timber requirement of the local people. • To take effective measures to conserve soil and moisture thereby enhancing the land productivity.	
Area allotment	Total area allotted to this Working Circle is 1500 hectares.	Para 5.4
Analysis and Valuation of Crop	These areas are mostly devoid of vegetation cover, so, the analysis and valuation of the crop have not been undertaken.	Para 5.5
Silvicultural System	Areas included in this working circle are required to be restocked through artificial regeneration. Under artificial regeneration, the barren/blank areas shall be restocked with suitable species of choice. Post planting operations as per Orissa Plantation Manual'1977 shall be followed.	Para 5.6
Constitution of Planting Series.	Four Planting series for 1500 ha. plantable area has been constituted.	Para 5.7
Choice of Species	Indigenous species shall be given priority. Economically important species like teak, gambhar, sissoo, dhaura, asan, bandhan and piasal etc shall be planted, in areas away from villages and other human habitations. In areas close to habitation, fuel-wood and fruit-bearing species e.g. Acacia species, siris, bamboo, semul, mango, tamarind, jack fruit, mahua, amla, genduli, kusum, harida, bahada and neem, etc shall be planted.	Para 5.8
Rotation and Calculation of Yield and Regulation	No rotation is fixed as none of the existing miscellaneous plantation has attained harvestable age. No yield is anticipated since the prime objective of this circle is to restock the barren and blank forest areas with artificial regeneration within the plan period of 10(ten) years and also to tend the existing plantations. However, dead and fallen trees shall be removed from the annual areas of treatments.	Para 5.9-5.10
Methodology & Operations in planting series	The following Methodology and Operations in Planting Series is to be implemented, • **Division into annual coupe:** Each planting series has been divided into 10 (ten) annual coupes. • **Demarcation of Annual Planting coupes:** The annual coupe shall be surveyed one year in advance. • **Preparation of Treatment Map and Plan:** The	Para 5.11

	identified sites shall be demarcated and mapped on 1:25,000 scale toposheet. • **Method of Raising Plantation** ✓ Prescriptions given in the Orissa Plantation Manual 1977.	
Miscellaneous Regulations	Plantation Journal and Nursery Journal shall be maintained for every plantation as per Orissa Plantation Manual, 1977. Compartment history files and Control forms shall be maintained for each planting Coupe/Compartment.	Para 5.12
Rights and Concessions	Only such rights and concessions shall be admitted as have been described in Chapter-1 of part I. Additional usufructuary rights may be allowed in accordance with the provisions of the Govt. with regard to Joint Forest Management.	Para 5.13
Interim Revision & Cost Norms.	No interim revision is anticipated. Total cost of Annual Operation Rs.**2,99,90,899/-**.	Para 5.14

CHAPTER - VI

VI. BAMBOO (OVER LAPPING) WORKING CIRCLE

Headings	**Particulars**	**Para**
General Constitution	This working circle extends to thirteen Forest Blocks, which have good bamboo crop. The bamboo species of commercial value in this division is Salia (*Dendrocalamus strictus*) and Kanta or Daba Bamboo (*Bambusa arundinecea*). In recent past kanta bamboo is noticed in few patches which is of paramount importance to local artisans, house hold and industries.	Para 6.1
General Character of vegetation	Salia bamboo is found in pure form and extensively in many forest blocks. It occurs as under storey. The quality of bamboo varies from I, II and II/III. Kanta or daba bamboo constitute only 5-10% of the Forest area covered with bamboo. Gregarious flowering of bamboo has not yet been noticed. Most of the bamboo area are affected by grazing, fire and illicit removal by rural population for making bamboo based products.	Para 6.2
Special objectives of Management	• To improve the quality of bamboo growing stock ensuring maximum yield on a sustained basis. • To meet demand of the local people and artisans while catering to the need of the paper industry. • To generate employment for local poor people • To rehabilitate the degraded bamboo bearing areas through appropriate measures like soil conservation measures and silvicultural operations.	Para 6.4
Methods of	The number of culm, height and age were recorded in each	Para 6.5

Treatment	clump at the time of tree enumeration. The circumferences of a clump were also measured. Number of bamboo clumps has been determined with average number of culms per clump in different age classes. The sampling intensity of compartment having bamboo vegetations included in selection working circle was determined to be 5% of the total compartment area, where as in case of rehabilitation it is 1%.	
Silvicultural system	The silvicultural system prescribed is "culm selection –cum-clump improvement" with simultaneous silvicultural operations for salia bamboo and "Clump improvement" combined with simultaneous cleaning and cultural operation for Kanta or Daba bamboo.	Para 6.6
Cutting Cycle	A systematic cutting cycle of 4 years is adopted in this Division. Each cutting series has been divided into four annual coupes. i.e. A, B, C, D. The coupe in each felling series shall be worked on rotation taking in to account of clump position in the compartment and intensity of illicit felling.	Para 6.7
Stock Mapping and Enumeration	Stock mapping and enumeration have been done in all sample points of bamboo bearing areas where enumeration of growing stock was conducted.	Para 6.8
Yield Estimation	Yield will be regulated entirely by the area which depends on past system of working, illicit removal of karidi, gregarious flouring, fire, climate and physiographic conditions. The average estimated yield of each coupe was calculated & given in Table 6.5.	Para 6.10
Bamboo Cutting Series	Seventeen cutting series have been constituted in this Working Circle in a cutting cycle of 4 years. Each Cutting Series has been divided into four coupes i.e. A, B, C and D. The details of annual sequence of operation is provided in table 6.8.	Para 6.11
Methods of Execution of Operations	Bamboo coupes shall be demarcated by giving double coal-tar rings. Section line should be properly demarcated and delineated. Sign-board shall be displayed on compartment lines, road, near nallah and other strategic points mentioning the details like cutting series, name of coupe, year of working, and compartment number. The coupe boundaries are kept co-terminus with compartment line so that demarcation of coupe is not difficult.	Para 6.12
Working Agency	Bamboo shall be worked as per bamboo cutting rules prescribed by the CCF (Central) Eastern Regional Office Ministry of Environment and Forest, Govt. of India, Bhubaneswar *vide Letter No. 13/FC WP/US-Gen dated 24.12.1990* and communicated *vide Pr.CCF, Orissa, Memo No.26951(40) dated 28.12.1990*.	Para 6.13
Treatment	Treatment map should be prepared after demarcation of	Para 6.19.2

maps	bamboo coupes by using GPS survey and delineated in management map 1:25,000 scale indicating salia and daba bamboo areas available separately by the working agency before execution of field work.	
Felling/Cutting Rules	Cutting rules for salia bamboo and for daba bamboo has explained in para 6.19.3 & 16.20 respectively as per the guidelines envisaged by CCF Central MOEF, Govt. of India. .	Para 6.19
Miscellaneous Regulation	Grazing will be regulated in this working circle in accordance with the Orissa Forest (Grazing of Cattle) Rule 1980 and carrying capacity of the forests. Regeneration in bamboo coupes shall be strictly protected from grazing, fire protection and illicit felling/removal.	Para 6.26
Interim Revision	No intermediate revision is anticipated. However, if necessary it can be recommended by the R.C.C.F. Berhampur Circle in consultation with Conservator of Forest, (Working Plan) Bhanjanagar only after five years.	Para 6.28
Cost Norm	The cost norm for this working circle is given in the Chapter 10 of Financial Forecasts of Plan.	Para 6.29

CHAPTER – VII

VII. WILDLIFE OVERLAPPING WORKING CIRCLE.

Headings	Particulars	Para
General Constitutions	To improve the habitat and conserve biodiversity, the wildlife overlapping working circle was constituted which extends to be almost entire working plan area of the Division. Most of the forest areas, both reserved and unreserved, lie outside the Sanctuaries and national Park and therefore, it is imperative that steps for conservation and protection of wildlife is taken up in all our forests and nothing is left to endanger precious wildlife.	Para 7.1
General Character of Vegetation	No systematic biodiversity survey of animals and plants has been carried out in the past, barring some qualitative observations. Formal floral-diversity surveys have been taken for the first time during the revision of this plan. Detailed description of the composition and diversity (including fauna) of these forests, have been already discussed in **Chapter-2B of Part– I** of this Plan. The rich biodiversity in flora and fauna of the Division has an important place in the wildlife wealth of Odisha.	Para 7.2
Special Objectives of Management	• To conserve, protect and improve wild life habitat with special emphasis on the forest cover for the wildlife. • To protect wild life in general and endangered	Para 7.3

	species in particular. • To create awareness among the local people regarding the necessity to conserve and protect the wild life and their habitat. • To conserve and develop important wild life habitat for the purpose of eco-tourism. • Increase in biodiversity and wildlife population. • Prevention of wildlife poaching and related crimes	
Analysis and Valuation.	Wildlife census has been carried out at regular intervals for different species of wildlife but no formal analysis and valuation of all such data have been done at the Divisional level except for statistical purposes. In spite of negligible inputs for wildlife and habitat improvement in the past, the Division still has rich variety of wild animals which has been described in detail in **Chapter-2B of Part-I**.	Para 7.4
Area and allotment	This working circle overlaps most of the plan area of the division. The total operational area of this working circle including entire working plan area.	Para 7.5
Wildlife Habitat	Bulk of the Division is terrestrial habitat having wide range of fauna. Number of other seasonal and perennial streams criss-cross the entire Division landscape providing water source for wildlife, avi fauna and also forming a corridor for migrating elephants. Special habitat like snag, snag trees, den trees, down wood, isolated large old trees, trees with buttresses, fruit bearing trees should be properly conserved and maintain for development of wild life.	Para 7.6
Species Structure	• **Autotrophs:** Forests of this division are mostly uneven-aged and have good natural regenerations and provide varied habitats. Trees of all age gradation are available. • **Heterotrophs:** Species seen in this Division • **Primary Heterotrophs** – Sambar, Cheetal, Barking Deer, Elephant etc. • **Secondary Heterotrophs –** Leopards, Jungle Cat, Civet Cat ,Wild boar etc. • **Scavengers** - Hyaena, Jackal, Wild dog, Sloth beer etc. • **Primates** – Common langur and common pati. • **Snakes** – Ahiraj, Cobra, Viper, Krait, Dhaman etc. • **Avifauna -** includes a wide range of birds like Peafowl, Red Jungle fowl, Common quail, Green pigeon and Hill mynas etc.	Para 7.7
Wildlife Crime	Human beings kills wildlife as a sport or fancy, for its meat, skin, nail, tusk and other valuable wild life products for quick monetary gains by sale of wildlife trophies and animal parts. Illegal trade in wildlife products, organized poaching is negligible in this Division as per the report of wild life crimes	Para 7.8

	detected in this Division and described in chapter 28 of part I.	
Methods of Treatment	• **Maintaining Special habitats:** Special wildlife habitats which are biological in origin, need to be protected and maintained, viz snags, snag recruits, den trees, down wood, isolated large old trees, trees with fluting boles, buttresses, lianas, some significant species of fruit bearing trees and shrubs. • All fruit bearing tree species should not be allowed to fell as they provide fruits to local human inhabitants and wildlife. • **Development of Habitat** –Habitat improvement forest cover improving food availability, increasing water source in forest. Improving natural saltlicks and creating saltlicks in wildlife concentrated area. • **Corridor Development** – In Division Elephants mainly move along corridors of Lankagarh-Mundigarh- Guma (S)- Kotogarh, Madaguda, Lasseri, Durgapanga to Rayagada Division. . • **Maintaining Unique Habitat: Unique** habitats provide special functions. Protection of Geomorphic in origin generally caves, Overhangs, Dens, Cliffs, tauls and ledges, Large Bouldery aggregates, Sheet rocks, Earth cutting, Sandy banks spits, Saltlicks. • **Maintenance of water sources and wetlands.** • **Other Prescriptions :** Census of wildlife should be done every year with consultation with Chief Wildlife Warden. Migration root of wildlife animals should be identified monitored and protected and improved. • **Development of Eco-tourism** • **Meadow development for herbivorous at suitable locations**	Para 7.9 Para 7.9.2 Para 7.9.2.6 Para 7.9.3 Para 7.9 Para 7.9.6.6
Wildlife protection Measures	• Collection of all available spatio-temporal information of wildlife crime. • Staff deployment for anti-poaching operations. Patrolling party/anti-poaching squads for prevention and detection of wild life crime. • Appropriate training in wildlife crime investigation. Anti-poaching camp in vulnerable pockets having rich wildlife habitat. • Inventory of all the gun licenses within 10 km radius of blocks rich in wildlife. • Collection of prior intelligence about poachers and surveillance of their day to day activities. • Engagements of informants in and around habitations of adjoining Forest area. • Tracking of movement of professional poachers	Para 7.12

	operating in the locality with the assistance of Wild Life Wing crime Branch Cuttack	
Miscellaneous Regulations	• Awareness • Infrastructure and Training • Information network and records keeping • Schedule species found in the area, • Pictorial directory of all identified poachers to be prepared and circulated in the locality, • List of traders in cattle and goat skins as well as tanneries; • List of eating houses alleged to be serving bird/jungle meat and • Timely & proper documentation of all the incidences of man-animal conflicts including poaching. • **Wildlife Depredation** • **Control of Grazing** • **Fire protection measures**. • **Incentives and Rewards** • **Rights and Concessions**	Para 7.13
Intermediate Revision	No interim revision is anticipated.	Para 7.11.1
Working cost.	The estimated cost for implementation of various prescriptions of this Working circle is given in Chapter of Part-II.	Para 7.11.2

CHAPTER – VIII

VIII. NTFP OVERLAPPING WORKING CIRCLE.

General Constitution	The forests of Ghumsur North Division contain a large number of species which yield a variety of non-timber forest products (NTFP) for example flowers, fruits, seeds, tubers, roots, leaves, barks, gums, etc.. It covers all the forest Blocks of Ghumsur North Forest Division. Harvesting of NTFP can form a crucial component in generating alternative income sources and enhances the livelyhood of adjoining inhabitants.	Para .8.1
Special Objectives of Management	I. To regulate scientific method of sustainable collection, extraction and utilization of various NTFPs. II. To protect the NTFP trees and to promote their regeneration III. To develop and extend skills to the local people including the tribal for sustainable collection, value addition and marketing of various NTFPs so as to create employment opportunities and to enhance their livelihood options.	Para 8.4

	IV. To involve more and more people in protection, conservation and proliferation of NTFP yielding species through formation of strong and progressive Vana Sanrakhana Samities and by obtaining the technical inputs from sources like the State Medicinal Plant Board (SMPB) for achieving In-situ and Ex-situ Conservation of germplasm. V. To create local NTFP based small scale industries	
Area and Allotment	All the forest blocks included in the Plan have been allotted to this Overlapping Working Circle.	Para 8.5
Analysis and Valuation of Crop	No systematic study has been done in the past in the division to assess the potential production of various NTFPs and to ascertain impact of collection etc of such NTFPs on sustainability of the forest. To arrive at an approximate figure about collection and disposal of NTFT in the locality, the assistance of Gram Panchayat should be taken as per State Govt. guideline.	Para 8.10
Methodology Adopted For Inventorisation Of NTFP	Primary collectors need guidance and training for proper techniques of collection, drying and storage and value addition to collect NTFPs. Further they should be facilitated with necessary market linkage to avoid exploitation of local traders who usually pay less money for the NTFP products.	Para 8.10.2
Statistical Analysis	This statistic on different aspects of NTFPs species have been furnished as per Simpsons diversity index & Shannon Diversity index.	Para 8.11
Results of the NTFP inventory study	Cost of implementation has been estimated in Chapter10 of Part II. A Range wise abstract of herbs, shrubs and climbers is given in table no. 8.5	Para 8.12

CHAPTER – IX

IX. JOINT FOREST MANAGEMENT OVERLAPPING WORKING CIRCLE

Headings	Particulars	Para
General Constitution	Participation of the local people cannot be ensured without considering their bonafide need. In order to make the matter broad based particularly people's friendly, Joint Forest Management is conceptualised for protection, conservation and management of the natural forests by the forest officials and local people combine in consonance with the compelling need of the circumstances. Such change in the process of management of forests is really the call of the time.	9.1
General Character of	Different types of forests from mixed deciduous to northern moist and dry deciduous forest which are degraded have been	9.2

Vegetation	included. The detail description of vegetation has been dealt in **Chapter-II of Part-I** of this Working Plan.	
Special Object of Management	• To promote JFM and active participation of the people in the management of local forests. • All the forest area assigned to VSS including those covered under FDA to be included and micro-plans to be prepared as per necessity. • To involve local people in regeneration and protection of the forests by formation of V.S.S. in each village adjoining the degraded Reserved and Proposed Reserved Forests. • To improve the crop condition of these areas which will in turn fulfill the demands of the local people in terms of small timber, firewood, N.T.F.Ps. etc., • To make people and Forest Department equal partners in management of the forests. • To restock the barren and blank areas through artificial regeneration. • To increase the productivity of the soil through soil and moisture conservation activities. • To encourage people to rationally utilize their own community resources for the betterment of the community. • To involve people in N.T.F.P. collection and trade. • To create multiple income generating activities in the villages protecting the forests. • To achieve all round socio economic development of the village by involving all other line departments like Horticulture, Veterinary, Health, Mass Education & Agriculture etc. • To study the scope of enhancing the network of VSS protection areas.	9.3
Area Allotment	**223** Vana Samrakhshana Samities (VSS) had been formed as per JFM guideline in Ghumsur North Division covering an area of **31457.79** hectares within the Reserve Forest only.	9.5
Silvicultural System	No specific system in general has been prescribed for this Overlapping Working Circle. The area of this working circle overlaps mostly some portion of Rehabilitation Working Circle, only tending and after care treatment has been prescribed without any silvicultural system. However, The Silvicultural system to be followed for this overlapping Working Circle is suggested to be based on the prescription to be made in the main Working Circle to which the block is primarily allotted	9.4
Method of Execution of	The assigned VSS areas will be demarcated with posting of stone cairons of size 2 ft height, maps on GIS domain need to	9.6

operations	be prepared, PRA exercise are to be conducted and MoUs need to be signed as per the JFM Resolutions. The micro plans should be prepared keeping in view the overall prescriptions of the concerned Working Circle. All prescriptions for exploitation and harvest should be- done conservatively. Exploitable diameter for different species for final harvest, marking rules, limiting the final yield with emphasis on conservation measures and biotic pressure etc. as prescribed in this revised plan should be followed while preparing the micro-plans.	
Capacity Building	Regular training camp and awareness campaign shall be organized to ensure this aspect. Only through such process the VSS can be stabilized and built up necessary capacity to discharge their function effectively. The field level functionaries particularly Forester and Forest Guard being the cutting edge of forest establishment should concentrate on this matter. The local youth should also be involved in the developmental activities with village and the VSS area as well.	9.7
Preparation of micro plan	This is the elementary document of Joint Forest Management. Three basic aspects are namely, • Requirement of villagers for forest produce • Need of the forests for rejuvenation and improvement • The need for other supporting non-forest activities shall be assessed properly and considered as a guiding factor for preparation of the plan document. • Integrated approach mechanism should be adopted.	9.8
Protection mechanism	Various protection methods like watching on roster basis, social restriction, cowherd boys for domestic cattle, contribution either in shape of kind or money for engagement of watcher etc. are in practice by the VSS members. The method suitable to the VSS shall be explored and adopted so that the adjoining flora and fauna is conserved in a sustainable manner and also catering to the demand of the local people.	9.9
Rejuvenation & development process	After arresting the degradation through control of biotic interference by suitable protection mechanism, the vegetation starts rejuvenating in the areas having potential rootstock and shrubby growth. Silvicultural treatment is necessary to augment and accelerate this process.	9.10
Benefit of Usufruct to the Households of the Village Community	All the intermediary benefit and half of the final/major harvest are meant for the VSS as per the existing provisions of Joint Forest Management resolution. The VSS should be technically guided regarding the method, period and quantum of collection of usufruct, but these activities shall be executed by them. The sharing of usufruct is a very delicate issue, which sometimes leads to the collapse of the system. Conflict resolution should	9.11

	be effectively monitored in case of sharing of usufructs.	
Monitoring & Evaluation	Periodical assessment is necessary to improve the implementation by removing the bottlenecks noticed. Normally the monitoring is done regularly through departmental staff but the evaluation should be done by an independent agency for providing the correct information and remedial measures to be adopted for development of the Forest. The evaluation shall be made in an objective manner for which the Divisional Forest Officer will prescribe a suitable format containing point wise scoring system. Reputed local NGO can be entrusted for such evaluation.	9.13.2
Publicity	Wide propaganda is of immense help for successful implementation of Joint Forest Management. Though the villagers show interest and appreciate the benefit of Joint Forest Management but they suffer from scepticism regarding the ultimate success. So exposure visit to the successful VSS area as well as the success story shall be circulated. Frequent awareness programme shall be organised to allure the villagers towards the usefulness of Joint Forest Management. The assistance of press, electronics media, documentary film, environmentalist, celebrities, etc should be taken for proper conservation of flora and fauna.	9.13.2.6
Interim Revision of the plan	Though it is not anticipated, yet an intermediate review of the prescriptions may be made after 5 years, jointly by the Regional Chief Conservator of Forests (Territorial) and Conservator of Forests (Working Plans), taking into account the crop condition and necessity of revision. Any deviation suggested, however, shall be subject to the approval of competent authority.	9.10
Cost Norm for implementation of the preparation of this working circle	The Cost norm of this Working Circle has been discussed in **Chapter –X of Part-II.**	9.11

CHAPTER-X

Financial Forecast	The financial forecast has been made keeping in view the present condition of the forests and the interventions that is required the most to bring in the necessary changes to the crop composition, density, stand structure and the multilayer nature of the forest canopy and in the process make it more resistant and resilient against such natural hazards and biotic pressures in the times to come.	10.1

Costs of the Plan	The Preparation of the Plan commenced during 2012-13 October and continued up to March 2016. Total cost of the Plan is Rs.2, 99, 90,899 over a period in excess of 3 year.	10.2.1
Roads	The total length of forest roads is 248.5 KM. Most of the forest roads needs annual repair before rainy season, as required to keep the roads in good condition. Some repair work was carried out during the year from 2006-07 to 2015-16 under Non Plan and CAMPA fund. An estimated average expenditure of Rs.42, 000/- Per KM has been taken for annual maintenance of road so that in 5 years all the roads can be maintained.	10.3
Building and wells	The total number of buildings in the division is 90. Most of these buildings are old. The average annual maintenance cost per building is expected to be Rs.10 lakhs/Year-. So for 10 years with 5% escalation of price per year the total cost comes to **12577890 lakhs.** There are 38 wells out of which 7 no's non-existent. Thus the total no of existing wells are 31. The average maintenance cost per well is expected to be Rs.10, 000/- per well per annum. Thus, the estimated annual cost of maintenance of wells is Rs.3, 10,000/-.	10.4.1 & 10.4.2
Generation of Employment	The rural labourers will be directly engaged by the department and get the prevailing wage per MD i.e. Rs.200.00. This will improve the economic condition to a great extent. Migration of labourers to outside can be reduced consequent upon the implementations of these prescriptions.	**10.5**
Prescriptions of Various Working Circles	The Total area under this Working Circle **51842.906 ha.** The cost norm to be followed in Selection Working Circle is given in **Table 10.4**	**10.6**
Treatment of Rehabilitation Working Circle	The total area under rehabilitation Working Circle is 33,470.072 ha. . The minimum blank area for gap plantation will be 0.4 Ha.	**10.6.2**
Treatment of Plantation overlapping Working Circle	An area of 1500 ha is allotted to this working circle. But from the year 2013 to 2016-17, 245 ha of block plantations already carried out in the proposed compartments. So, t**he 1255 ha** is due for taking up plantation in remaining working plan period. Thus each year in an average **125.5** ha new plantation will be raised.	**10.6.3**
Treatment of Protection Working Circle	The total area to be treated under this Working Circle is 5235.495 ha. Total area to be treated is **5235.495 ha**. Annual area to be is 523.5 ha.	**10.6.4**
Treatment of Wildlife	The total area under this Working Circle is 92,048 ha. Prescriptions under Wildlife (Overlapping) Working Circle	**10.6.5**

Overlapping Working Circle	are in need of average Rs. 33.00 lakhs annually as per the details furnished in **Table No. 10.9.**	
Treatment of N.T. F. P. Working Circle Overlapping Working Circle	The total area under this Working Circle is 92,048 ha. Total area of treatment is 92,048 ha. 7 lakhs will be annually spent for this working circle. For whole working plan period it's comes around 70.0 Lakhs subsequently 5 % increasing price. The treatment along with proposed expenditure statement has given in below **Table 10.10.**	**10.6.6**
Treatment of Bamboo Overlapping Working Circle	The total area under this Working Circle is 58,970.177 ha. The items of executions are mainly (i) Demarcation of coupes, (ii) Preparation of treatment map (iii) Harvesting i.e. cutting, bundling and transport to depot (iv) Simultaneous silvicultural operation. The harvesting is entrusted to the working agency whereas the rest 3 (three) operations are carried out by the department.	**10.6.7**
Treatment to Joint Forest Management (Overlapping) Working Circle	Rs. 11 lakhs as the estimated expenditure per annum the total requirement of fund for execution of this working circle comes to **Rs.110 lakhs**. The prescribed items of work for implementation and the probable cost involvement have been assessed for this working circle as under **Table 10.12.**	**10.6.8**
Drifts and Waif Wood	The annual expenditure is on L.S. basis of Rs. 2 lakh and subsequently 5 % rise each year.	**10.7**
Consolidation	22 RF Blocks included in the plan are to be demarcated by using GPS/DGPS. Similarly all the D.P.F., U.D.P.F. and village forests are to be demarcated by GPS. Similarly old plantations raised during the ongoing plan are to be demarcated.	**10.8**
Infrastructure Development	Replacement of old vehicle, Maintenance of VHF, Purchase of new sets, expenditure on arms and ammunition other miscellaneous works a lump sum of Rs. 5 lakh per annum, and subsequent 5% raise in each year.	**10.9**
Maintenance of Boundary	The length of reserve forest boundary is 1206.80 km. In an average boundary clearance to be taken up is 120 Km/year for 10 years. For complete maintenance of boundary in every 5 years the annual target is raised to 240 Km. Maintenance of boundary 240 K.M. x 10 man days x 200 every year in 5yrs rotation comes to Rs. 4,80,000 and subsequent rise of 5% every year.	**10.10**
Maintenance of Pillar	The number of RF pillars in the division is 8001 out of which about 60% pillars are either damaged or not available. Taking 60% of the pillars either to be newly constructed or repaired, the number of such pillars will be 4800 or say 5,000. So annual construction or repair of 500 pillars @ Rs. 1000 per pillar comes to Rs. 5, 00,000/- and	**10.10.2**

	subsequent rise of 5% every yea	
Library, Equipments, Maps and Tools	Annually an amount of Rs. 5 lakhs on lump sum is proposed and subsequent 5% escalation is added for computerization, 1 lakhs for preparation of maps and tools So total requirement is 6 lakhs and thus annually lakhs is kept for expenditure.	**10.11**
Control of Forest Fire:	Considering the incidence of fire hazard at present, the requirement of fund for different Ranges as well as Divisional Head Quarters has been assessed as Rs 29 Lakhs.	

CHAPTER - XI

XI. MISCELLANEOUS REGULATIONS

Headings	**Particulars**	**Para**
General Consideration	Miscellaneous prescriptions, spelt out in this Chapter, fall in two categories. First, this Chapter includes prescriptions with regard to those important activities that have not been discussed before (e.g., roads, buildings, and boundaries of forest blocks). Second, this Chapter also re-iterates some regulations, already prescribed in the Main Working Circles, for the further emphasis.	11.1
System of Sale/ Disposal of Forest Produce	All the timber coupes shall be worked by the OFDC Ltd in the Division. However, timber and firewood from wind fallen trees, and materials of illicitly felled trees, shall be salvaged departmentally. Salvaged materials shall be handed over to OFDC Ltd. for sale to the local people. Similarly, confiscated and Undetected Case (UD Case) timbers shall be disposed of through the OFDC Ltd. or through local auctions, as the circumstances may dictate. Saleable thinning materials may, therefore, be disposed of through local auctions or in accordance with the Government policy of JFM depending upon the local circumstances.	11.2
Irregular Exploitation	In normal course, irregular felling of trees will not be permitted. However, in emergencies or extraordinary circumstances (e.g., natural calamities like fires, floods, cyclones, urgent departmental requirements and socio-religious functions like car festival), it can be resorted to in manner and extent as provided in writing by competent authority.	11.3
Development of Forest Roads	The existing 24 numbers of forest roads are damaged due to poor maintenance for a variety of reasons including paucity of funds, the details of which has been furnished vide **Table No.11.1** These roads are major communication net-works for transportation of forest produce, to effective supervision	11.4

	and to check smuggling, illicit felling and poaching. Local people also use these roads for transportation. Therefore, these are important social capital assets and required to be properly maintained.	
Development of Building	Most of the buildings have been constructed since long and the condition is also precarious. Regular maintenance is very inadequate due to paucity of funds. However, under support of CAMPA APO fund new buildings such as Forest Guard Quarters, Forester Quarters, Range Office building, seizure yards, staff barrack, compound wall, etc have been constructed in different Ranges in different years. This type of infrastructure development in the interior area not only facilitate the field staff but also act as a measure of better protection of flora and fauna in a more effective manner.	11.5
Forest Consolidation, Area discrepancy and its reconciliation	All the pending PRFs & DPF blocks need to be notified u/s 21 of Orissa Forest Act 1972 during this revised plan period. All PRF & DPF blocks need to be re-demarcated in consultation with the FSO and assistance should be provided to the FSO to complete his enquiry so that the final notification is facilitated and UDPFs be demarcated. In the demarcation process GPS mapping should be made mandatory. There are some variations some between the notified are and digitized topo area/GIS area in case of some PRFs and DPFs. It was found that topo depiction is prima-facie correct. Hence the topo depicted and digitized area has been taken for the current plan, till detailed survey of all these forest blocks and reconciliation of the discrepancy by the DFO.	11.6
Maintenance of Boundaries	The boundaries of various forest blocks are in poor shape due to a variety of reasons including paucity of funds. A field staff is often not aware of correct boundary of forest blocks under his jurisdiction. During field verification, most of the boundary pillars were found missing. Hence, boundary pillars are required to be periodically repaired and numbered. Boundary lines are also required to be cleared and properly maintained. A five year cycle of maintenance of boundaries and boundary pillars is prescribed.	11.7
Maintenance of Records	Control forms and other informations shall be strictly maintained according to National Working Plan Code	11.8
Forest Fire Management	Every year DFO shall prepare a Fire Map and develop strategy, Special plans to prevent fires in these blocks have to be prepared and implemented. The community around	11.11

	these blocks has to be made aware and with their assistance the occurrence of fire in these blocks is to be reduced. In these villages, the village level committees or VSS need to be formed and each committee is to be given incentive for three months (March, April and May) for preventing the incidence of fire and they should be motivated to protect the forests from fire. The following fire protection measures are suggested: • All Range Officers shall maintain annual fire maps on 1:25,000 scales of their respective ranges showing incidence of fire, in order to enable them to take advance fire protection measures in fire prone areas. • Annual fire line clearance of 1 to 2-chain width in fire sensitive areas, coupled with controlled burning shall be done under the personal supervision of forester. Moreover, old fire lines, forest roads, boundary lines, village ring shall be kept clean by taking up control burning in 1-chain strip on both sides of it. • The Orissa Forest (Fire Protection) Rules, 1979 and the fire protection measures provided in the O.F.D. code shall be followed in these forests. The forest fringe village where there is high fire vulnerability is to be identified. In these villages, the village level committees/VSS need to be formed and each committee is to be given incentive for three months (March, April and May) for preventing incidents of fire and motivate them to protect the forests from fire. • Public awareness campaign should be organized in winters ahead of dry season to educate people especially in the fire prone areas not to resort to burning of ground flora to collect NTFP including kendu-leaf. Besides, VSS shall be actively involved in fire protection including extinguishing of fire in their allotted area. Incentives should be announced to both public (including VSS) and staff to protect the forests from fire. Funds for this purpose should be provided in budget. • Fire fighting teams consisting of Section Forester, beat guard and fire watchers should be formed in	

	areas vulnerable to fire. Incidence of annual fire should be entered in the compartment history. • Imparting training to forest staff, VSS members and workers on modern forest fire management. Better communication facilities like wireless sets, vehicles etc. will be of great help to combat the menace. • Fire fighting Cell shall function both at Division Office and Range Offices during the aforesaid period to keep constant vigil on the menace and take instant action to extinguish the fire. In each fire fighting cell that should be the provision of a vehicle engaged on hire basis along with a fire fighting squad. • Fire protection has to be attended as top priority in the Division. The fire incidences should be also monitored by the DFO through database facility and plan accordingly.	
Grazing Regulations	• Due to heavy cattle population pressure in the Division adequate regeneration is affected in the forest areas. For better fodder availability following measures may be adopted. • People may be motivated with the help of veterinary department, to minimize the number of unproductive cattle. They should rather go for better quality cattle and stall-feeding • Plantations of fast growing fodder species and development of silvi-pasture plots in the selected high-density cattle areas be taken up • Rotational grazing shall be adopted basing on the carrying capacity of the area for which the VSS shall be trained.	11.12
Maintenance of Control Forms and Records	Control Form maintenance Fire Maps Compartment Histories Boundary Repair register Plantation register and journal Reserved forest register Divisional register Building register	11.13 to 11.14
Survey and Maintenance of Map	During the revision of this Working plan all administrative boundaries of the Division up to beat level has been digitized at 1:50,000 scale and all the blocks of RF, PRFs, DPFs included in this plan have also digitized at this scale.	11.14.9.1

	Working Plan Map: The working plan map has been prepared on 1:25,000 scale by ORSAC. **Stock Map:** The stock map has been prepared by ORSAC in 1:25,000 scale giving details of crop composition for all the blocks included in the plan. **Index Maps:** Index map has been prepared on 1:2,50,000 scale. **Management Maps:** Two sets of management maps have been prepared on 1:50,000 scale topo sheets.	
		11.14.9
Capacity Building of Forest personnel.	• The skill and the information requirements of the staff at the beat, section and range level has undergone a lot of change in the last two decades. Accordingly the skill of forest personnel should be improved by following methods. • Proper training and regular refresher courses for the field executives. • Communication skill training to the FG/FR level • Regular in-house workshops to update knowledge of the field staff. • Monthly meeting at the Range level should give opportunity to Foresters and Forest Guard. • Awards/Incentives for exemplary work in the protection and development activities. • Exposure visit to successful area both inside and out side the state.	11.16
Administrative Changes	• Promotional opportunity to the field staff should be increased. • Secret Service Funds should be provided to the DFO to collect intelligence about timber smuggling, poaching etc. • Attractive compensatory/ rehabilitation package be given to the families of field staffs laying their life or getting badly injured on forest protection duty.	11.16
Forest Conservation Act implementation	Forest Conservation is an important tool to check the devastation of the Forest. Under the forest conservation Act, 82.837 hectares of forest land has been diverted for different Minor and Major irrigation Project and transmission line in the Division. In lieu of diverted forest land, equivalent extent of non forest land has been identified in the area of Ghumsur south Division. Hence the question of taking up compensatory afforestation within the	11.17

	premises of this division does not arise..	
Ecotourism	Ecotourism in potential areas shall be encouraged. Nature trail, interpretation centers, hiking, picnic; trekking shall be organized and monitored in each Range. This activity should be an alternative livelihood base program for rural people.	11.18
Fuel wood Management	To reduce the heavy pressure on the existing forests, the following measures may be adopted:- • Extensive plantations of short rotation fuel wood species should be raised on community & other barren lands. • Encouragement of Agro Forestry and Farm Forestry in large scale. • Motivation of people through formation of V.S.S. to regenerate degraded patches of forests to meet their fuel-wood requirement, instead of depending on existing forests. • Distribution of fuel-efficient smokeless chullahs (it can reduce consumption by 30%) to all the villagers at concessional rates to reduce the consumption of fuel wood. Even, optimal utilization of firewood shall be ensured without wasteful burning. • Use of firewood in commercial establishments like hotels; restaurants; Brick kiln etc shall be strictly prohibited.	11.19
Research Plots	Permanent sample plots maintained by the state silviculturist had earlier been laid down throughout the division. But the plots are not maintained and also damaged by natural calamity ie. Philine, Hud hud . State Silviculturist in consultation with The Divisional Forest Officer shall rehabilitate the old plots and new plots may be find out in the division.	11.21

CHAPTER-XII
XII. ESTABLISHMENT AND LABOUR

General Consideration	In forestry both technical expertise and experience of the workers are essential. Regular establishment consists of mostly technical personnel and partly supporting ministerial staff while the work force required to carry out various operations in forest areas is pulled from the forest	12.1

	fringe villages which constitutes unskilled, semi skilled and skilled persons. Technical competency of the regular staff coupled with the skill of the local people can translate the plan into action successfully.	
Establishment	Establishment consists of sanctioned regular posts under non-plan only in this division. The cadre strength is inadequate to shoulder the multifarious responsibility as emerged in the present situation.. The **Table No.12.1** given below shows the Sanction strength of posts and employees in position as on 31.05.2016 in Ghumsur North Forest Division.	12.2
Prescribed Cadre Strength	The cadre deployment and the cadre changes required has been furnished in table 12.2	12.2.2
Capacity Building of the Staff	• Following prescription are adopted for capacity building of the staff: • Regular refresher courses shall be conducted for field executives. • Fire arms training to Forest Guard, Forester and Range Officer for proper and effective handling. • Training on legal matters at frequent interval at least once in a year for ensuring prosecution rightly. • Training on communication skill for Joint Forest Management. • Training on modern fire fighting technique particularly tackling the fire hazard on steep hill slopes. • Training to contain elephant depredation and wildlife human conflict. • Secret Service Funds should be provided to the DFO to collect intelligence about timber smuggling, poaching etc. • Awards should be given to the field staff for exemplary work in the protection & Afforestation activities. • Quarters of field staff should be constructed on priority basis. • Power of Executive Magistrate shall be given to the ACFs and DFOs of territorial wing to issue eviction orders in respect of encroachments in Reserved	12.3.1

	Forests and for search operation. • Malkhana's to keep seized produce should be available in all smuggling prone areas. • Forest department should have its own lawyers to contest cases in the courts. • Attractive compensatory/ rehabilitation package shall be given to the families of field staffs laying their life or getting badly injured on for forest protection duty and Left Wing Extremist areas. • Training on Remote Sensing and GIS, Computer Application should be conducted in range level for the benefit of the field executives. • Exposure visit of the field staff in side & outside of the state should be taken up regularly to broaden their knowledge. • Training on wildlife management should be provided by engaging eminent wildlife Personalities to Field Executives.	
Amenities to the staff	Subordinate field functionaries like Forest Guards and Foresters are mostly residing in interior, inaccessible and inhospitable areas and very often susceptible to different diseases. Being the cutting edge of forest administration, they are required to be in sound health to discharge arduous duties. Therefore basic amenities like safe drinking water, good accommodation, proper sanitation, provision of health kit etc. should be provided to them departmentally.	12.4
Intelligence Network	In order to combat the smugglers and poachers successfully, building of an intelligence network is of utmost importance. It should be created and developed at both range and division level. Secret service funds should be provided to the Divisional Forest Officer for collecting intelligence to strike the crime effectively.	12.5
Power of Executive Magistrate	Very often difficult situations are faced in conducting raids / search / eviction in absence of the Executive Magistrate in time. So it is essential to provide such power of Executive Magistrate to the officers not below the rank of Assistant Conservator of Forests in the greater interest of protection of forests.	12.6
Skill upgradation	Daily wage workers more precisely the work force is also equally important to augment the regular establishment for effective functioning of the department. Most of the	12.7.1

	forestry operations like cutting of bamboo, harvest of timber, nursery raising, plantation activities etc. needs some skill and expertise. Another important requirement is the skill up-gradation local people in handling the elephant depredation satisfactorily so that loss to human life and property can be prevented.	
Incentive	In order to allure the labourers for forestry operations, it is necessary to provide some incentives like provision of food commodities at subsidized rate, supply of free medicines for some easily prone diseases like malaria, diarrhea, dysentery etc. should be considered.	12.7.2
Welfare programme	Provisions of safe drinking water through digging of tube well, bore well, health camp for free medical checkup and distribution of medicines at frequent interval, provision of Non Formal Education centre for forest based workers in remote area, communication net work for such people staying at inaccessible locality, etc. shall be considered in the forest fringe villages not only to ensure the availability of the work force for forestry operations but also to obtain their active participation in protection and development of forests.	121.7.3

CHAPTER-XIII

XIII. CONTROL AND RECORDS

Headings	Particulars	Para
General Consideration	Monitoring is the most crucial aspect to ensure proper implementation. It is necessary to assess the implementation at periodical intervals. It must be in an objective manner to record the findings in a properly documented procedure.	13.1
Maintenance of Records	**Register of Forest Blocks:** Registers of Reserved forests, Protected forests, Village forests are to be maintained properly as per codal provisions. Accurate maps of the block delineating the boundaries and showing the position of the boundary pillars as they exist on the ground and other details like boundary lengths, number of pillars, GPS readings of the pillars etc. should also be kept as part of this register. **Compartment Histories:** Compartment History Files for all the compartments of the forest blocks have been prepared in three sets which will be kept in the Working Plan Office, Divisional Forest Office and at the Forest Range Office for maintenance, in accordance with the standard instructions contained in the O.F.D. Code and National Working Plan Code 2004.	13.2.1 13.2.2

	Plantation Journals: Journals for plantations will be maintained for each plantation / rehabilitation work taken up in the Division showing details of operations and their cost, in the forms prescribed in Orissa Forest Plantation Manual 1977. **Plantation Register:** A plantation register shall be maintained at the Division level giving details of every plantation carried out like year of plantation, location, area, species planted and agency involved. **Register of Silvicultural Operations:** A register shall be maintained at the Division level giving details of subsidiary silvicultural operations carried out in Selection, Sal Conversion and Bamboo coupes. Fire Maps: shall be maintained as per the 283 (22) of the Orissa Forest Department.	13.2.3 13.2.3 13.2.5
Control Forms	Two formats of control forms are prescribed namely Coupe Control Form for control of all silvicultural operations such as cleaning, thinning, burning, subsidiary silvicultural operations, petty felling etc. and Felling Control Form for controlling and maintaining a record of all trees marked for felling and trees retained as seed bearers or to safeguard future yield.	13.3
Deviation Statement and Control forms for each working circle	Deviation statements are to be maintained by the Divisional Forest Officer as per Rule 132 of the O.F.D. Code and para 81 of the National Working Plan Code, 2004. The DFO will forward through the Regional Chief Conservator, every year, copies of this form in triplicate along with the copy of the Control forms. The Divisional Forest Officer will maintain an abstract of the operation carried out each year for each of the Working Circles to monitor the progress in implementation of the Revised Working Plan.	13.4

Annexure-I

Rainfall Data of Ghumusur North Division as obtained from Indian Metrological Department.

1995

Station	Jan.	Feb.	mar.	Apr.	may	jun.	Jul.	Aug.	sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	57	0	556	99	350	356	126	211	90	0	0	0	1845
Bellaguntha	47	12	595	91	293	350	105	370	156	0	0	0	2019
Jagannathprasad	35	9	455	164	152	459	95	291	106	0	0	0	1766
Soroda	10	18	304	34	196	219	245	192	75	0	0	0	1293
Total	***149***	***39***	***1910***	***388***	***991***	***1384***	***571***	***1064***	***427***	***0***	***0***	***0***	***6923***

1996

Station	Jan.	Feb.	mar.	Apr.	may	jun.	Jul.	Aug.	sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	8	0	21	53	44	265	138	330	126	50	10	0	1045
Bellaguntha	62	0	22	70	68	247	120	356	184	38	9	0	1176
Jagannathprasad	2	0	0	7	5	47	70	298	62	69	14	0	574
Soroda	23	1	6	33	28	140	84	154	91	97	7	0	664
Total	***95***	***1***	***49***	***163***	***145***	***699***	***412***	***1138***	***463***	***254***	***40***	***0***	***3459***

1997

Station	Jan.	Feb.	mar.	Apr.	may	jun.	Jul.	Aug.	sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	31	4	55	41	29	215	230	409	240	70	0	21	1345
Bellaguntha	13	0	9	78	15	116	162	320	294	35	2	65	1109
Jagannathprasad	28	0	84	39	51	121	166	622	427	41	6	59	1644
Soroda	0	0	24	39	22	61	105	240	167	5	0	75	738
Total	***72***	***4***	***172***	***197***	***117***	***513***	***663***	***1591***	***1128***	***151***	***8***	***220***	***4836***

1998

Station	Jan.	Feb.	mar.	Apr.	may	jun.	Jul.	Aug.	sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	0	219	89	77	98	97	281	222	405	149	167	0	1804
Bellaguntha	0	101	92	45	52	90	171	98	206	96	113	0	1064
Jagannathprasad	0	112	73	36	30	120	316	146	206	59	148	0	1246
Soroda	0	47	92	83	19	110	247	118	308	197	102	0	1323
Total	***0***	***479***	***346***	***241***	***199***	***417***	***1015***	***584***	***1125***	***501***	***530***	***0***	***5437***

1999

Station	Jan.	Feb.	mar.	Apr.	may	jun.	Jul.	Aug.	sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	0	0	0	0	33	139	269	218	140	446	22	0	1267
Bellaguntha	0	0	0	0	22	74	84	182	102	391	32	0	887
Jagannathprasad	0	0	0	0	50	127	169	220	266	238	17	0	1087
Soroda	0	0	0	0	150	153	174	121	298	331	48	0	1275
Total	***0***	***0***	***0***	***0***	***255***	***493***	***696***	***741***	***806***	***1406***	***119***	***0***	***4516***

2000

Station	Jan.	Feb.	mar.	Apr.	may	jun.	Jul.	Aug.	sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	0	67	0	25	119	276	159	336	205	53	0	0	1240
Bellaguntha	0	51	0	0	36	219	122	286	221	22	0	0	957
Jagannathprasad	0	67	0	20	130	342	214	159	152	22	0	0	1106
Soroda	0	83	0	34	102	301	143	317	121	34	0	0	1135
Total	***0***	***268***	***0***	***79***	***387***	***1138***	***638***	***1098***	***699***	***131***	***0***	***0***	***4438***

2001

Station	Jan.	Feb.	mar.	Apr.	may	jun.	Jul.	Aug.	sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	0	0	108	23	56	340	296	275	68	178	0	0	1344
Bellaguntha	0	0	45	27	10	262	236	135	55	173	0	0	943
Jagannathprasad	0	0	70	15	0	369	359	220	47	133	0	0	1213
Soroda	0	0	75	66	63	419	188	361	148	173	0	0	1493
Total	***0***	***0***	***298***	***131***	***129***	***1390***	***1079***	***991***	***318***	***657***	***0***	***0***	***4993***

2002

Station	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	57	0	556	99	350	356	126	211	90	0	0	0	1845
Bellaguntha	47	12	595	91	293	350	105	370	156	0	0	0	2019
Jagannathprasad	35	9	455	164	152	459	95	291	106	0	0	0	1766
Soroda	10	18	304	34	196	219	245	192	75	0	0	0	1293
Total	***149***	***39***	***1910***	***388***	***991***	***1384***	***571***	***1064***	***427***	***0***	***0***	***0***	***6923***

2003

Station	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	8	0	21	53	44	265	138	330	126	50	10	0	1045
Bellaguntha	62	0	22	70	68	247	120	356	184	38	9	0	1176
Jagannathprasad	2	0	0	7	5	47	70	298	62	69	14	0	574
Soroda	23	1	6	33	28	140	84	154	91	97	7	0	664
Total	***95***	***1***	***49***	***163***	***145***	***699***	***412***	***1138***	***463***	***254***	***40***	***0***	***3459***

2004

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	31	4	55	41	29	215	230	409	240	70	0	21	1345
Bellaguntha	13	0	9	78	15	116	162	320	294	35	2	65	1109
Jagannathprasad	28	0	84	39	51	121	166	622	427	41	6	59	1644
Soroda	0	0	24	39	22	61	105	240	167	5	0	75	738
Total	***72***	***4***	***172***	***197***	***117***	***513***	***663***	***1591***	***1128***	***151***	***8***	***220***	***4836***

2005

Station	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	0	219	89	77	98	97	281	222	405	149	167	0	1804
Bellaguntha	0	101	92	45	52	90	171	98	206	96	113	0	1064
Jagannathprasad	0	112	73	36	30	120	316	146	206	59	148	0	1246
Soroda	0	47	92	83	19	110	247	118	308	197	102	0	1323
Total	***0***	***479***	***346***	***241***	***199***	***417***	***1015***	***584***	***1125***	***501***	***530***	***0***	***5437***

2006

Station	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	0	0	0	0	33	139	269	218	140	446	22	0	1267
Bellaguntha	0	0	0	0	22	74	84	182	102	391	32	0	887
Jagannathprasad	0	0	0	0	50	127	169	220	266	238	17	0	1087
Soroda	0	0	0	0	150	153	174	121	298	331	48	0	1275
Total	***0***	***0***	***0***	***0***	***255***	***493***	***696***	***741***	***806***	***1406***	***119***	***0***	***4516***

2007

Station	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	0	67	0	25	119	276	159	336	205	53	0	0	1240
Bellaguntha	0	51	0	0	36	219	122	286	221	22	0	0	957
Jagannathprasad	0	67	0	20	130	342	214	159	152	22	0	0	1106
Soroda	0	83	0	34	102	301	143	317	121	34	0	0	1135
Total	***0***	***268***	***0***	***79***	***387***	***1138***	***638***	***1098***	***699***	***131***	***0***	***0***	***4438***

2008

Station	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	0	0	108	23	56	340	296	275	68	178	0	0	1344
Bellaguntha	0	0	45	27	10	262	236	135	55	173	0	0	943
Jagannathprasad	0	0	70	15	0	369	359	220	47	133	0	0	1213
Soroda	0	0	75	66	63	419	188	361	148	173	0	0	1493
Total	***0***	***0***	***298***	***131***	***129***	***1390***	***1079***	***991***	***318***	***657***	***0***	***0***	***4993***

2009

Station	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	0	0	0	0	15	101	489	246	106	141	42	0	1140
Bellaguntha	0	0	0	0	23	80	416	239	108	148	30	0	1044
Jagannathprasad	0	0	0	0	29	114	498	124	113	161	34	0	1073
Soroda	0	0	0	0	50	79	501	230	128	230	61	0	1279
Total	***0***	***0***	***0***	***0***	***117***	***374***	***1904***	***839***	***455***	***680***	***167***	***0***	***4536***

2010

Station	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	0	0	0	0	114	228	156	312	150	232	88	57	1337
Bellaguntha	0	0	0	0	52	210	132	295	163	117	106	75	1150
Jagannathprasad	0	0	0	0	113	150	215	302	144	163	89	41	1217
Soroda	0	0	0	0	62	187	131	272	126	224	158	68	1228
Total	***0***	***0***	***0***	***0***	***341***	***775***	***634***	***1181***	***583***	***736***	***441***	***241***	***4932***

2011

Station	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	0	25	4	62	63	220	217	285	224	23	0	0	1123
Bellaguntha	0	0	0	14	40	8	203	163	250	42	0	0	720
Jagannathprasad	0	0	0	24	62	101	178	397	189	0	0	0	951
Soroda	0	10	0	53	16	213	213	297	161	3	0	0	966
Total	***0***	***35***	***4***	***153***	***181***	***542***	***811***	***1142***	***824***	***68***	***0***	***0***	***3760***

2012

Station	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	3	0	0	0	0	135	260	351	285	86	302	0	1422
Bellaguntha	0	0	0	0	0	260	320	434	286	110	231	0	1641
Jagannathprasad	63	0	0	44	0	109	244	362	182	119	184	0	1307
Soroda	89	0	0	29	68	32.1	213	139	164	96	190	0	1020.4
Total	***155***	***0***	***0***	***73***	***68***	***536***	***1037***	***1286***	***917***	***411***	***907***	***0***	***5390***

2013

Station	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bhanjanagar	28	0	0	116	116	234	449	265	270	775	0	0	2252.1
Bellaguntha	0	0	0	40	69	278	336	158	449	1037	0	0	2367
Jagannathprasad	0	0	0	137	85	419	415	145	191	940	0	0	2332
Soroda	0	0	0	108	54	223	340	125	212	730	0	0	1792
Total	***28***	***0***	***0***	***401***	***324***	***1154***	***1540***	***693***	***1122***	***3482***	***0***	***0***	***8743***

Source: Indian Metrological Department, Website-www.ori.nic.in

Annexure-II

Rainfall Data of Ghumusur North Division as obtained from Minor Irrigation Department.

Month Wise Rain Fall Data Of 1995

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	90.00	19.00	51.00	20.00	582.00	71.00	317.00	319.00	291.00	242.00	100.00	0.00	**2102.00**
Daha	88.50	4.05	45.15	28.75	473.65	38.45	220.30	243.15	217.70	285.95	129.95	0.00	**1775.60**
Khandrabali	77.35	6.35	0.00	0.00	828.05	63.50	200.69	285.98	125.46	322.52	177.80	0.00	**2087.70**
Madhabrida	55.00	9.60	59.60	21.20	643.00	85.80	275.50	242.20	321.75	339.66	152.39	0.00	**2205.70**
Sorisa muli	74.00	17.30	7.70	18.80	245.73	80.91	262.80	295.10	535.90	173.40	83.30	0.00	**1794.94**
Total	***384.85***	***56.30***	***163.45***	***88.75***	***2772.43***	***339.66***	***1276.29***	***1385.43***	***1491.81***	***1363.53***	***643.44***	***0.00***	***9965.94***

Month Wise Rain Fall Data Of 1996

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	5.00	0.00	19.00	51.00	40.00	271.00	134.00	341.00	116.00	39.00	15.00	0.00	**1031.00**
Daha	6.50	14.25	31.80	47.10	15.25	250.75	178.65	246.50	100.20	73.00	21.25	0.00	**985.25**
Khandrabali	0.00	7.60	0.00	15.25	12.60	233.70	220.45	256.45	167.70	86.40	10.00	0.00	**1010.15**
Madhabrida	26.40	11.20	16.60	34.60	35.60	288.20	124.00	376.28	121.12	38.10	12.70	0.00	**1084.80**
Sorisa muli	0.00	0.00	12.59	21.22	17.97	276.19	204.00	255.00	169.00	119.00	21.00	0.00	**1095.97**
Total	***37.90***	***33.05***	***79.99***	***169.17***	***121.42***	***1319.84***	***861.10***	***1475.23***	***674.02***	***355.50***	***79.95***	***0.00***	***5207.17***

Month Wise Rain Fall Data Of 1997

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	36.00	12.00	46.00	53.00	33.00	170.00	216.00	400.00	235.00	40.00	32.00	0.00	**1273.00**
Daha	58.50	0.00	23.00	8.30	17.80	186.45	148.25	387.85	260.05	58.60	27.65	0.00	**1176.45**
Khandrabali	0.00	0.00	12.70	0.00	50.80	210.45	269.25	372.20	340.55	54.60	0.00	0.00	**1310.55**
Madhabrida	17.40	0.00	22.00	35.80	28.90	121.75	291.78	378.21	230.59	41.91	33.02	3.81	**1205.17**
Sorisa muli	33.44	0.00	10.00	71.60	25.93	205.07	306.00	391.00	202.86	26.68	10.22	0.00	**1282.80**
Total	***145.34***	***12.00***	***113.70***	***168.70***	***156.43***	***893.72***	***1231.28***	***1929.26***	***1269.05***	***221.79***	***102.89***	***3.81***	***6247.97***

Month Wise Rain Fall Data Of 1998

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	0.00	128.00	79.00	56.00	70.00	147.00	335.00	191.00	374.00	161.00	182.00	0.00	1723.00
Daha	0.00	118.40	85.85	141.75	40.00	244.30	253.05	134.30	271.25	105.50	176.50	0.00	1570.90
Khandrabali	0.00	50.80	104.00	0.00	63.40	228.50	188.05	178.55	335.25	194.75	50.90	0.00	1394.20
Madhabrida	20.07	68.03	114.05	48.26	91.44	214.62	207.77	220.98	321.76	100.33	129.54	0.00	1536.85
Sorisa muli	0.00	158.60	61.87	34.83	34.50	131.85	390.42	354.34	227.19	118.20	145.31	0.00	1657.11
Total	***20.07***	***523.83***	***444.77***	***280.84***	***299.34***	***966.27***	***1374.29***	***1079.17***	***1529.45***	***679.78***	***684.25***	***0.00***	***7882.06***

Month Wise Rain Fall Data Of 1999

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	0.00	0.00	7.00	0.00	47.00	188.00	303.00	213.00	163.00	389.00	43.00	0.00	1353.00
Daha	0.00	0.00	0.00	0.00	70.00	172.50	243.15	121.05	226.00	210.75	38.75	0.00	1082.20
Khandrabali	0.00	0.00	0.00	0.00	12.70	156.75	260.00	122.95	136.00	264.10	55.85	0.00	1008.35
Madhabrida	0.00	0.00	0.00	0.00	63.50	160.02	284.48	204.97	246.86	363.40	72.39	0.00	1395.62
Sorisa muli	0.00	0.00	0.00	0.00	92.16	216.66	216.98	214.70	138.15	269.25	37.10	0.00	1185.00
Total	***0.00***	***0.00***	***7.00***	***0.00***	***285.36***	***893.93***	***1307.61***	***876.67***	***910.01***	***1496.50***	***247.09***	***0.00***	***6024.17***

Month Wise Rain Fall Data Of 2000

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	0.00	125.00	0.00	15.00	65.00	267.00	84.00	332.00	284.00	18.00	0.00	0.00	1190.00
Daha	0.00	157.50	0.00	9.00	41.00	322.55	154.35	316.80	209.30	15.80	20.00	0.00	1246.30
Khandrabali	0.00	58.42	0.00	0.00	58.44	189.24	180.20	290.97	111.98	18.00	12.75	0.00	920.00
Madhabrida	0.00	128.17	0.00	0.00	50.80	332.74	163.83	350.52	153.94	20.32	0.00	0.00	1200.32
Sorisa muli	0.00	161.95	0.00	14.94	67.65	226.66	121.21	312.71	236.94	23.60	0.00	0.00	1165.66
Total	***0.00***	***631.04***	***0.00***	***38.94***	***282.89***	***1338.19***	***703.59***	***1603.00***	***996.16***	***95.72***	***32.75***	***0.00***	***5722.28***

Month Wise Rain Fall Data Of 2001

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	0.00	0.00	109.00	19.00	51.00	433.00	334.00	274.00	60.00	184.00	54.00	0.00	1518.00
Daha	0.00	0.00	111.80	46.20	63.20	312.80	257.20	415.80	159.60	171.20	46.20	0.00	1584.00
Khandrabali	0.00	12.70	90.70	15.00	61.40	505.65	189.30	142.13	91.95	240.79	24.09	0.00	1373.71
Madhabrida	0.00	7.62	73.66	41.91	27.17	334.01	312.42	184.84	165.10	233.68	34.29	0.00	1414.70
Sorisa muli	0.00	0.00	98.21	11.78	69.00	313.42	465.40	317.61	145.46	173.98	32.24	0.00	1627.10
Total	***0.00***	***20.32***	***483.37***	***133.89***	***271.77***	***1898.88***	***1558.32***	***1334.38***	***622.11***	***1003.65***	***190.82***	***0.00***	***7517.51***

Month Wise Rain Fall Data Of 2002

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	4.00	0.00	27.00	55.00	112.00	187.00	62.00	348.00	226.00	91.00	0.00	0.00	1112.00
Daha	26.40	0.00	25.00	85.60	56.20	125.00	91.20	467.60	188.00	136.00	0.00	0.00	1201.00
Khandrabali	17.78	5.08	11.43	22.86	38.64	80.01	90.98	231.26	125.00	67.00	5.00	0.00	695.04
Madhabrida	35.56	10.16	22.83	36.83	106.68	124.22	219.20	251.52	228.00	120.00	0.00	0.00	1155.00
Sorisa muli	11.81	0.00	15.00	31.49	112.56	176.30	140.06	447.78	240.00	158.00	0.00	0.00	1333.00
Total	***95.55***	***15.24***	***101.26***	***231.78***	***426.08***	***692.53***	***603.44***	***1746.16***	***1007.00***	***572.00***	***5.00***	***0.00***	***5496.04***

Month Wise Rain Fall Data Of 2003

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	0.00	20.00	16.00	49.00	51.00	52.00	385.00	400.00	209.00	395.00	2.00	52.00	1631.00
Daha	0.00	35.00	40.00	20.00	30.00	95.40	419.60	437.00	185.00	378.00	0.00	51.00	1691.00
Khandrabali	0.00	47.00	20.00	49.00	45.00	0.00	377.00	784.00	300.00	413.00	0.00	0.00	2035.00
Madhabrida	0.00	77.00	12.80	67.70	77.30	119.20	254.00	345.00	171.00	406.00	0.00	49.00	1579.00
Sorisa muli	0.00	18.50	2.36	46.44	0.00	103.58	428.12	463.00	376.00	317.00	1.00	39.00	1795.00
Total	***0.00***	***197.50***	***91.16***	***232.14***	***203.30***	***370.18***	***1863.72***	***2429.00***	***1241.00***	***1909.00***	***3.00***	***191.00***	***8731.00***

Month Wise Rain Fall Data Of 2004

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	0.00	25.00	3.00	172.00	10.00	115.00	347.00	110.00	115.00	109.00	0.00	0.00	1006.00
Daha	1.50	33.00	0.00	83.00	0.00	124.00	414.00	110.00	248.00	149.00	0.00	0.00	1162.50
Khandrabali	3.00	20.00	0.00	59.00	0.00	58.00	283.00	112.00	165.00	176.00	0.00	0.00	876.00
Madhabrida	3.00	25.00	0.00	106.00	0.00	107.00	257.00	148.00	103.80	179.20	0.00	0.00	929.00
Sorisa muli	22.00	0.00	5.00	108.00	3.00	194.00	404.00	187.00	167.00	124.00	0.00	0.00	1214.00
Total	***29.50***	***103.00***	***8.00***	***528.00***	***13.00***	***598.00***	***1705.00***	***667.00***	***798.80***	***737.20***	***0.00***	***0.00***	***5187.50***

Month Wise Rain Fall Data Of 2005

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	4.00	0.00	25.00	21.00	62.00	102.00	337.00	190.00	382.00	390.00	26.00	0.00	1539.00
Daha	12.00	0.00	34.00	12.00	81.00	116.00	213.00	123.00	425.00	348.00	0.00	0.00	1364.00
Khandrabali	10.50	0.00	16.50	19.00	8.00	69.55	211.95	37.50	330.26	339.80	33.00	0.00	1076.06
Madhabrida	29.40	0.00	29.60	13.20	86.30	102.50	167.00	144.00	334.80	269.40	163.00	0.00	1339.20
Sorisa muli	27.00	0.00	67.00	15.00	19.00	78.00	442.00	187.00	351.00	510.00	29.00	0.00	1725.00
Total	***82.90***	***0.00***	***172.10***	***80.20***	***256.30***	***468.05***	***1370.95***	***681.50***	***1823.06***	***1857.20***	***251.00***	***0.00***	***7043.26***

Month Wise Rain Fall Data Of 2006

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	0.00	0.00	78.00	17.00	102.00	222.00	434.00	428.00	271.00	34.00	55.00	0.00	1641.00
Daha	0.00	0.00	69.00	24.00	85.00	189.00	285.00	433.00	276.00	61.00	52.00	0.00	1474.00
Khandrabali	0.00	0.00	41.50	15.00	145.60	170.30	353.30	371.95	220.10	25.00	18.00	0.00	1360.75
Madhabrida	0.00	0.00	42.60	19.90	106.90	207.80	440.80	327.40	193.30	27.50	36.80	0.00	1403.00
Sorisa muli	0.00	0.00	52.00	11.00	75.00	250.00	405.84	347.14	181.03	28.33	29.90	0.00	1380.24
Total	***0.00***	***0.00***	***283.10***	***86.90***	***514.50***	***1039.10***	***1918.94***	***1907.49***	***1141.43***	***175.83***	***191.70***	***0.00***	***7258.99***

Month Wise Rain Fall Data Of 2007

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	0.00	3.00	39.00	16.00	104.00	305.00	139.00	427.00	318.00	34.00	12.00	0.00	1397.00
Daha	0.00	14.00	2.00	7.00	33.00	357.00	173.00	375.00	379.00	80.00	8.00	0.00	1428.00
Khandrabali	0.00	20.00	15.00	0.00	96.50	311.60	111.00	242.60	333.30	101.00	5.00	0.00	1236.00
Madhabrida	0.00	35.00	101.00	9.40	78.40	375.40	124.00	376.30	408.50	76.00	3.00	0.00	1587.00
Sorisa muli	0.00	0.00	7.87	15.74	48.80	347.59	220.00	337.00	576.00	18.00	8.00	0.00	1579.00
Total	***0.00***	***72.00***	***164.87***	***48.14***	***360.70***	***1696.59***	***767.00***	***1757.90***	***2014.80***	***309.00***	***36.00***	***0.00***	***7227.00***

Month Wise Rain Fall Data Of 2008

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	11.00	2.00	42.00	17.00	46.00	215.00	254.00	432.00	364.00	0.00	18.00	0.00	1401.00
Daha	10.00	0.00	71.00	35.00	29.00	204.00	246.00	233.00	356.00	6.00	5.00	0.00	1195.00
Khandrabali	15.00	0.00	25.00	20.00	50.00	286.00	214.00	317.00	224.00	12.00	68.00	0.00	1231.00
Madhabrida	15.25	0.00	51.20	98.55	88.00	227.00	202.00	339.00	359.00	31.00	57.88	0.00	1468.88
Sorisa muli	0.00	60.00	15.00	49.00	0.00	303.00	258.00	426.00	450.00	3.00	4.00	0.00	1568.00
Total	***51.25***	***62.00***	***204.20***	***219.55***	***213.00***	***1235.00***	***1174.00***	***1747.00***	***1753.00***	***52.00***	***152.88***	***0.00***	***6863.88***

Month Wise Rain Fall Data Of 2009

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	0.00	0.00	0.00	0.00	62.00	125.00	534.00	223.00	130.00	174.00	13.00	0.00	1261.00
Daha	0.00	0.00	17.00	0.00	18.00	74.00	582.00	442.00	128.00	124.00	32.00	0.00	1417.00
Khandrabali	0.00	0.00	0.00	30.00	20.00	53.00	384.00	157.00	81.00	175.00	56.00	0.00	956.00
Madhabrida	15.25	0.00	0.00	14.28	61.02	115.00	438.00	221.00	176.00	141.00	43.00	0.00	1224.55
Sorisa muli	0.00	0.00	0.00	0.00	48.00	191.00	739.00	321.00	95.00	122.00	14.00	0.00	1530.00
Total	***15.25***	***0.00***	***17.00***	***44.28***	***209.02***	***558.00***	***2677.00***	***1364.00***	***610.00***	***736.00***	***158.00***	***0.00***	***6388.55***

Month Wise Rain Fall Data Of 2010

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	72.00	0.00	40.00	0.00	93.00	212.00	184.00	416.00	202.00	193.00	87.00	57.00	1556.00
Daha	13.00	0.00	24.00	0.00	109.00	138.00	188.00	445.00	209.00	180.00	61.00	47.00	1414.00
Khandrabali	22.00	30.00	0.00	0.00	177.00	173.00	141.00	319.00	197.00	139.00	113.00	57.00	1368.00
Madhabrida	79.00	0.00	22.00	0.00	96.60	237.00	123.40	226.60	181.15	267.00	102.00	113.00	1447.75
Sorisa muli	25.00	0.00	16.00	0.00	63.00	329.00	270.00	353.00	360.00	204.00	99.00	41.00	1760.00
Total	***211.00***	***30.00***	***102.00***	***0.00***	***538.60***	***1089.00***	***906.40***	***1759.60***	***1149.15***	***983.00***	***462.00***	***315.00***	***7545.75***

Month Wise Rain Fall Data Of 2011

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	0.00	28.00	0.00	22.00	44.00	204.00	193.00	320.00	209.00	8.00	0.00	2.00	1030.00
Daha	0.00	2.00	2.00	55.00	10.00	131.00	266.00	305.00	123.00	28.00	0.00	0.00	922.00
Khandrabali	0.00	0.00	0.00	60.00	25.00	113.00	264.00	227.00	120.00	38.00	0.00	2.00	849.00
Madhabrida	0.00	6.80	0.00	72.00	32.00	101.60	197.60	161.80	152.00	10.00	0.00	5.00	738.80
Sorisa muli	0.00	7.00	0.00	0.00	59.00	119.00	471.00	485.00	183.00	12.00	0.00	1.00	1337.00
Total	***0.00***	***43.80***	***2.00***	***209.00***	***170.00***	***668.60***	***1391.60***	***1498.80***	***787.00***	***96.00***	***0.00***	***10.00***	***4876.80***

Month Wise Rain Fall Data Of 2012

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	69.00	0.00	0.00	48.00	60.00	124.00	281.00	358.00	312.00	74.00	312.00	0.00	1638.00
Daha	51.00	0.00	0.00	39.00	19.00	47.00	186.00	310.00	235.00	47.00	194.00	0.00	1128.00
Khandrabali	53.00	0.00	0.00	46.00	13.00	68.00	228.00	245.00	139.00	74.00	213.00	0.00	1079.00
Madhabrida	89.00	0.00	0.00	101.00	44.00	168.00	276.00	275.00	214.00	142.00	263.00	0.00	1572.00
Sorisa muli	59.00	0.00	0.00	77.00	23.00	105.00	360.00	415.00	210.00	97.00	336.00	0.00	1682.00
Total	***321.00***	***0.00***	***0.00***	***311.00***	***159.00***	***512.00***	***1331.00***	***1603.00***	***1110.00***	***434.00***	***1318.00***	***0.00***	***7099.00***

Month Wise Rain Fall Data Of 2013

centre name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	G.Total
Bhanjanagar	0.0	2.0	0.0	141.0	139.0	280.0	458.0	267.0	208.0	690.0	0.0	0.0	2185.00
Daha	0.0	0.0	0.0	85.0	28.0	111.0	408.0	219.0	176.0	557.0	0.0	0.0	1584.00
Khandrabali	0.0	26.0	0.0	79.0	61.0	291.0	219.0	261.0	330.0	828.0	0.0	0.0	2095.00
Madhabrida	0.0	8.0	0.0	88.0	46.0	262.0	349.0	170.0	257.0	710.0	0.0	0.0	1890.00
Sorisa muli	0.0	8.0	0.0	72.0	97.0	394.0	518.0	191.0	178.0	846.0	0.0	0.0	2304.00
Total	***0.00***	***44.00***	***0.00***	***465.00***	***371.00***	***1338.00***	***1952.00***	***1108.00***	***1149.00***	***3631.00***	***0.00***	***0.00***	***10058.00***

Source: Executive Engineer, Irrigation Department, Bhanjanagar

Annexure-III

List of Dug wells, constructed in Ghumusur North Forest Division.				
Sl. No.	**Year of Construction**	**No. of Dug well**	**Name of Building**	**Present Condition**
1	1903	1	Central Range Office, Bhejiput	Existing
2	1908	1	Forest Rest House, Kaliamba	Existing
3	1908	1	Forester Quarter, Lathipada	Existing
4	1947	1	Forester Quarter, Khariguda	Existing
5	1930	1	Forest Guard Quarter, Badaborsing	Existing
6	1911	1	Forester Quarter, Gangapur	Existing
7	1907	1	Forest Rest House, Ragada	Existing
8	1919	1	D.F.O Residence, Bhanjanagar	Existing
9	1938	4	Forest Colony, Hartnagar, Bhanjanagar	Existing
10	1925	1	Range Inspection shed, Mujagada	Existing
11	1904	1	Forest Rest House, Rambha	Existing
12	1904	1	Forester and FG Quarter, Rambha	Not-Existing
13	1927	1	Forest Guard Quarter, Biripadar	Existing
14	1971	1	Forest Guard Quarter, Brahmanpadar	Not-Existing
15	1940	1	Forest Guard Quarter, Durgaprasad	Existing
16	1930	1	Forest Guard Quarter, Kullada	Not-Existing
17	1937	1	Forest Guard Quarter, Bhejiput	Not-Existing
18	1930	1	Forester Quarter, Tilisingi	Existing
19	1910	1	Forest Guard Quarter, Gallery	Existing
20	1927	1	Forest Guard Quarter, Badangi	Existing
21	1930	1	Out House at Banta	Not-Existing
22	1920	1	Forest Guard Quarter, Banta	Not-Existing
23	1955	1	Forest Guard Quarter, Alsu	Existing
24	1930	1	Forest Guard Quarter, Jagannathprasad	Existing
25	1928	1	Forester Quarter, Gereda	Existing
26	1913	1	Forest Rest House, Gereda	Not-Existing
27	1920	1	Forest Guard Quarter, Gereda	Existing
28	1979	1	Marking shed, Suramani	Existing
29	1979	1	Marking shed, Jadadhara	Existing
30	1931	1	Range Office Residence, Tarsing	Existing
31	1931	1	Clerk Quarter, Tarsing	Existing
32	1929	1	Forest Quarter, Gayaganda	Existing
33	1911	1	Forest Rest House, Ghogoda	Existing
34	1928	1	Forest Rest House, Badagunduribadi	Existing
35	2009	1	Forest Guard Quarter, Banta	Existing
Total		***38***		

Source: D.F.O Ghumsur North Division

Annexure-IV

CD Block wise average Water levels in different locations in Ghumusur North Division			
Sl. No.	**Name of CD Block**	**Location**	**Average depth of water table below ground level. (in mt.)**
1	Bhanjanagar	Dadaralunda and Mujagada	18.00
		Gallery, Harigada and Douhani	9.00
		Tutua, Tilisingi and Lembhei	8.00
		Kullada, Dihapadhala, Golapada and Baruda	10.00
		Jillundi	12.00
		Baunsalundi	10.00
		Lalsingi	16.00
		Sanakodanda and Dumakumpa	18.00
		Badakodanda	11.00
		Baiballi and Brahmanpadar	20.00
2	Bellaguntha	Ambapua	8.00
		Banka	7.00
		Badaborsingi	12.00
		Badapada	7.00
		Dhumuchai	7.00
		G.Nuagaon	6.00
		Gangapur	12.00
		Gobara	10.00
		Inginathi	5.00
		Khairapati	14.00
		Khetribarapur	12.00
		Netenga	12.00
		Pailipada	10.00
		Sasana	10.00
		Tanarada	9.00
		Udura	10.00
		Benipalli	7.00
3	Soroda	Gopalpur Sasan, Palakata & Genja	10.00
		Badabadangi	15.00
4	Jagannathprasad	J.N.Prasad, Routi, Allasu, Kadua	12.50
		Gandadhar, Jhadabhuin, BijayDhanurjayapur, Baragaon, Adhaigaon	9.80
		Pratapur, Kudutei, Gereda, Khetaundali, Bankatora	11.80
		Tarasingi, Kokolaba, Gayaganda, Rudhapadar	13.00

Source: Executive Engineer, RWSS, Bhanjanagar

Annexure-V

Block wise & Grampanchayat wise list of Minor Irrigation Projects in Ghumusur North Division.														
Surada Block														
Sl. No.	Name of the M.I.P	Name of G P	Latitude			Longitude			Catchment in Sq. Km	Designed Ayacut in Ha.		Certified Ayacut in Ha.		Canal Length in Mtr.
			Degree	Minute	Second	Degree	Minute	Second		Kharif	Rabi	Kharif	Rabi	
1	Kandhatopa Agula, Makarapalli	Kulangi	19°	48 '	15 " N	84°	31 '	30 " E	1.60	48.00	-	52.09	-	2000
2	Kelaghai, Kulangi	Kulangi	19°	48 '	12 " N	84°	32 '	24 " E	1.00	41.00	-	53.66	-	
3	Boitabandha, Kulangi	Kulangi	19°	48 '	00 " N	84°	31 '	55 " E	0.80	41.00	16.00	45.49	-	
4	Dimirinala, Chanchadapali	Kulangi	19°	46 '	50 " N	84°	25 '	45 " E	2.10	86.00	14.00	86.00	-	1500
5	Jharanalla, Neliguda	Gopalapur Sasan	19°	49 '	00 " N	84°	27 '	15 " E	2.09	42.00	-	42.86	-	
6	Khandanalla Agula, Palasapalli	Kulangi	19°	48 '	40 " N	84°	32 '	15 " E	1.30	41.00	-	48.91	-	
7	V.Kotibadi Anicut, V.Kotibadi	Gopalapur Sasan	19°	45 '	40 " N	84°	29 '	30 " E	11.15	53.00	-	-		2000
8	A) Banalabandha,	Gopalapur Sasan	19°	46 '	00 " N	84°	26 '	50 " E	9.00	84.00	282.00	-		

	Sorisabali (FT: Alikuan MIP, Badua)												
9	Aligodaghai, Gudiapali	Lathipada	19°	45 '	30 " N	84°	29 '	45 " E	1.40	41.00	-	40.46		1500
10	Kulangi Anicut, Kulangi	Kulangi	19°	48 '	05 " N	84°	32 '	20 " E	1.70	41.00	-	53.66		
11	Ragadagarundi, Ragada	Lathipada	19°	48 '	45 " N	84°	29 '	10 " E	3.10	60.00	-	49.80		

Bellaguntha Block													
Sl. No.	Name of the M.I.P	Name of G P	Latitude			Longitude			Catchment in Sq. Km	Designed Ayacut in Ha.		Certified Ayacut in Ha.		Canal Length in Mtr.
			Degree	Minute	Second	Degree	Minute	Second		Khariff	Rabi	Khariff	Rabi	
1	Agulaghai, Khetribarapur	Khetribarapur	19°	48'	06 " N	84°	36'	05 " E	1.03	53.00	-	52.00		
2	Baladiagula, Kokolunda	Udhara	19°	52'	53 " N	84°	38'	57 " E	1.20	52.00	-	60.54		
3	Benughai, Gajendra	Udhara	19°	46 '	29 " N	84°	42 '	09 " E	1.70	41.00	-	60.54		
4	Chandibandha, Ambapua	Ambapua	19°	52'	05 " N	84°	39'	21 " E	2.00	46.00	-	46.20		5400.00
5	Hajabandha, K.Barapur	Tanarada	19°	55'	15 " N	84°	38'	02 " E	1.00	40.00	-	57.00		1500.00
6	Krishna Sagar, Bellaguntha	Bellaguntha NAC	19°	52'	34 " N	84°	38'	00 " E	1.90	86.00	-	110.54		
7	Padmabandha, Gajendra	Udhara	19°	52'	11 " N	84°	40'	15 " E	1.20	41.00	-	45.35		

8	Bedha Agula, Gangapur (FT: Borisagar)	Gangapur	19°	46 '	02 '' N	84°	35 '	10 '' E	1.90	51.00	-	51.01		
9	Borisagar at Bori	Gangapur	19°	45'	41 '' N	84°	35'	29 '' E	11.70	369.00	-	368.85		
10	Gobaraghai, Bankaledi	Badaburusingi	19°	50'	16 '' N	84°	31'	17 '' E	5.20	144.00	-	144.21		
11	Hadahadia, Khariguda D/W	Badaburusingi	19°	49'	32 '' N	84°	31'	10 '' E	13.10	278.00	12.00	251.67		5500.00
12	Hari Martha Agula, Palakasandha	Kshetribarpur	19°	47'	34 '' N	84°	35'	15 '' E	2.60	81.00	-	60.25		1000.00
13	Nuabandha, Kumundi	Gangapur	19°	46'	05 '' N	84°	34'	15 '' E	6.60	85.00	-	85.67		800.00
14	Pokasunga Agula, Saranuapalli	Tanarada	19°	54'	44 '' N	84°	39'	05 '' E	1.40	43.00	-	34.87		
15	Ratanighai, Indanpur	Khairaputi	19°	45 '	49 '' N	84°	37 '	17 '' E	1.30	68.00	-	68.15		
16	Solakati Agula Kusapalli	Igninati	19°	53 '	47 '' N	84°	35 '	20 '' E	1.10	41.00	-	42.93		
17	Solobandha, Banatumba	Tanarada	19°	53'	57 '' N	84°	37'	45 '' E	1.60	54.00	-	54.23		
18	Sandhaswar MIP, Palakasandha	Palakasandha	19°	46'	07 '' N	84°	34'	22 '' E	5.00	208.00	-	208.01		4000.00
19	Ballianallaghai, Khariguda	Badaburusingi	19°	49 '	06 '' N	84°	32 '	31 '' E	1.60	50.00	-	-		
20	Banklidighai, D/W	Badaburusingi	19°	50'	08 '' N	84°	33'	46 '' E	2.90	90.00	-	-		
21	Kaliambaghai, D/W Nuapada	Gobara	19°	50'	24 '' N	84°	32'	19 '' E	8.25	130.00	-	-		

Bhanjanagar Block														
Sl. No.	Name of the M.I.P	Name of G P	Latitude			Longitude			Catchment in Sq. Km	Designed Ayacut in Ha.		Certified Ayacut in Ha.		Canal Length in Mtr.
			Degree	Minute	Second	Degree	Minute	Second		Khariff	Rabi	Khariff	Rabi	
1	Baistambaghai, Binjigiri	Sanakodanda	19°	57 '	24 " N	84°	32 '	10 " E	3.20	106.00	-	106.34		1200.00
2	Beruanbadi, Turumu	Turumu	20°	03 '	08 " N	84°	37 '	34 " E	2.30	97.00	-	97.00		1500.00
3	Bhitribediguba MIP	Dadaralunda	20°	06 '	13 " N	84°	27 '	55 " E	9.06	454.00	41.00	464.58		16580.00
4	Budhaghai, Budhagocha	Turumu	20°	04 '	36 " N	84°	37 '	24 " E	2.80	80.00	8.00	80.52		750.00
5	Golabandha MIP at Harigada	Harigada	20°	7 '	05 " N	84°	34 '	14 " E	2.60	138.00	16.00	211.17		500.00
6	Jayamangal Tank, Mujagada	Mujagada	20°	2 '	32 " N	84°	31 '	22 " E	3.20	160.00	-	160.84		2300.00
7	Jhilimilighai Bahadapadar	Sanakodanda	19°	57 '	07 " N	84°	30 '	57 " E	2.10	166.00	-	166.25		500.00
8	Joginalla MIP, Harigada	Harigada	20°	7 '	47 " N	84°	34 '	46 " E	2.80	66.00	-	65.80		1280.00
9	Pochakabali MIP	Mujagada	19°	59 '	26 " N	84°	30 '	34 " E	3.90	170.00	20.00	170.25		4320.00
10	Rajaghai MIP, Tilisingi	Tilisingi	20°	01 '	08 " N	84°	38'	21 " E	2.80	70.00	-	88.98		
11	Saranallahaghai, Rajakunda	Lalasingi	19°	56 '	44 " N	84°	33 '	10 " E	5.20	102.00	-	101.57		
12	Badaghai, Jogimari	Sanakodanda	19°	56 '	32 " N	84°	31 '	10 " E	1.30	41.00	-	40.47		

13	Bagdeviaguala, Balliapata	Baruda	20°	00 '	13 " N	84°	35 '	19 " E	1.30	41.00	-	24.45		
14	Bapangi MIP, Bapangi	Baibilli	20°	00 '	50 " N	84°	28 '	12 " E	18.30	146.00	-	73.58		5420.00
15	Chandiagula, Sanakodanda	Sanakodanda	19°	56 '	26 " N	84°	32 '	34 " E	5.10	81.00	-	81.15		
16	Chunapali Agula	Sanakodanda	19°	57 '	57 " N	84°	29 '	00 " E	1.20	40.00	-	6.23		
17	Kuchianala, Kulada	Golapada	19°	58 '	21 " N	84°	37 '	50 " E	1.16	93.00	-	92.81		
18	Kumbhijhola Agula, Dindipali	Dhiapadhala	19°	57 '	32 " N	84°	37 '	12 " E	3.10	41.00	8.00	28.61		
19	Kumbhipalli MIP, Kumbhipalli	Turumu	20°	5 '	29 " N	84°	37 '	05 " E	9.10	210.00	20.00	210.50		5810.00
20	Lochiakhalaghai, Lembei	Lembei	20°	2 '	26 " N	84°	38 '	39 " E	1.20	41.00	-	44.87		
21	Mankadakumpa MIP, Lembei	Lembei	20°	2 '	45 " N	84°	39 '	07 " E	1.90	43.00	-	43.06		
22	Podagada MIP	Mujagada	20°	03 '	00 " N	84°	29 '	00 " E	75.10	452.00	41.00	423.03		13050.00
23	Somapalli Anicut	Sanakodanda	19°	58'	08 " N	84°	31'	16 " E	3.90	159.00	-	62.63		
24	Gudipadar MIP	Dhumakumpa	19°	54 '	26 " N	84°	30 '	10 " E	2.60	46.00	-	-		
25	Natuninalla MIP	Domuhani	20°	08 '	11 " N	84°	36 '	38 " E	17.95	300.00	-	-		
26	Jirajuali MIP	Brahmanpadar	20°	05 '	00 " N	84°	32 '	57 " E	2.10	50.00	-	-		
27	Rangameru MIP	Turumu	20°	4 '	31 " N	84°	34 '	46 " E	4.70	45.00	-	-		
28	Jamanalla	Mujagada	20°	01	16 "	84°	30	45 " E	6.25	45.00	-	-		

				'	N		'							
29	Chitipalli MIP	Sanokodanda	19°	58 '	16 " N	84°	29 '	02 " E	1.00	369.00	-	-		
30	Lundighai Rajkundu	Lalsingi	19°	57 '	10 " N	84°	33 '	09 " E	1.30	40.00	-	-		
31	Naikaagula MIP	Dadaralunda	20°	03 '	00 " N	84°	30 '	14 " E	1.00	40.00	-	-		
32	Badangi MIP	Harigada	20°	10 '	02 " N	84°	34 '	48 " E	71.75	1100.00	-	-		
33	Kalasa MIP	Domuhani	20°	09 '	29 " N	84°	36 '	17 " E	138.00	390.00	-	-		
34	Durgaprasad MIP	Dadaralunda	20°	7 '	37 " N	84°	27 '	00 " E	22.00	41.00	-	-		
35	Kanabindha MIP	Dadaralunda	20°	03 '	45 " N	84°	26 '	24 " E	11.75	324.00	-	65.00		
36	Kupati MIP	Brahamanpadar	20°	09 '	03 " N	84°	31 '	34 " E	25.34	385.00	20.00	298.00		

Jagannathprasad Block														
Sl. No.	Name of the M.I.P	Name of G P	Latitude			Longitude			Catchment in Sq. Km	Designed Ayacut in Ha.		Certified Ayacut in Ha.		Canal Length in Mtr.
			Degree	Minute	Second	Degree	Minute	Second		Khariff	Rabi	Khariff	Rabi	
1	Badabandha, Baragam	Baragam	19°	53'	48 " N	84°	41'	32 " E	1.30	41.00	-	37.76		
2	Baradanda, MIP, Baradanda	Tarasingi	20°	3 '	15 " N	84°	41'	26 " E	1.30	41.00	-	82.89		

3	Baunstaliaghai, Landaihill (Bankatara)	Pratapur	19°	56'	54 " N	84°	41'	36 " E	2.60	48.00	-	92.82		3450.00
4	Bichabaniaghai, Gochabadi	Jhadabhumi	19°	57'	56 " N	84°	43 '	16 " E	1.30	41.00	-	75.39		1500.00
5	Chadhiaganda MIP, Ekagharia	Olasu	20°	02'	21 " N	84°	48'	55 " E	1.75	283.00	81.00	432.04		7700.00
6	Chelakhaighai, Malingi	Rauti	19°	58'	03 " N	84°	49'	03 " E	1.40	43.00	-	42.69		100.00
7	Dandianalla	Pratapur	19°	56 '	4 8 " N	84°	38 '	48 " E	5.90	41.00	-	40.00		
8	Dangijholinalla, Bhabasara	Rauti	19°	59 '	19 " N	84°	48 '	09 " E	15.20	150.00	-	132.54		2600.00
9	Deulapatraghai, Haridapadar	Kudutai	19°	58'	23 " N	84°	41'	48 " E	2.60	45.00	-	60.67		680.00
10	Ghusurigadia Tank, Pratapur	Pratapur	19°	56'	40 " N	84°	40'	25 " E	2.50	70.00	-	132.32		2610.00
11	A) Jagulaibandha (FT: Ghusurigadia)	Pratapur	19°	56 '	45 " N	84°	39 '	52 " E	-	-	-	-		
12	B) Chandibandha (FT: Ghusurigadia)	Pratapur	19°	56 '	55 " N	84°	39 '	40 " E	-	-	-	-		
13	C) Pathrabandha (FT: Ghusurigadia)	Pratapur	19°	56 '	58 " N	84°	39 '	28 " E	-	-	-	-		
14	Hatiagula, Chikili	J.N.Prasad	19°	57'	28 " N	84°	44'	55 " E	2.50	50.00	-	51.11		90.00
15	Jayamangalaghai, Burapali	Pratapur	19°	55'	50 " N	84°	41'	00 " E	2.30	89.00	-	100.61		
16	Khirikhai chorichanchara, Gunduribadi	Pratapur	19°	55'	36 " N	84°	41'	04 " E	1.30	41.00	-	82.89		2400.00
17	Kusuma Agula, Mentapur	B.D.Pur	19°	54'	49 " N	84°	41'	57 " E	1.30	41.00	-	86.85		
18	Lankagada MIP, JN Prasad	J.N.Prasad	19°	59'	41 "	84°	46'	53 " E	10.50	728.00	238.0	729.2		13270.

					N						0	2		00
19	Mahadev Agula, Gochabadi	Jhadabhumi	19˚	56 '	50 " N	84°	43'	38 " E	5.20	120.00	-	120.01		1200.00
20	Malangi MIP, Malangi	Rauti	19˚	58 '	31 " N	84˚	49 '	14 " E	1.30	97.00	-	97.62		1500.00
21	Nadiakhaighai, Budurungu	Budurungu	19˚	55 '	58 " N	84˚	48 '	57 " E	4.50	47.00	-	45.04		
22	Nalakulaghai, Bhabasara	Rauti	20°	00'	16 " N	84°	48'	12 " E	7.80	218.00	111.00	219.00		6930.00
23	Nua Agula, Balakiari	Adhiagam	19°	55'	24 " N	84°	39'	31 " E	1.80	59.00	-	72.80		1500.00
24	Olasu MIP, Olasu	Olasu	20°	02'	42 " N	84°	50'	20 " E	5.40	327.00	81.00	474.40		9030.00
25	Rankighai, Pantikhari	Pratapur	19˚	55 '	41 " N	84˚	40 '	00 " E	1.30	41.00	-	44.69		30.00
26	A) Arunachal Tank, (FT: Lankagada MIP)	J.N.Prasad	19°	58'	13 " N	84°	46'	12 " E	3.40	59.00	-	-		3060.00
27	A) Chakarpradhanghai, Gayaganda (FT: Gayaganda)	Gayaganda	20˚	10 '	04 " N	84˚	45 '	03 " E	0.90	41.00	-	-		
28	A) Ghai in Survey No. 321 & 322, Tarasingi (FT: Khilladi MIP)	Tarasingi	20˚	5 '	45 " N	84˚	46 '	00 " E	2.00	49.00	-	-		
29	A) Gudiabandha at Mahulpalli (FT: Khalianall)	Kudutai	19˚	54 '	47 " N	84˚	43 '	30 " E	1.03	41.00	-	-		
30	B) Bhaliabankaghai (FT: Lankagada MIP)	J.N.Prasad	19˚	58'	44 " N	84°	46'	52 " E	1.00	41.00	-	-		
31	Bedhaghai, Ekaghriapali	Rauti	20˚	00'	53 " N	84°	48'	45 " E	1.30	52.00	-	73.50		240.00
32	Bengibandha, Tamanda	Jhadabhumi	19˚	55 '	41 " N	84˚	44 '	09 " E	1.60	41.00	-	47.60		
33	Benughai, Gochhabadi	Jhadabhumi	19˚	56'	48 " N	84°	43'	02 " E	2.60	45.00	-	15.05		

34	Brahamandevibandha, Adhigam	Adhiagam	19˚	53'	57 " N	84°	40'	28 " E	3.00	49.00	-	31.16		
35	Dhouabandha, Kumunda (FT: Chamunda)	Alladi	19˚	56 '	40 " N	84˚	45 '	28 " E	1.00	42.00	-	42.00		
36	Ganeshbandha, Gothalunda	Pratapur	19˚	37'	52 " N	84°	39'	31 " E	1.60	41.00	-	26.84		
37	Kaninalla, Jhadabhumi	Jhadabhumi	19˚	55 '	34 " N	84°	43 '	17 " E	4.30	209.00	-	209.64		3590.00
38	Kepiti MIP, Kepiti	Gereda	20˚	01'	10 " N	84°	41'	15 " E	1.85	41.00	-	25.36		
39	Khalianalla, Bhagabanpur	Kudutai	19˚	57'	55 " N	84°	40'	59 " E	2.10	41.00	-	40.00		
40	Pathrateka MIP, Umasahi	Gereda	20˚	01'	37 " N	84˚	42'	00 " E	4.10	41.00	-	37.00		
41	Saraghai, Sorisamuli	B.D.Pur	19˚	53 '	50 " N	84˚	42 '	26 " E	3.10	41.00	-	37.46		
42	Bananalla MIP, Kokalaba	Kokolaba	20°	06'	52 " N	84°	43'	36 " E	2.85	41.00	-	-		
43	Haripurnala, Khamarapali	Khamarpali	19˚	57 '	15 " N	84˚	44 '	26 " E	1.50	41.00	-	42.21		
44	Rankighai, Jhadabhumi	Jhadabhumi	19˚	54 '	50 " N	84˚	43 '	27 " E	1.03	54.00	-	54.20		
45	Gayaganda	Gayaganda	20˚	10 '	03 " N	84˚	45 '	34 " E	82.90	1214.00	-	1,014.00		11250.00
46	Bada Agula, Tarapa	B.D.Pur	19˚	54'	56 " N	84°	42 '	22 " E	0.80	41.00	-	30.33		
47	Baradapadar MIP, Gereda	Gereda	19˚	02 '	24 " N	84°	42'	00 " E	1.30	41.00	-	24.37		
48	Gramadevati MIP, Gramadevati	Khetamunduli	20˚	04'	37 " N	84°	44'	00 " E	1.03	41.00	-	23.09		
49	Dhanakaninala MIP	Khetamunda	20˚	3 '	44 "	84˚	43	43 " E	1.55	41.00	-	-		

		li			N		'							
50	Baunsabandha	Gerada	20°	01 '	36 " N	84°	42 '	03 " E	0.90	40.00	-	-		
51	Gopapur Agula MIP at Gandadhara	Gandadhara	19°	56 '	42 " N	84°	44 '	16 " E	1.00	40.00	-	-		
52	Biluamara MIP	Khetramundali	20°	03 '	42 " N	84°	44 '	36 " E	45.32	728.00	-	-		
53	Ratanasagar Mip at Nimapadar	Khamarpali	19°	53 '	3 " N	84°	41 '	12 " E	1.10	40.00	-	-		
54	Deulabandha MIP at Bargaon	Bargaon	19°	53 '	52 " N	84°	41 '	00 " E	2.00	60.00	-	-		
55	Samarabandha MIP at Samarabandha	Gereda	19°	59 '	31 " N	84°	45 '	46 " E	2.50	70.00	-	-		
56	Khuntianalla MIP	Pratapur	19°	37 '	45 " N	84°	39 '	12 " E	1.30	41.00	-	-		
57	Kadaliagada MIP	Gayaganda	20°	11 '	41 " N	84°	43 '	00 " E	2.75	76.00	-	-		
58	Hadisahi Nalla MIP	J.N.Prasad	19°	57 '	26 " N	84°	45 '	48 " E	1.80	45.00	-	-		
59	Tulasipalli MIP	Gerada	19°	58 '	52 " N	84°	42 '	34 " E	2.15	50.00	-	-		
60	Baradatailaghai MIP	Khetramundali	20°	04 '	39 " N	84°	45 '	19 " E	1.65	44.00	-	-		
61	Bhalighai	Baragaon	19°	54 '	11 " N	84°	40 '	48 " E	1.10	40.00	-	-		
62	Landeighai MIP at Kandhagan	Pratapur	19°	56 '	20 " N	84°	42 '	26 " E	1.40	40.00	-	-		
63	Bonthanalla MIP	Khetramundali	20°	04 '	17 " N	84°	48 '	00 " E	3.25	42.00	-	-		
64	Dalakaagual MIP	Baragaon	19°	54 '	24 " N	84°	41 '	21 " E	1.30	45.00				

65	Dhanakhani MIP	Khetramundali	19°	56 '	27 " N	84°	48 '	22 " E	10.50	120.00	-	-		
66	Maradapalli MIP	Khetramundali	20°	5 '	13 " N	84°	48 '	05 " E	9.40	50.00	-	-		
67	Haripur MIP	Gandadhara	19°	58 '	58 " N	84°	44 '	31 " E	4.40	120.00	-	120.00		
68	Andharianalla, near Haripur	Gandadhara	19°	56 '	40 " N	84°	44 '	45 " E	13.50	216.00	-	10.00		
69	Nagharianalla MIP	Olasu	20°	00 '	57 " N	84°	50 '	10 " E	11.50	56.00	-	-		
70	Dudhijharana MIP	Pratapur	19°	57 '	58 " N	84°	40 '	00 " E	2.75	94.00	-	70.00		
71	Kadalianalla MIP	Pratapur	19°	57 '	13 " N	84°	39 '	31 " E	38.75	465.00	-	-		
72	Nunimundi MIP	Gereda	19°	59 '	28 " N	84°	43 '	05 " E	2.25	100.00	-	-		
73	Kurutei MIP	Kurutei	19°	58 '	29 " N	84°	41 '	00 " E	20.25	325.00	-	-		
74	Khajurinalla MIP	Jhadabhumi	19°	55 '	15 " N	84°	43 '	22 " E	6.00	95.00	-	30.00		
75	Landeinalla MIP	Pratapur	19°	56 '	08 " N	84°	39 '	12 " E	7.50	120.00	-	-		
76	Bhusubhusa MIP	Gerada	19°	58 '	49 " N	84°	42 '	00 " E	7.00	115.00	-	35.00		
77	Sapanga MIP	Kurutei	19°	59 '	05 " N	84°	42 '	24 " E	3.30	50.00	-	-		

Source: Executive Engineer, Minor Irrigation Department, Bhanjanagar.

Annexure-VI

Block wise Ground Water Level Data of important Locations of Ghumusur North Forest Division.												
Block Name- Bellaguntha					Block Name- Bhanjanagar				Block Name- Jagannathprasad			
Latitude	Longitude	Site name	Water level		Latitude	Longitude	Site name	Water level	Latitude	Longitude	Site name	Water level
1995					1995				1995			
January					January				January			
19°47'15" N	84°31'3" E	Lathipada	4.53		19°56'55" N	84°35'0" E	Bhanjanagar-i	5.6	19°53'52" N	84°41'2" E	Baragam	3.45
19°49'35" N	84°36'0" E	Gobara	2.85		20°1'0" N	84°31'2" E	Mujhagarh	8.76	19°55'9" N	84°43'24" E	Jhadabhumi	4.4
19°52'54" N	84°38'22" E	Belaguntha1	4.33		20°1'8" N	84°37'56" E	Tilisingi	8.04	19°58'15" N	84°46'40" E	Jagannathprasad	4.06
April					April				April			
19°47'15" N	84°31'3" E	Lathipada	6.89		19°56'55" N	84°35'0" E	Bhanjanagar-i	1.17	19°53'52" N	84°41'2" E	Baragam	4.49
19°49'35" N	84°36'0" E	Gobara	4.37		20°1'0" N	84°31'2" E	Mujhagarh	1.66	19°55'9" N	84°43'24" E	Jhadabhumi	6.1
19°52'54" N	84°38'22" E	Belaguntha1	5.29		20°1'8" N	84°37'56" E	Tilisingi	0.72	19°58'15" N	84°46'40" E	Jagannathprasad	5.38
August					August				August			
19°47'15" N	84°31'3" E	Lathipada	0.96		19°56'55" N	84°35'0" E	Bhanjanagar-i	4	19°53'52" N	84°41'2" E	Baragam	0.89
19°49'35" N	84°36'0" E	Gobara	0.25		20°1'0" N	84°31'2" E	Mujhagarh	8.58	19°55'9" N	84°43'24" E	Jhadabhumi	0.34
19°52'54" N	84°38'22" E	Belaguntha1	1.1		20°1'8" N	84°37'56" E	Tilisingi	4.31	19°58'15" N	84°46'40" E	Jagannathprasad	1.52
November					November				November			
19°47'15" N	84°31'3" E	Lathipada	1.41		19°56'55" N	84°35'0" E	Bhanjanagar-i	1.69	19°53'52" N	84°41'2" E	Baragam	1.36
19°49'35" N	84°36'0" E	Gobara	0.92		20°1'0" N	84°31'2" E	Mujhagarh	4.84	19°55'9" N	84°43'24" E	Jhadabhumi	1.02
19°52'54" N	84°38'22" E	Belaguntha1	1.33		20°1'8" N	84°37'56" E	Tilisingi	2.85	19°58'15" N	84°46'40" E	Jagannathprasad	2.47
1996					1996				1996			
January					January				January			
19°47'15" N	84°31'3" E	Lathipada	2.56		19°56'55" N	84°35'0" E	Bhanjanagar-i	3.68	19°53'52" N	84°41'2" E	Baragam	2.74
19°49'35" N	84°36'0" E	Gobara	2.14		20°1'0" N	84°31'2" E	Mujhagarh	8.73	19°55'9" N	84°43'24" E	Jhadabhumi	2.95
19°52'54" N	84°38'22" E	Belaguntha1	2.08		20°1'8" N	84°37'56" E	Tilisingi	9.34	19°58'15" N	84°46'40" E	Jagannathprasad	3.95
April					April				April			
19°47'15" N	84°31'3" E	Lathipada	6.13		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.72	19°53'52" N	84°41'2" E	Baragam	4.36

19°49'35" N	84°36'0" E	Gobara	4.79		20°1'0" N	84°31'2" E	Mujhagarh	2.76		19°55'9" N	84°43'24" E	Jhadabhumi	6.08
19°52'54" N	84°38'22" E	Belaguntha1	4.98		20°1'8" N	84°37'56" E	Tilisingi	1.96		19°58'15" N	84°46'40" E	Jagannathprasad	5.18
August					August					August			
19°47'15" N	84°31'3" E	Lathipada	2.33		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.5		19°53'52" N	84°41'2" E	Baragam	0.85
19°49'35" N	84°36'0" E	Gobara	0.55		20°1'0" N	84°31'2" E	Mujhagarh	5.41		19°55'9" N	84°43'24" E	Jhadabhumi	1.34
19°52'54" N	84°38'22" E	Belaguntha1	1.06		20°1'8" N	84°37'56" E	Tilisingi	3.91		19°58'15" N	84°46'40" E	Jagannathprasad	2.81
November					November					November			
19°47'15" N	84°31'3" E	Lathipada	3.59		19°56'55" N	84°35'0" E	Bhanjanagar-i	3.03		19°53'52" N	84°41'2" E	Baragam	2.19
19°49'35" N	84°36'0" E	Gobara	1.75		20°1'0" N	84°31'2" E	Mujhagarh	5.18		19°55'9" N	84°43'24" E	Jhadabhumi	2.45
19°52'54" N	84°38'22" E	Belaguntha1	1.87		20°1'8" N	84°37'56" E	Tilisingi	3.68		19°58'15" N	84°46'40" E	Jagannathprasad	4.2
1997					1997					1997			
January					January					January			
19°47'15" N	84°31'3" E	Lathipada	5.02		19°56'55" N	84°35'0" E	Bhanjanagar-i	5.37		19°53'52" N	84°41'2" E	Baragam	3.56
19°49'35" N	84°36'0" E	Gobara	3.19		20°1'0" N	84°31'2" E	Mujhagarh	8.68		19°55'9" N	84°43'24" E	Jhadabhumi	5.38
19°52'54" N	84°38'22" E	Belaguntha1	4.5		20°1'8" N	84°37'56" E	Tilisingi	8.3		19°58'15" N	84°46'40" E	Jagannathprasad	5.55
April					April					April			
19°47'15" N	84°31'3" E	Lathipada	7.12		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.65		19°53'52" N	84°41'2" E	Baragam	4.48
19°49'35" N	84°36'0" E	Gobara	4.61		20°1'0" N	84°31'2" E	Mujhagarh	1.78		19°55'9" N	84°43'24" E	Jhadabhumi	6.43
19°52'54" N	84°38'22" E	Belaguntha1	6.12		20°1'8" N	84°37'56" E	Tilisingi	1.09		19°58'15" N	84°46'40" E	Jagannathprasad	6.15
August					August					August			
19°47'15" N	84°31'3" E	Lathipada	1.71		19°56'55" N	84°35'0" E	Bhanjanagar-i	3.53		19°53'52" N	84°41'2" E	Baragam	1.73
19°49'35" N	84°36'0" E	Gobara	0.35		20°1'0" N	84°31'2" E	Mujhagarh	6.52		19°55'9" N	84°43'24" E	Jhadabhumi	0.27
19°52'54" N	84°38'22" E	Belaguntha1	1.16		20°1'8" N	84°37'56" E	Tilisingi	4.89		19°58'15" N	84°46'40" E	Jagannathprasad	1.25
November					November					November			
19°47'15" N	84°31'3" E	Lathipada	3.79		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.95		19°53'52" N	84°41'2" E	Baragam	2.64
19°49'35" N	84°36'0" E	Gobara	1.45		20°1'0" N	84°31'2" E	Mujhagarh	5.26		19°55'9" N	84°43'24" E	Jhadabhumi	1.75
19°52'54" N	84°38'22" E	Belaguntha1	2.84		20°1'8" N	84°37'56" E	Tilisingi	3.76		19°58'15" N	84°46'40" E	Jagannathprasad	3.31
1998					1998					1998			
January					January					January			
19°49'35" N	84°36'0" E	Gobara	1.37		20°1'0" N	84°31'2" E	Mujhagarh	7.48		19°53'52" N	84°41'2" E	Baragam	2.96
19°52'54" N	84°38'22" E	Belaguntha1	1.53		20°1'8" N	84°37'56" E	Tilisingi	6.56		19°55'9" N	84°43'24" E	Jhadabhumi	2.45
April					April					19°58'15" N	84°46'40" E	Jagannathprasad	4.37

19°47'15" N	84°31'3" E	Lathipada	5.69		19°56'55" N	84°35'0" E	Bhanjanagar-i	1.81		April			
19°49'35" N	84°36'0" E	Gobara	3.25		20°1'0" N	84°31'2" E	Mujhagarh	2.61		19°53'52" N	84°41'2" E	Baragam	3.95
19°52'54" N	84°38'22" E	Belaguntha1	3.83		20°1'8" N	84°37'56" E	Tilisingi	1.33		19°55'9" N	84°43'24" E	Jhadabhumi	3.87
August					August					19°58'15" N	84°46'40" E	Jagannathprasad	2.41
19°47'15" N	84°31'3" E	Lathipada	3.44		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.28		August			
19°49'35" N	84°36'0" E	Gobara	0.49		20°1'0" N	84°31'2" E	Mujhagarh	5.9		19°53'52" N	84°41'2" E	Baragam	1.38
19°52'54" N	84°38'22" E	Belaguntha1	1.23		20°1'8" N	84°37'56" E	Tilisingi	4.19		19°55'9" N	84°43'24" E	Jhadabhumi	1.4
November					November					19°58'15" N	84°46'40" E	Jagannathprasad	1.33
19°47'15" N	84°31'3" E	Lathipada	0.61		19°56'55" N	84°35'0" E	Bhanjanagar-i	1.34		November			
19°49'35" N	84°36'0" E	Gobara	0.45		20°1'0" N	84°31'2" E	Mujhagarh	0.92		19°53'52" N	84°41'2" E	Baragam	1.18
19°52'54" N	84°38'22" E	Belaguntha1	1.13		20°1'8" N	84°37'56" E	Tilisingi	1.93		19°55'9" N	84°43'24" E	Jhadabhumi	0.88
1999					1999					19°58'15" N	84°46'40" E	Jagannathprasad	2.56
January					January					1999			
19°47'15" N	84°31'3" E	Lathipada	3.13		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.22		January			
19°49'35" N	84°36'0" E	Gobara	2.25		20°1'0" N	84°31'2" E	Mujhagarh	5.61		19°53'52" N	84°41'2" E	Baragam	2.9
19°52'54" N	84°38'22" E	Belaguntha1	2.15		20°1'8" N	84°37'56" E	Tilisingi	4.73		19°55'9" N	84°43'24" E	Jhadabhumi	3.45
April					April					19°58'15" N	84°46'40" E	Jagannathprasad	1.27
19°47'15" N	84°31'3" E	Lathipada	6.17		19°56'55" N	84°35'0" E	Bhanjanagar-i	5.06		April			
19°49'35" N	84°36'0" E	Gobara	4.75		20°1'0" N	84°31'2" E	Mujhagarh	8.65		19°53'52" N	84°41'2" E	Baragam	4.62
19°52'54" N	84°38'22" E	Belaguntha1	6.42		20°1'8" N	84°37'56" E	Tilisingi	9.43		19°58'15" N	84°46'40" E	Jagannathprasad	3.76
August					August					20°4'6" N	84°36'18" E	Saishamuli	6.27
19°47'15" N	84°31'3" E	Lathipada	3.73		19°56'55" N	84°35'0" E	Bhanjanagar-i	4.23		August			
19°49'35" N	84°36'0" E	Gobara	0.43		20°1'0" N	84°31'2" E	Mujhagarh	3.69		19°53'52" N	84°41'2" E	Baragam	1.63
19°52'54" N	84°38'22" E	Belaguntha1	1.24		20°1'8" N	84°37'56" E	Tilisingi	2.5		19°55'9" N	84°43'24" E	Jhadabhumi	0.54
November					2000					19°58'15" N	84°46'40" E	Jagannathprasad	1.05
19°47'15" N	84°31'3" E	Lathipada	7		January					2000			
19°49'35" N	84°36'0" E	Gobara	4.35		19°56'55" N	84°35'0" E	Bhanjanagar-i	3.26		January			
19°52'54" N	84°38'22" E	Belaguntha1	5.2		20°1'0" N	84°31'2" E	Mujhagarh	5.66		19°53'52" N	84°41'2" E	Baragam	2.98
2000					20°1'8" N	84°37'56" E	Tilisingi	4.21		19°55'9" N	84°43'24" E	Jhadabhumi	3.6
January					April					19°58'15" N	84°46'40" E	Jagannathprasad	2.16
19°47'15" N	84°31'3" E	Lathipada	4.12		19°56'55" N	84°35'0" E	Bhanjanagar-i	4.4		April			
19°49'35" N	84°36'0" E	Gobara	2.48		20°1'0" N	84°31'2" E	Mujhagarh	6.9		19°53'52" N	84°41'2" E	Baragam	4.24

19°52'54" N	84°38'22" E	Belaguntha1	3.27		20°1'8" N	84°37'56" E	Tilisingi	5.95		19°55'9" N	84°43'24" E	Jhadabhumi	5.93
April					August					19°58'15" N	84°46'40" E	Jagannathprasad	3.24
19°47'15" N	84°31'3" E	Lathipada	7		19°56'55" N	84°35'0" E	Bhanjanagar-i	4.7		August			
19°49'35" N	84°36'0" E	Gobara	4.35		20°1'0" N	84°31'2" E	Mujhagarh	5.31		19°53'52" N	84°41'2" E	Baragam	0.99
19°52'54" N	84°38'22" E	Belaguntha1	5.2		20°1'8" N	84°37'56" E	Tilisingi	3.96		19°55'9" N	84°43'24" E	Jhadabhumi	0.56
August					November					2001			
19°47'15" N	84°31'3" E	Lathipada	0.94		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.01		January			
19°49'35" N	84°36'0" E	Gobara	0.44		20°1'0" N	84°31'2" E	Mujhagarh	1.7		19°53'52" N	84°41'2" E	Baragam	4.99
19°52'54" N	84°38'22" E	Belaguntha1	1.27		20°1'8" N	84°37'56" E	Tilisingi	1.15		19°55'9" N	84°43'24" E	Jhadabhumi	6.5
November					2001					19°58'15" N	84°46'40" E	Jagannathprasad	3.86
19°47'15" N	84°31'3" E	Lathipada	3.91		January					April			
19°49'35" N	84°36'0" E	Gobara	1.74		19°56'55" N	84°35'0" E	Bhanjanagar-i	5.5		19°53'52" N	84°41'2" E	Baragam	5
19°52'54" N	84°38'22" E	Belaguntha1	2.94		20°1'0" N	84°31'2" E	Mujhagarh	6.58		19°55'9" N	84°43'24" E	Jhadabhumi	6.86
2001					20°1'8" N	84°37'56" E	Tilisingi	4.89		19°58'15" N	84°46'40" E	Jagannathprasad	3.9
January					April					August			
19°47'15" N	84°31'3" E	Lathipada	5.79		19°56'55" N	84°35'0" E	Bhanjanagar-i	7.3		19°53'52" N	84°41'2" E	Baragam	1.08
19°49'35" N	84°36'0" E	Gobara	3.4		20°1'0" N	84°31'2" E	Mujhagarh	8.24		19°55'9" N	84°43'24" E	Jhadabhumi	0.75
19°52'54" N	84°38'22" E	Belaguntha1	5.74		20°1'8" N	84°37'56" E	Tilisingi	6.67		19°58'15" N	84°46'40" E	Jagannathprasad	1.33
April					August					November			
19°47'15" N	84°31'3" E	Lathipada	6.75		19°56'55" N	84°35'0" E	Bhanjanagar-i	1.69		19°53'52" N	84°41'2" E	Baragam	1.89
19°49'35" N	84°36'0" E	Gobara	4.48		20°1'0" N	84°31'2" E	Mujhagarh	3.53		19°55'9" N	84°43'24" E	Jhadabhumi	1.83
19°52'54" N	84°38'22" E	Belaguntha1	6.31		20°1'8" N	84°37'56" E	Tilisingi	2.18		19°58'15" N	84°46'40" E	Jagannathprasad	1.57
August					November					2002			
19°47'15" N	84°31'3" E	Lathipada	2.16		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.46		January			
19°49'35" N	84°36'0" E	Gobara	0.54		20°1'0" N	84°31'2" E	Mujhagarh	5.06		19°53'52" N	84°41'2" E	Baragam	3.59
19°52'54" N	84°38'22" E	Belaguntha1	1.2		20°1'8" N	84°37'56" E	Tilisingi	3.18		19°55'9" N	84°43'24" E	Jhadabhumi	4.96
November					2002					19°58'15" N	84°46'40" E	Jagannathprasad	4.92
19°47'15" N	84°31'3" E	Lathipada	2.86		January					April			
19°49'35" N	84°36'0" E	Gobara	1.39		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.45		19°53'52" N	84°41'2" E	Baragam	4.61
19°52'54" N	84°38'22" E	Belaguntha1	1.68		20°1'0" N	84°31'2" E	Mujhagarh	5.78		19°55'9" N	84°43'24" E	Jhadabhumi	6.11
2002					20°1'8" N	84°37'56" E	Tilisingi	4.24		19°58'15" N	84°46'40" E	Jagannathprasad	6.12
January					April					August			

19°47'15" N	84°31'3" E	Lathipada	5.29		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.91		19°53'52" N	84°41'2" E	Baragam	1.24
19°49'35" N	84°36'0" E	Gobara	5.05		20°1'0" N	84°31'2" E	Mujhagarh	8.5		19°55'9" N	84°43'24" E	Jhadabhumi	2.13
19°52'54" N	84°38'22" E	Belaguntha1	3.74		20°1'8" N	84°37'56" E	Tilisingi	5.98		19°58'15" N	84°46'40" E	Jagannathprasad	2.22
April					August					November			
19°47'15" N	84°31'3" E	Lathipada	7.7		19°56'55" N	84°35'0" E	Bhanjanagar-i	3.13		19°53'52" N	84°41'2" E	Baragam	3.74
19°49'35" N	84°36'0" E	Gobara	7.66		20°1'0" N	84°31'2" E	Mujhagarh	3.43		19°55'9" N	84°43'24" E	Jhadabhumi	5.01
19°52'54" N	84°38'22" E	Belaguntha1	5.59		20°1'8" N	84°37'56" E	Tilisingi	1.48		19°58'15" N	84°46'40" E	Jagannathprasad	5.15
August					November					2003			
19°47'15" N	84°31'3" E	Lathipada	2.17		19°56'55" N	84°35'0" E	Bhanjanagar-i	1.91		January			
19°49'35" N	84°36'0" E	Gobara	0.38		20°1'0" N	84°31'2" E	Mujhagarh	6.79		19°53'52" N	84°41'2" E	Baragam	4.16
19°52'54" N	84°38'22" E	Belaguntha1	1.26		20°1'8" N	84°37'56" E	Tilisingi	4.07		19°55'9" N	84°43'24" E	Jhadabhumi	5.36
November					2003					19°58'15" N	84°46'40" E	Jagannathprasad	5.29
19°47'15" N	84°31'3" E	Lathipada	5.41		January					April			
19°49'35" N	84°36'0" E	Gobara	5.27		19°56'55" N	84°35'0" E	Bhanjanagar-i	6.17		19°53'52" N	84°41'2" E	Baragam	5.61
19°52'54" N	84°38'22" E	Belaguntha1	2.26		20°1'0" N	84°31'2" E	Mujhagarh	7.38		19°58'15" N	84°46'40" E	Jagannathprasad	6.07
2003					20°1'8" N	84°37'56" E	Tilisingi	4.52		August			
January					April					19°53'52" N	84°41'2" E	Baragam	0.81
19°47'15" N	84°31'3" E	Lathipada	6.44		19°56'55" N	84°35'0" E	Bhanjanagar-i	4.52		19°55'9" N	84°43'24" E	Jhadabhumi	0.17
19°49'35" N	84°36'0" E	Gobara	6.83		20°1'0" N	84°31'2" E	Mujhagarh	4.84		19°58'15" N	84°46'40" E	Jagannathprasad	0.58
19°52'54" N	84°38'22" E	Belaguntha1	4.25		20°1'8" N	84°37'56" E	Tilisingi	4.01		November			
April					August					19°53'52" N	84°41'2" E	Baragam	1.24
19°47'15" N	84°31'3" E	Lathipada	6.53		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.24		19°55'9" N	84°43'24" E	Jhadabhumi	0.82
19°49'35" N	84°36'0" E	Gobara	4.36		20°1'0" N	84°31'2" E	Mujhagarh	1.38		19°58'15" N	84°46'40" E	Jagannathprasad	1.38
19°52'54" N	84°38'22" E	Belaguntha1	5.91		20°1'8" N	84°37'56" E	Tilisingi	0.42		2004			
August					November					January			
19°47'15" N	84°31'3" E	Lathipada	2.21		19°56'55" N	84°35'0" E	Bhanjanagar-i	1.45		19°53'52" N	84°41'2" E	Baragam	3.02
19°49'35" N	84°36'0" E	Gobara	2.67		20°1'0" N	84°31'2" E	Mujhagarh	3.84		19°55'9" N	84°43'24" E	Jhadabhumi	3.78
19°52'54" N	84°38'22" E	Belaguntha1	1.14		20°1'8" N	84°37'56" E	Tilisingi	2.53		19°58'15" N	84°46'40" E	Jagannathprasad	4.28
November					2004					April			
19°47'15" N	84°31'3" E	Lathipada	3.12		January					19°53'52" N	84°41'2" E	Baragam	4.62
19°49'35" N	84°36'0" E	Gobara	2.86		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.06		19°58'15" N	84°46'40" E	Jagannathprasad	6.14
19°52'54" N	84°38'22" E	Belaguntha1	1.34		20°1'0" N	84°31'2" E	Mujhagarh	5.69		August			

2004					20°1'8" N	84°37'56" E	Tilisingi	3.94		19°53'52" N	84°41'2" E	Baragam	1.2
January					April					19°55'9" N	84°43'24" E	Jhadabhumi	0.6
19°47'15" N	84°31'3" E	Lathipada	4.67		19°56'55" N	84°35'0" E	Bhanjanagar-i	3.39		19°58'15" N	84°46'40" E	Jagannathprasad	1.43
19°49'35" N	84°36'0" E	Gobara	4.1		20°1'0" N	84°31'2" E	Mujhagarh	8.54		November			
19°52'54" N	84°38'22" E	Belaguntha1	1.82		20°1'8" N	84°37'56" E	Tilisingi	5.25		19°53'52" N	84°41'2" E	Baragam	2.12
April					August					19°55'9" N	84°43'24" E	Jhadabhumi	1.35
19°47'15" N	84°31'3" E	Lathipada	7.05		20°1'0" N	84°31'2" E	Mujhagarh	4.68		19°58'15" N	84°46'40" E	Jagannathprasad	1.6
19°49'35" N	84°36'0" E	Gobara	5.88		20°1'8" N	84°37'56" E	Tilisingi	2.15		2005			
19°52'54" N	84°38'22" E	Belaguntha1	3.64		November					January			
August					19°56'55" N	84°35'0" E	Bhanjanagar-i	3.81		19°53'52" N	84°41'2" E	Baragam	3.87
19°47'15" N	84°31'3" E	Lathipada	2.21		20°1'0" N	84°31'2" E	Mujhagarh	4.99		19°55'9" N	84°43'24" E	Jhadabhumi	4.66
19°49'35" N	84°36'0" E	Gobara	2.14		20°1'8" N	84°37'56" E	Tilisingi	3.19		19°58'15" N	84°46'40" E	Jagannathprasad	4.87
19°52'54" N	84°38'22" E	Belaguntha1	1.35		2005					April			
November					January					19°53'52" N	84°41'2" E	Baragam	5.03
19°47'15" N	84°31'3" E	Lathipada	4.63		19°56'55" N	84°35'0" E	Bhanjanagar-i	5.13		19°58'15" N	84°46'40" E	Jagannathprasad	6.1
19°49'35" N	84°36'0" E	Gobara	2.96		20°1'0" N	84°31'2" E	Mujhagarh	6.23		August			
19°52'54" N	84°38'22" E	Belaguntha1	1.96		20°1'8" N	84°37'56" E	Tilisingi	4.21		19°58'15" N	84°46'40" E	Jagannathprasad	6.18
2005					April					2006			
January					19°56'55" N	84°35'0" E	Bhanjanagar-i	6.47		January			
19°47'15" N	84°31'3" E	Lathipada	6.8		20°1'0" N	84°31'2" E	Mujhagarh	8.36		19°53'52" N	84°41'2" E	Baragam	4.99
19°49'35" N	84°36'0" E	Gobara	4.54		20°1'8" N	84°37'56" E	Tilisingi	3.09		19°55'9" N	84°43'24" E	Jhadabhumi	6.5
19°52'54" N	84°38'22" E	Belaguntha1	7.93		August					19°58'15" N	84°46'40" E	Jagannathprasad	3.86
April					19°56'55" N	84°35'0" E	Bhanjanagar-i	2.23		April			
19°47'15" N	84°31'3" E	Lathipada	8.89		20°1'0" N	84°31'2" E	Mujhagarh	1.62		19°58'15" N	84°46'40" E	Jagannathprasad	6.01
19°49'35" N	84°36'0" E	Gobara	5.48		20°1'8" N	84°37'56" E	Tilisingi	0.59		August			
19°52'54" N	84°38'22" E	Belaguntha1	7.54		2006					19°53'52" N	84°41'2" E	Baragam	0.9
August					January					19°58'15" N	84°46'40" E	Jagannathprasad	0.89
19°47'15" N	84°31'3" E	Lathipada	0.69		19°56'55" N	84°35'0" E	Bhanjanagar-i	5.5					
19°49'35" N	84°36'0" E	Gobara	2.85		20°1'0" N	84°31'2" E	Mujhagarh	6.58		19°53'52" N	84°41'2" E	Baragam	1.69
19°52'54" N	84°38'22" E	Belaguntha1	1.24		20°1'8" N	84°37'56" E	Tilisingi	4.89		19°55'9" N	84°43'24" E	Jhadabhumi	1.9
2006					April					19°58'15" N	84°46'40" E	Jagannathprasad	2.49
January					19°56'55" N	84°35'0" E	Bhanjanagar-i	3.57		2007			

19°47'15" N	84°31'3" E	Lathipada	5.79		20°1'0" N	84°31'2" E	Mujhagarh	8.74		January			
19°49'35" N	84°36'0" E	Gobara	3.4		20°1'8" N	84°37'56" E	Tilisingi	4		19°53'52" N	84°41'2" E	Baragam	3.35
19°52'54" N	84°38'22" E	Belaguntha1	5.74		August					19°55'9" N	84°43'24" E	Jhadabhumi	3.87
April					19°56'55" N	84°35'0" E	Bhanjanagar-i	1.01		19°58'15" N	84°46'40" E	Jagannathprasad	4.89
19°47'15" N	84°31'3" E	Lathipada	9.89		20°1'0" N	84°31'2" E	Mujhagarh	2.49		April			
19°49'35" N	84°36'0" E	Gobara	6.53		20°1'8" N	84°37'56" E	Tilisingi	1.85		19°53'52" N	84°41'2" E	Baragam	4.61
19°52'54" N	84°38'22" E	Belaguntha1	6.72		November					19°55'9" N	84°43'24" E	Jhadabhumi	6.61
August					19°56'55" N	84°35'0" E	Bhanjanagar-i	2.85		19°58'15" N	84°46'40" E	Jagannathprasad	6.13
19°47'15" N	84°31'3" E	Lathipada	3.3		20°1'0" N	84°31'2" E	Mujhagarh	5.15		August			
19°49'35" N	84°36'0" E	Gobara	2.44		20°1'8" N	84°37'56" E	Tilisingi	3.04		19°53'52" N	84°41'2" E	Baragam	1.36
19°52'54" N	84°38'22" E	Belaguntha1	1.15		2007					19°55'9" N	84°43'24" E	Jhadabhumi	0.83
November					January					19°58'15" N	84°46'40" E	Jagannathprasad	1.27
19°47'15" N	84°31'3" E	Lathipada	4.59		19°56'55" N	84°35'0" E	Bhanjanagar-i	3.15		November			
19°49'35" N	84°36'0" E	Gobara	1.04		20°1'0" N	84°31'2" E	Mujhagarh	5.81		19°53'52" N	84°41'2" E	Baragam	1.78
19°52'54" N	84°38'22" E	Belaguntha1	1.68		20°1'8" N	84°37'56" E	Tilisingi	3.91		19°55'9" N	84°43'24" E	Jhadabhumi	1.99
2007					April					19°58'15" N	84°46'40" E	Jagannathprasad	3.51
January					19°56'55" N	84°35'0" E	Bhanjanagar-i	4.83		2008			
19°47'15" N	84°31'3" E	Lathipada	5.88		20°1'0" N	84°31'2" E	Mujhagarh	8.52		January			
19°49'35" N	84°36'0" E	Gobara	1.71		20°1'8" N	84°37'56" E	Tilisingi	4.65		19°53'52" N	84°41'2" E	Baragam	1.93
19°52'54" N	84°38'22" E	Belaguntha1	4.44		August					19°55'9" N	84°43'24" E	Jhadabhumi	3.47
April					19°56'55" N	84°35'0" E	Bhanjanagar-i	1.54		19°58'15" N	84°46'40" E	Jagannathprasad	4.41
19°47'15" N	84°31'3" E	Lathipada	8.94		20°1'0" N	84°31'2" E	Mujhagarh	3.17		April			
19°49'35" N	84°36'0" E	Gobara	5.85		20°1'8" N	84°37'56" E	Tilisingi	1.94		19°53'52" N	84°41'2" E	Baragam	5.78
19°52'54" N	84°38'22" E	Belaguntha1	7.38		November					19°55'9" N	84°43'24" E	Jhadabhumi	5.79
August					19°56'55" N	84°35'0" E	Bhanjanagar-i	1.32		19°58'15" N	84°46'40" E	Jagannathprasad	7.26
19°47'15" N	84°31'3" E	Lathipada	2.92		20°1'0" N	84°31'2" E	Mujhagarh	5.18		August			
19°49'35" N	84°36'0" E	Gobara	1.21		20°1'8" N	84°37'56" E	Tilisingi	1.91		19°53'52" N	84°41'2" E	Baragam	0.84
19°52'54" N	84°38'22" E	Belaguntha1	1.3		2008					19°55'9" N	84°43'24" E	Jhadabhumi	0.61
November					January					19°58'15" N	84°46'40" E	Jagannathprasad	0.55
19°47'15" N	84°31'3" E	Lathipada	3.52		19°56'55" N	84°35'0" E	Bhanjanagar-i	1.92		November			
19°49'35" N	84°36'0" E	Gobara	1.6		20°1'0" N	84°31'2" E	Mujhagarh	5.61		19°53'52" N	84°41'2" E	Baragam	3.6
19°52'54" N	84°38'22" E	Belaguntha1	1.64		20°1'8" N	84°37'56" E	Tilisingi	2.94		19°55'9" N	84°43'24" E	Jhadabhumi	2.98

2008					April					19°58'15" N	84°46'40" E	Jagannathprasad	4.06
January					19°56'55" N	84°35'0" E	Bhanjanagar-i	6.1		2009			
19°47'15" N	84°31'3" E	Lathipada	5.72		20°1'0" N	84°31'2" E	Mujhagarh	8.19		January			
19°49'35" N	84°36'0" E	Gobara	1.88		20°1'8" N	84°37'56" E	Tilisingi	5.91		19°53'52" N	84°41'2" E	Baragam	3.46
19°52'54" N	84°38'22" E	Belaguntha1	4.02		August					19°55'9" N	84°43'24" E	Jhadabhumi	3.81
April					19°56'55" N	84°35'0" E	Bhanjanagar-i	1.7		19°58'15" N	84°46'40" E	Jagannathprasad	3.05
19°47'15" N	84°31'3" E	Lathipada	7.09		20°1'0" N	84°31'2" E	Mujhagarh	3.95		April			
19°49'35" N	84°36'0" E	Gobara	6.5		20°1'8" N	84°37'56" E	Tilisingi	2		19°53'52" N	84°41'2" E	Baragam	7.06
19°52'54" N	84°38'22" E	Belaguntha1	7.47		November					19°55'9" N	84°43'24" E	Jhadabhumi	6
August					19°56'55" N	84°35'0" E	Bhanjanagar-i	0.49		19°58'15" N	84°46'40" E	Jagannathprasad	4.92
19°47'15" N	84°31'3" E	Lathipada	3.45		20°1'0" N	84°31'2" E	Mujhagarh	4.25		August			
19°49'35" N	84°36'0" E	Gobara	0.65		20°1'8" N	84°37'56" E	Tilisingi	0.89		19°53'52" N	84°41'2" E	Baragam	1.35
19°52'54" N	84°38'22" E	Belaguntha1	1.24		2009					19°55'9" N	84°43'24" E	Jhadabhumi	1.81
November					January					19°58'15" N	84°46'40" E	Jagannathprasad	0.68
19°47'15" N	84°31'3" E	Lathipada	2.79		19°56'55" N	84°35'0" E	Bhanjanagar-i	5.14		November			
19°49'35" N	84°36'0" E	Gobara	1.28		20°1'0" N	84°31'2" E	Mujhagarh	6.16		19°53'52" N	84°41'2" E	Baragam	1.35
19°52'54" N	84°38'22" E	Belaguntha1	0.85		20°1'8" N	84°37'56" E	Tilisingi	3.81		19°55'9" N	84°43'24" E	Jhadabhumi	1.81
2009					April					19°58'15" N	84°46'40" E	Jagannathprasad	0.68
January					19°56'55" N	84°35'0" E	Bhanjanagar-i	7.85		2010			
19°47'15" N	84°31'3" E	Lathipada	5.27		20°1'0" N	84°31'2" E	Mujhagarh	8.74		January			
19°52'54" N	84°38'22" E	Belaguntha1	4.4		20°1'8" N	84°37'56" E	Tilisingi	4.8		19°53'52" N	84°41'2" E	Baragam	3.19
April					August					19°55'9" N	84°43'24" E	Jhadabhumi	3.46
19°47'15" N	84°31'3" E	Lathipada	9.44		19°56'55" N	84°35'0" E	Bhanjanagar-i	1.78		19°58'15" N	84°46'40" E	Jagannathprasad	2.42
19°49'35" N	84°36'0" E	Gobara	4.05		20°1'0" N	84°31'2" E	Mujhagarh	3.13		April			
19°52'54" N	84°38'22" E	Belaguntha1	6.04		20°1'8" N	84°37'56" E	Tilisingi	2.1		19°53'52" N	84°41'2" E	Baragam	3.15
August					November					19°55'9" N	84°43'24" E	Jhadabhumi	6.93
19°47'15" N	84°31'3" E	Lathipada	2.57		19°56'55" N	84°35'0" E	Bhanjanagar-i	3.08		19°58'15" N	84°46'40" E	Jagannathprasad	6.07
19°49'35" N	84°36'0" E	Gobara	1.43		20°1'0" N	84°31'2" E	Mujhagarh	5.25		August			
19°52'54" N	84°38'22" E	Belaguntha1	1.39		20°1'8" N	84°37'56" E	Tilisingi	3.6		19°53'52" N	84°41'2" E	Baragam	1.27
November					2010					19°55'9" N	84°43'24" E	Jhadabhumi	1.31
19°47'15" N	84°31'3" E	Lathipada	3.18		January					19°58'15" N	84°46'40" E	Jagannathprasad	1.42
19°49'35" N	84°36'0" E	Gobara	2.35		19°56'55" N	84°35'0" E	Bhanjanagar-i	3.39		November			

19°52'54" N	84°38'22" E	Belaguntha1	2.05		20°1'0" N	84°31'2" E	Mujhagarh	5.93		19°53'52" N	84°41'2" E	Baragam	1.22
2010					20°1'8" N	84°37'56" E	Tilisingi	2.71		19°55'9" N	84°43'24" E	Jhadabhumi	1.16
January					April					19°58'15" N	84°46'40" E	Jagannathprasad	1.47
19°47'15" N	84°31'3" E	Lathipada	4.91		19°56'55" N	84°35'0" E	Bhanjanagar-i	5.4		2011			
19°52'54" N	84°38'22" E	Belaguntha1	1.86		20°1'0" N	84°31'2" E	Mujhagarh	7.08		January			
April					20°1'8" N	84°37'56" E	Tilisingi	4.7		19°53'52" N	84°41'2" E	Baragam	2.08
19°47'15" N	84°31'3" E	Lathipada	7.74		August					19°55'9" N	84°43'24" E	Jhadabhumi	2.56
19°49'35" N	84°36'0" E	Gobara	4		19°56'55" N	84°35'0" E	Bhanjanagar-i	1.88		19°58'15" N	84°46'40" E	Jagannathprasad	3.29
19°52'54" N	84°38'22" E	Belaguntha1	5.19		20°1'0" N	84°31'2" E	Mujhagarh	3.43		April			
August					20°1'8" N	84°37'56" E	Tilisingi	2.44		19°53'52" N	84°41'2" E	Baragam	4.21
19°47'15" N	84°31'3" E	Lathipada	2.21		November					19°55'9" N	84°43'24" E	Jhadabhumi	5.25
19°49'35" N	84°36'0" E	Gobara	1.58		19°56'55" N	84°35'0" E	Bhanjanagar-i	1.4		19°58'15" N	84°46'40" E	Jagannathprasad	5.57
19°52'54" N	84°38'22" E	Belaguntha1	1.62		20°1'0" N	84°31'2" E	Mujhagarh	4.19		August			
November					20°1'8" N	84°37'56" E	Tilisingi	3		19°53'52" N	84°41'2" E	Baragam	1.26
19°47'15" N	84°31'3" E	Lathipada	2.62		2011					19°55'9" N	84°43'24" E	Jhadabhumi	0.91
19°49'35" N	84°36'0" E	Gobara	1.17		January					19°58'15" N	84°46'40" E	Jagannathprasad	0.62
19°52'54" N	84°38'22" E	Belaguntha1	1.46		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.16		November			
2011					20°1'0" N	84°31'2" E	Mujhagarh	5.53		19°53'52" N	84°41'2" E	Baragam	2.78
January					20°1'8" N	84°37'56" E	Tilisingi	3.75		19°55'9" N	84°43'24" E	Jhadabhumi	2.13
19°47'15" N	84°31'3" E	Lathipada	2.86		April					19°58'15" N	84°46'40" E	Jagannathprasad	2.84
19°49'35" N	84°36'0" E	Gobara	1.66		19°56'55" N	84°35'0" E	Bhanjanagar-i	6.11		2012			
19°52'54" N	84°38'22" E	Belaguntha1	2.05		20°1'0" N	84°31'2" E	Mujhagarh	5.84		January			
April					20°1'8" N	84°37'56" E	Tilisingi	4.76		19°53'52" N	84°41'2" E	Baragam	3.81
19°47'15" N	84°31'3" E	Lathipada	6.34		August					19°55'9" N	84°43'24" E	Jhadabhumi	4.85
19°49'35" N	84°36'0" E	Gobara	4.15		19°56'55" N	84°35'0" E	Bhanjanagar-i	3.8		19°58'15" N	84°46'40" E	Jagannathprasad	4.68
19°52'54" N	84°38'22" E	Belaguntha1	4.72		20°1'0" N	84°31'2" E	Mujhagarh	1.53		April			
August					20°1'8" N	84°37'56" E	Tilisingi	1.02		19°53'52" N	84°41'2" E	Baragam	4.86
19°47'15" N	84°31'3" E	Lathipada	1.2		November					19°55'9" N	84°43'24" E	Jhadabhumi	4.41
19°49'35" N	84°36'0" E	Gobara	1.12		19°56'55" N	84°35'0" E	Bhanjanagar-i	6.94		19°58'15" N	84°46'40" E	Jagannathprasad	5.82
19°52'54" N	84°38'22" E	Belaguntha1	1.23		20°1'0" N	84°31'2" E	Mujhagarh	5.33		August			
November					20°1'8" N	84°37'56" E	Tilisingi	3.7		19°53'52" N	84°41'2" E	Baragam	1.21
19°47'15" N	84°31'3" E	Lathipada	4.95		2012					19°55'9" N	84°43'24" E	Jhadabhumi	1.26

19°49'35" N	84°36'0" E	Gobara	2.36		January					19°58'15" N	84°46'40" E	Jagannathprasad	0.94
19°52'54" N	84°38'22" E	Belaguntha1	2.55		19°56'55" N	84°35'0" E	Bhanjanagar-i	7.91		November			
2012					20°1'0" N	84°31'2" E	Mujhagarh	5.96		19°53'52" N	84°41'2" E	Baragam	0.67
January					20°1'8" N	84°37'56" E	Tilisingi	4.21		19°55'9" N	84°43'24" E	Jhadabhumi	0.45
19°47'15" N	84°31'3" E	Lathipada	6.11		April					19°58'15" N	84°46'40" E	Jagannathprasad	0.7
19°49'35" N	84°36'0" E	Gobara	3.2		19°56'55" N	84°35'0" E	Bhanjanagar-i	8.25		2013			
19°52'54" N	84°38'22" E	Belaguntha1	3.95		20°1'0" N	84°31'2" E	Mujhagarh	6.97		January			
April					20°1'8" N	84°37'56" E	Tilisingi	7.91		19°53'52" N	84°41'2" E	Baragam	2.84
19°47'15" N	84°31'3" E	Lathipada	8.1		August					19°55'9" N	84°43'24" E	Jhadabhumi	3.45
19°49'35" N	84°36'0" E	Gobara	4.79		19°56'55" N	84°35'0" E	Bhanjanagar-i	3.05		19°58'15" N	84°46'40" E	Jagannathprasad	3.86
19°52'54" N	84°38'22" E	Belaguntha1	5.37		20°1'0" N	84°31'2" E	Mujhagarh	2.22		April			
August					20°1'8" N	84°37'56" E	Tilisingi	1.64		19°53'52" N	84°41'2" E	Baragam	4.36
19°47'15" N	84°31'3" E	Lathipada	3.61		November					19°55'9" N	84°43'24" E	Jhadabhumi	6.21
19°49'35" N	84°36'0" E	Gobara	1.98		19°56'55" N	84°35'0" E	Bhanjanagar-i	1.55		19°58'15" N	84°46'40" E	Jagannathprasad	6.01
19°52'54" N	84°38'22" E	Belaguntha1	1.13		20°1'0" N	84°31'2" E	Mujhagarh	1.2		August			
November					20°1'8" N	84°37'56" E	Tilisingi	0.88		19°53'52" N	84°41'2" E	Baragam	1.05
19°47'15" N	84°31'3" E	Lathipada	0.43		2013					19°55'9" N	84°43'24" E	Jhadabhumi	1.15
19°49'35" N	84°36'0" E	Gobara	0.55		January					19°58'15" N	84°46'40" E	Jagannathprasad	2.65
19°52'54" N	84°38'22" E	Belaguntha1	1.21		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.1		November			
2013					20°1'0" N	84°31'2" E	Mujhagarh	5.32		19°53'52" N	84°41'2" E	Baragam	1.35
January					20°1'8" N	84°37'56" E	Tilisingi	4.13		19°55'9" N	84°43'24" E	Jhadabhumi	1.59
19°47'15" N	84°31'3" E	Lathipada	4.45		April					19°58'15" N	84°46'40" E	Jagannathprasad	1.51
19°49'35" N	84°36'0" E	Gobara	4.02		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.99		2014			
19°52'54" N	84°38'22" E	Belaguntha1	3.14		20°1'0" N	84°31'2" E	Mujhagarh	7.1		January			
April					20°1'8" N	84°37'56" E	Tilisingi	3.59		19°53'52" N	84°41'2" E	Baragam	2.26
19°47'15" N	84°31'3" E	Lathipada	5.69		August					19°55'9" N	84°43'24" E	Jhadabhumi	2.65
19°49'35" N	84°36'0" E	Gobara	5.76		19°56'55" N	84°35'0" E	Bhanjanagar-i	1.4		April			
19°52'54" N	84°38'22" E	Belaguntha1	5.34		20°1'0" N	84°31'2" E	Mujhagarh	2.65		19°53'52" N	84°41'2" E	Baragam	3.87
August					20°1'8" N	84°37'56" E	Tilisingi	2		19°55'9" N	84°43'24" E	Jhadabhumi	5.47
19°47'15" N	84°31'3" E	Lathipada	2		November					19°58'15" N	84°46'40" E	Jagannathprasad	5.78
19°49'35" N	84°36'0" E	Gobara	0.47		19°56'55" N	84°35'0" E	Bhanjanagar-i	2.7					
19°52'54" N	84°38'22" E	Belaguntha1	1.35		20°1'0" N	84°31'2" E	Mujhagarh	4.7					

November					20°1'8" N	84°37'56" E	Tilisingi	3.15					
19°47'15" N	84°31'3" E	Lathipada	2.02										
19°49'35" N	84°36'0" E	Gobara	0.45										
19°52'54" N	84°38'22" E	Belaguntha1	1.48										

Source: Central Ground Water Board, Bhubaneswar

Annexure-VII

List of Reserve Forest blocks of Ghumsur North Division							
Name of Range	Sl. No.	Name of Reserved Forest	Compartment No.	Notification No. & Date	Area in Ha.	Total Area of RF in ha.	Reference Topo sheet no
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Mujagada	1	Tiliki	1	338 dt.	824.403		
		Tiliki	2	24.07.1899	829.583		
Central		Tiliki	3		676.892		74 A/9, 74 A/5
		Tiliki	4		597.491		
		Tiliki	5		749.385		
		Tiliki	6		563.86	4241.614	
	2	Kaliamba	1	39 dt.	905.14		
		Kaliamba	2	11.01.1897	898.745		
		Kaliamba	3	117 dt.	611.25		74 A/9
		Kaliamba	4	15.03.1900	615.135		
		Kaliamba	5		437.92		
		Kaliamba	6		425.294	3893.484	
	3	Malati	1	254 dt. 13.09.1888	766.410	766.41	74 A/9, 74 A/10
	4	Dumudumi East	1	447 dt. 10.10.1900	588.952	588.952	74 A/9,
	5	Dumudumi West	1		443.424	443.424	74 A/9
	6	Vinjigiri	1	318 dt.	415.441		
		Vinjigiri	2	28.01.1891	747.297		74 A/9, 74 A/5, 74 A/10
		Vinjigiri	3		489.724		
		Vinjigiri	4		386.928	2039.39	
	7	Ragada	1	342 dt.	567.584		
		Ragada	2	24.07.1899	513.153	6412.040	

		Ragada	3		807.163		
		Ragada	4		979.280		
		Ragada	5		563.133		74 A/9, 74 A/5
		Ragada	6		492.796		
		Ragada	7		819.830		
		Ragada	8		408.640		
		Ragada	9		760.987		
		Ragada	10		499.474		
Gallery	8	Dimirijholi	1	414 dt. 16.12.1887 2890 dt.11.10.1939	683.165	1662.93	73 D/12
		Dimirijholi	2		979.765		
	9	Chadhiapalli	1	330 dt. 02.07.1896	328.167	328.167	73 D/12
	10	Ambajhara	1	226 dt.19.05.1899 88 dt. 29.01.1906 110 dt. 17.03.1920	573.978		73 D/12, 73 D/11
		Ambajhara	2		644.881		
		Ambajhara	3		682.558		
		Ambajhara	4		713.76		
		Ambajhara	5		583.691		
		Ambajhara	6		736.827		
Tarasingi		Ambajhara	7		627.964	12034.925	73 D/12, 73 D/11
		Ambajhara	8		684.257		
		Ambajhara	9		515.054		
		Ambajhara	10		611.817		
Mujagada		Ambajhara	11		622.622		
		Ambajhara	12		607.527		
Tarasingi		Ambajhara	13		701.821		
		Ambajhara	14		692.432		
		Ambajhara	15		789.802		
		Ambajhara	16		458.964		
		Ambajhara	17		627.722		
		Ambajhara	18		628.248		
		Ambajhara	19		531		
Mujagada	11	Gallery	1	36 dt.24.01.1899 200 dt. 26.01.1920 136 dt. 07.05.1925	385.472	11021.165	
		Gallery	2		418.778		
		Gallery	3		491.097		
		Gallery	4		579.482		
		Gallery	5		739.903		
		Gallery	6		485.835		
		Gallery	7		361.513		
		Gallery	8		434.075		
		Gallery	9		403.926		

		Gallery	10		525.415		
		Gallery	11		464.751		
		Gallery	12		346.702		
		Gallery	13		435.572		73 D/12, 74 A/9, 73 D/8
		Gallery	14		472.683		
		Gallery	15		799.797		
Gallery		Gallery	16		503.844		
Mujagada		Gallery	17		551.801		
Gallery		Gallery	18		413.436		
		Gallery	19		514.65		
		Gallery	20		372.319		
		Gallery	21		430.595		
		Gallery	22		416.836		
		Gallery	23		472.683		
	12	Chandragiri	1	306 dt. 01.07.1891 323 dt. 27.06.1901 10 dt. 15.12.1912 85 dt. 08.03.1922	770.053	7054.984	73 D/12
		Chandragiri	2		726.831		
		Chandragiri	3		912.141		
Tarasingi		Chandragiri	4		582.113		
		Chandragiri	5		601.902		
		Chandragiri	6		459.935		
		Chandragiri	7		537.92		
		Chandragiri	8		367.503		
		Chandragiri	9		501.335		
		Chandragiri	10		407.325		
Gallery		Chandragiri	11		842.803		
		Chandragiri	12		345.123		
Mujagada	13	Rambha	1	550 dt. 04.11.1893	707.731	5303.601	73 D/12, 73 D/8
		Rambha	2		800.404		
		Rambha	3		521.044		
		Rambha	4		774.504		
		Rambha	5		734.439		
		Rambha	6		697.207		
		Rambha	7		1068.272		
Mujagada	14	Darpangia	1	422 dt. 14.09.1898 14 dt. 26.12.1901 466 dt. 05.06.1901	786.726	7135.329	73 D/8
		Darpangia	2		783.974		
		Darpangia	3		823.877		
		Darpangia	4		595.832		
		Darpangia	5		503.077		
		Darpangia	6		627.681		
		Darpangia	7		1152.527		
		Darpangia	8		302.833		
		Darpangia	9		465.399		73 D/8
		Darpangia	10		502.711		

		Darpangia	11		224.363		
		Darpangia	12		366.329		
	15	Kullada	1	379 dt. 17.07.1897 200 dt. 21.06.1920	530.838	1570.427	74 A/9
		Kulada	2		232.376		
		Kullada	3		456.424		
		Kullada	4		350.789		
Mujagada	16	Baiballi	1	193 dt. 27.04.1898	771.064	7541.441	74 A/5, 73 D/8
		Baiballi	2		783.327		
		Baiballi	3		704.735		
		Baiballi	4		793.363		
		Baiballi	5		470.984		
		Baiballi	6		548.118		
		Baiballi	7		969.405		
		Baiballi	8		677.944		
		Baiballi	9		572.804		
		Baiballi	10		324.322		
		Baiballi	11		475.84		
		Baiballi	12		449.535		
	17	Odinabadi	1	2066 dt. 06.08.1955	233.104	233.104	73 D/8
Jagannath Prasad	18	Jagannath Prasad	1	319 dt. 17.07.1890 103 dt. 13.02.1893	925.01	6691.886	73 D/12, 74 A/13, 74 A/9, 73 D/16
		Jagannath Prasad	2		625.86		
		Jagannath Prasad	3		604.452		
		Jagannath Prasad	4		428.976		
		Jagannath Prasad	5		622.218		
		Jagannath Prasad	6		533.994		
		Jagannath Prasad	7		584.096		
		Jagannath Prasad	8		522.541		
		Jagannath Prasad	9		922.885		
		Jagannath Prasad	10		444.638		
Mujagada		Jagannath Prasad	11		477.216		
Tarasingi	19	Paichalia	1	409 Dt. 31.08.1898	576.609	3302.064	73 D/16
		Paichalia	2		574.666		
		Paichalia	3		729.624		
Jagannath Prasad		Paichalia	4		679.522		
		Paichalia	5		741.643		
Tarasingi	20	Ghogoda	1	1991 dt.22.04.1899 316 dt. 24.08.1903	638.244	4131.364	73 D/16
		Ghogoda	2		568.515		
		Ghogoda	3		746.459		
		Ghogoda	4		673.533		
		Ghogoda	5		737.07		

		Ghogoda	6		767.543		
Tarasingi	21	Gunduribadi		269 dt. 13.06.1899	682.881	2580.979	73 D/12, 73 D/11
		Gunduribadi	2		485.957		
		Gunduribadi	3		705.099		
		Gunduribadi	4		707.042		
	22	Brahmanasahi	1	192 dt. 23.04.1898	534.318	3071.064	73 D/12
		Brahmanasahi	2		845.852		
		Brahmanasahi	3		450.748		
		Brahmanasahi	4		243.343		
		Brahmanasahi	5		562.606		
		Brahmanasahi	6		434.197		
				Grand total	**92048.74**		

Source: DFO Ghumusur North Forest Division, Bhanjanagar

Annexure-VIII

List of Demarcated Protected Forest of Ghumusur North Division			
Sl. No.	**Name of the Forest Block**	**Area in Ha.**	**Remarks**
1	**2**	**3**	**4**
1	Chudakhai Parbat(AAA) Plot No. 2047 Khata No. 207	26.70 Ha	Not Notified

List of Un-Demarcated Protected Forest of Ghumusur North Division		
SL No.	**Name of Forest Block**	**Area in Ha.**
1	**2**	**3**
1	Burudingi	372.72
2	Gangajhola	28.75
3	Gotri	33.5
4	Kadaligada	44.45
5	Laxmimundia	64.16
6	Mankadakumpa	54.07
7	Nabagochha	60.16
8	Tuinpadar	29.54
	Total	687.35

Source: DFO Ghumusur North Forest Division, Bhanjanagar

Annexure-IX

Sl. No.	Name of the Village Forest	Area in Ha.
1	Agulapada	10 Ha.
2	Gopinathpur	10 Ha.
3	Golapada	10 Ha.
4	Golapada	10 Ha
5	Mahulia	10 Ha.
6	Beniapalli	10 Ha
7	Badapada	5 Ha.
8	Benakunda	5 Ha.
9	Baruda	4 Ha.
10	Sahanapalli	5 Ha.
11	Gangapur	8 Ha.
12	Nabaratnapur	5 Ha.
13	Sorisabilli	5 Ha.
14	Haripur	5 Ha.
15	Pratap Laxmanpur	4 Ha.
16	Parasulunda	8 Ha.
17	Badaborasingh	8 Ha.
18	Mahulia	10 Ha.
19	Badapada	7 Ha.
20	Ratanga	4 Ha.
21	Sahanapalli	5 Ha.
22	Baniapalli	6 Ha.
23	Ripitipalli	7 Ha.
24	Betar	10 Ha.
25	Kurutai	2 Ha.
	TOTAL	**173 Ha. or 1.73 Sq. Km.**

Source: DFO Ghumusur North Forest Division, Bhanjanagar

Annexure-X

Forest Block wise & Compt. Wise forest type & area in different Range								
Range	Block	Compartment	Area in ha.	Forest Type	Area under in ha.			
					Sal.	Miscellaneous.	Plantation	Blanks/ Eroded unproductive
Central (183.853 km^2)	Tiliki	1a	629.939	$5b/c_1c$,$5b/c_2$, $5/ds_1$	383.883	192.925	--	53.131
		1b	174.464	$5b/c_1c$,$5b/c_2$	38.939	135.525	--	--
		1c	20.00		--	--	20.000	--
		2a	280.291	$5b/c_1c$,$5b/c_2$	128.560	151.731	--	--
		2b	549.292	$5b/c_1c$,$5b/c_2$	225.316	323.975	--	--
		3a	338.729	$5b/c_1c$,$5b/c_2$	193.750	144.979	--	--
		3b	338.163	$5b/c_1c$,$5b/c_2$	24.312	313.851	--	--
		4	597.491	$5b/c_2c$,$5b/c_2$	123.654	473.837	--	--
		5a	689.385	$5b/c_1c$,$5b/c_2$, $5/e_2$	329.988	296.897	--	62.500
		5b	60.000	--	--	--	60.000	--
		6a	438.860	$5b/c_1c$,$5b/c_2$	180.089	258.771	--	--
		6b	125.000	--	--	--	125.000	--
	Kaliamba	1	905.140	$5b/c_1c$,$5b/c_2$	59.375	845.765	--	--
		2	898.745	$5b/c_1c$,$5b/c_2$	444.495	454.250	--	--
		3	611.250	$5b/c_1c$,$5b/c_2$	288.432	322.818	--	--
		4a	557.135	$5b/c_1c$,$5b/c_2$	96.875	460.260	--	--
		4b	58.000	--	--	--	58.000	--
		5a	217.968	$5b/c_1c$, $5/ds_1$	144.963	--	--	73.005
		5b	219.952	--	--	--	219.952	--
		6a	300.295	$5b/c_1c$, $5/ds_1$	212.795	--	--	87.500
	Malati	1a	197.132	$5/e_9$	--	--	--	197.132

		1b	569.278	--	--	--	569.278	--
	Dumdumi (East)	1a	374.038	$5/e_9$	--	--	--	374.038
		1b	214.914	--	--	--	214.914	--
	Dumdumi (West)	1a	303.424	$5/e_9$	--	--	--	303.424
		1b	140.000	--	--	--	140.000	--
	Vinjigiri.	1a	321.804	$5b/c_1c,5b/c_2$, $5/ds_1$	95.637	160.010	--	66.157
	Vinjigiri.	1b	93.637	--	--	--	93.637	--
		2a	732.297	$5b/c_1c,5b/c_2$	22.541	687.322	--	22.434
		2b	15.000	--	--	--	15.000	--
		3a	395.390	$5b/c_1c,5b/c_2$	179.688	170.330	--	45.372
		3b	94.334	--	--	--	94.334	--
		4a	311.928	$5b/c_1c,5b/c_2$, $5/ds_1$	97.896	163.532	--	50.500
		4b	75.000	--	--	--	75.000	--
	Ragada	1	567.584	$5b/c_1c,5b/c_2$	82.962	484.622	--	--
		2a	505.383	$5b/c_1c,5b/c_2$	56.334	449.049	--	--
		2b	7.770	--	--	--	7.770	--
		3a	367.867	$5b/c_1c,5b/c_2$	138.342	229.525	--	--
		3b	439.296	$5b/c_1c,5b/c_2$	418.984	20.312	--	--
		4a	839.339	$5b/c_1c,5b/c_2$, $5/ds_1$	281.182	366.816	--	191.341
		4b	139.941	--	--	--	139.941	--
		5a	256.171	$5b/c_1c,5b/c_2$	154.085	102.086	--	--
		5b	304.962	--	--	--	304.962	--
	Ragada	6a	452.796	$5b/c_1c,5b/c_2$	67.928	384.868	--	--
		6b	40.000	--	--	--	40.000	--
		7a	787.495	$5b/c_1c,5b/c_2$	132.214	655.281	--	--
		7b	32.395	$5b/c_1c,5/ds_1$	--	32.335	--	--
		8	408.6	$5b/c_1c,5b/c_2$	258.6	158.000	--	--

			40		40			
		9	760.967	5b/c_1c,5b/c_2	201.295	559.672	--	--
		10a	469.474	5b/c_1c,5b/c_2	23.877	445.597	--	--
		10b	30.000	--	--	--	30.000	--
Gallery	Dimirijholi	1a	644.163	5b/c_1c,5b/c_2, 5/ds_1	--	--	--	43.750
		1b	25.000	--	--	--	25.000	--
		1c	14.002	--	--	--		14.002
		2a	917.831	5b/c_1c,5b/c_2, 5/ds_1	259.490	645.841	--	12.5000
		2b	50.198	--	--	--	50.198	--
		2c	11.736	--	--	--	--	11.736
	Chadhiapalli	1a	251.386	5b/c_1c,5b/c_2, 5/ds_1	111.696	119.690	--	20.000
		1b	75.000	--	--	--	75.000	--
		1c	1.781	--	--	--	--	1.781
	Ambazora	1	573.978	5b/c_1c,5b/c_2	114.795	459.183	--	--
		2	644.881	5b/c_1c,5b/c_2, 3c/c_{2eii}	161.22	483.661	--	--
		3a	680.130	5b/c_1c,5b/c_2, 3c/c_{2eii}	226.557	453.573	--	--
		3b	2.428	--	--	--	2.428	--
		4	713.760	5b/c_1c,5b/c_2	21.875	691.885	--	--
		5	583.691	5b/c_1c,5b/c_2	34.804	548.887	--	--
		6a	694.860	5b/c_1c,5b/c_2	134.461	560.399	--	--
		6b	41.967	5/ds_1	--	--	--	41.967
	Gallery	16a	473.120	5b/c_1c,5b/c_2	105.787	367.333	--	--
		16b	30.724	--	--	--	30.724	--
		18a	375.436	5b/c_1c,5b/c_2	34.396	341.96	--	--
		18b	38.000	--	--	--	38	--
		19a	508.175	5b/c_1c,5b/c_2	64.751	443.424	--	--
		19b	6.475	--	--	--	6.475	--
		20a	347.319	5b/c_1c,5b/c_2	42.493	304.826	--	--

		20b	25.000	--	--	--	25	--
		21	430.595	5b/c_1c,5b/c_2	91.056	339.539	--	--
		22	416.836	5b/c_1c,5b/c_2	96.317	320.519	--	--
		23a	451.083	5b/c_1c,5b/c_2	133.549	317.534	--	--
		23b	12.000	--	--	--	12	--
		23c	9.600	5/ds_1	--	--	--	9.6
	Chandragiri	1	770.053	5b/c_1c,5b/c_2	76.083	693.97	--	--
		2	726.831	5b/c_1c,5b/c_2	68.393	658.438	--	--
		3	912.141	5b/c_1c,5b/c_2	101.983	810.158	--	--
		10	407.325	5b/c_1c,5b/c_2	135.573	271.752	--	--
		11	842.803	5b/c_1c,5b/c_2	397.734	445.069	--	--
		12	345.123	5b/c_1c,5b/c_2	303.52	41.603	--	--
Mujagada	Rambha (296.805 km2)	1a	646.508	5b/c_1c,5b/c_2	112.788	533.72	--	--
		1b	61.223	--	--	--	61.223	--
		2	800.404	5b/c_1c,5b/c_2	109.227	691.177	--	--
		3	521.044	5b/c_1c,5b/c_2	102.226	418.818	--	--
		4a	769.243	5b/c_1c,5b/c_2	169.527	599.716	--	--
		4b	5.261	--	--	--	5.261	--
		5	734.439	5b/c_1c,5b/c_2, 3c/c_{2eii}	149.251	585.188	--	--
		6a	653.457	5b/c_1c,5b/c_2	101.174	552.283	--	--
		6b	43.750	5/ds_1	--	--	--	43.75
		7a	1043.990	5b/c_1c,5b/c_2	168.352	875.638	--	--
		7b	24.282	--	--	--	24.282	--
	Darpangia	1a	773.816	5b/c_1c,5b/c_2	168.352	605.464	--	--
		1b	12.910	--	--	--	12.91	--
		2	783.974	5b/c_1c,5b/c_2	115.338	668.636	--	--
		3	823.8	5b/c_1c,5b/c_2	151.7	672.117	--	--

			77		6			
		4	595.832	5b/c_1c,5b/c_2	173.088	422.744	--	--
		5	503.035	5b/c_1c,5b/c_2	155.321	347.714	--	--
		6	627.681	5b/c_1c,5b/c_2	173.493	454.188	--	--
		7	1152.327	5b/c_1c,5b/c_2	148.928	1003.399	--	--
		8	302.833	5b/c_1c,5b/c_2	114.529	188.304	--	--
		9	465.399	5b/c_1c,5b/c_2	113.112	352.287	--	--
		10	502.711	5b/c_1c,5b/c_2	79.118	423.593	--	--
		11	224.363	5b/c_1c,5b/c_2	135.573	88.79	--	--
		12	366.329	5b/c_1c,5b/c_2	222.015	144.314	--	--
	Kullada	1a	425.838	5b/c_1c,5b/c_2	161.028	264.81	--	--
		1b	105.000	--	--	--	105	--
		2a	167.376	5b/c_1c,5b/c_2	42.776	124.6	--	--
		2b	65.000	--	--	--	65	--
		3a	388.414	5b/c1c,5b/c2,5/ds1	166.572	184.342	--	37.5
		3b	68.000	--	--	--	68	--
		4	350.789	5b/c_1c,5b/c_2	87.333	263.456	--	--
	Baiballi	1	771.064	5b/c_1c,5b/c_2	141.157	629.907	--	--
		2	783.327	5b/c_1c,5b/c_2	136.544	646.783	--	--
		3	704.733	5b/c_1c,5b/c_2	150.47	554.265	--	--
		4	793.363	5b/c_1c,5b/c_2	160.097	633.266	--	--
		5	470.984	5b/c_1c,5b/c_2	100.567	370.417	--	--
		6	548.118	5b/c_1c,5b/c_2	276.002	272.116	--	--
		7	969.405	5b/c_1c,5b/c_2	230.524	738.851	--	--
		8	677.944	5b/c_1c,5b/c_2	164.306	513.638	--	--
		9	572.804	5b/c_1c,5b/c_2	312.75	260.054	--	--
		10	324.3	5b/c_1c,5b/c_2	183.3	140.995	--	--

			22		27			
		11	475.840	5b/c_1c,5b/c_2	53.824	422.016	--	--
		12	449.535	5b/c_1c,5b/c_2	386.96	62.575	--	--
	Gallery	1	385.472	5b/c_1c,5b/c_2	176.245	209.227	--	--
		2	418.778	5b/c_1c,5b/c_2	147.147	271.631	--	--
		3a	487.050	5b/c_1c,5b/c_2	169.523	117.523	--	--
		3b	4.047	--	--	--	4.047	--
		4a	473.232	5b/c_1c,5b/c_2	97.127	376.106	--	--
		4b	10.000	--	--	--	10.000	--
		4c	96.249	5/ds_1	--	--	--	96.249
		5a	652.703	5b/c_1c,5b/c_2	242.817	409.886	--	--
		5b	47.000	--	--	--	47.000	--
		5c	40.200	5/ds_1	--	--	--	40.200
		6a	191.059	5b/c_1c,5b/c_2	127.681	63.378	--	--
		6b	79.255	--	--	--	79.255	--
		6c	209.521	5/ds_1	--	--	--	209.521
		6d	6.000	5/ds_1	--	--	--	6.000
		7a	304.350	5b/c_1c,5b/c_2	215.500	88.850	--	--
		7b	20.094	--	--	--	20.094	--
		7c	16.228	5/ds_1	--	--	--	16.228
		7d	6.070	5/ds_1	--	--	--	6.070
		7e	14.771	5b/c2,5/ds1	--	7.700	--	7.071
		8a	422.675	5b/c_1c,5b/c_2	185.674	237.001	--	--
		8b	11.400	5/ds1	--	--	--	11.400
		9a	393.926	5b/c_1c,5b/c_2	193.403	200.523	--	--
		9b	10.000	--	--	--	10.000	--
		10	525.415	5b/c_1c,5b/c_2	124.322	401.093	--	--

		11a	355.704	5b/c_1c,5b/c_2	110.765	244.939	--	--
		11b	109.047	--	--	--	109.047	--
		12	346.702	5b/c_1c,5b/c_2	56.172	290.530	--	--
		13	435.572	5b/c_1c,5b/c_2	267.188	168.384	--	--
		14	472.483	5b/c_1c,5b/c_2	102.023	370.660	--	--
		15	799.797	5b/c_1c,5b/c_2	111.291	688.506	--	--
		17	551.801	5b/c_1c,5b/c_2	104.290	447.511	--	--
	Odinabadi	1	233.104	5b/c_1c,5b/c_2	54.836	178.268	--	--
Tarasing	Jagannath prasad	1	925.010	5b/c_1c,5b/c_2	371.875	553.135	--	--
		2a	600.860	5b/c_1c,5b/c_2	32.376	568.484	--	--
		2b	25.000	--	--	--	25.000	--
		3a	575.648	5b/c_1c,5b/c_2	20.313	553.335	--	--
		3b	28.804	--	--	--	28.804	--
		4	428.976	5b/c_1c,5b/c_2	68.751	360.225	--	--
		5a	479.995	5b/c_1c,5b/c_2	2.833	477.162	--	--
		5b	142.223	--	--	--	142.223	--
		6a	423.518	5b/c_1c,5b/c_2	1.214	422.304	--	--
		6b	110.476	--	--	--	110.476	--
		7	584.096	5b/c_1c,5b/c_2, 5/ds_1	95.123	768.973	--	20.000
		8	522.541	5b/c_1c,5b/c_2	41.279	481.262	--	--
		9a	877.885	5b/c_1c,5b/c_2	457.309	429.576	--	--
		9b	45.000	--	--	--	45.000	--
		10a	433.792	5b/c_1c,5b/c_2	78.915	354.877	--	--
		10b	10.845	--	--	--	10.846	--
		11a	474.788	5b/c_1c,5b/c_2	195.872	278.916	--	--
		11b	2.428	--	--	--	2.428	--
	Ghogodo	1	638.2	5b/c_1c,5b/c_2	549.9	88.750	--	--

			44		94			
		2	568.515	5b/c_1c	568.515	--	--	--
		3a	682.650	5b/c_1c,5b/c_2	359.931	322.719	--	--
		3b	46.416	--	--	--	46.416	--
		3c	17.393	5/ds1	--	--	--	17.393
		4a	72.116	5b/c1c	72.116	--	--	--
		4b	209.250	--	--	--	209.250	--
		4c	370.407	5b/c_1c,5b/c_2	181.124	189.283	--	--
		4d	21.760	5/ds1	--	--	--	21.760
		5a	666.302	5b/c1c	666.302	--	--	--
		5b	38.865	--	--	--	38.865	--
		5c	6.893	--	--	--	--	6.893
		5d	25.010	5/ds1	--	--	--	25.010
		6	767.543	5b/c_1c,5b/c_2	658.798	108.754	--	--
	Ambazora	7a	611.979	5b/c_1c,5b/c_2	8.499	603.480	--	--
		7b	15.985	5/ds1	--	--	--	15.985
		8	684.257	5b/c1c,5b/c2	92.188	592.069	--	--
		9a	500.054	5b/c1c,5b/c2	310.938	189.116	--	--
		9b	15.000	--	--	--	15.000	--
		10a	591.817	5b/c1c,5b/c2	254.985	336.832	--	--
		10b	20.000	--	--	--	20.000	--
		11a	603.804	5b/c1c,5b/c2	20.235	583.569	--	--
		11b	18.818	5/ds1	--	--	--	18.818
		12	607.527	5b/c1c,5b/c2	332.813	274.714	--	--
		13a	661.821	5b/c1c,5b/c2	221.880	439.941	--	--
		13b	40.000	--	--	--	40.000	--
		14	692.432	5b/c1c,5b/c2	239.063	453.369	--	--

		15	789.802	5b/c1c,5b/c2	71.631	718.171	--	--
		16	458.964	5b/c1c,5b/c2	220.313	238.651	--	--
		17	627.722	5b/c1c,5b/c2	212.500	415.222	--	--
		18	628.248	5b/c1c,5b/c2	393.750	234.498	--	--
		19	531.000	5b/c1c,5b/c2	208.823	322.177	--	--
	Paichallia.	1	576.609	5b/c1c,5b/c2	71.875	504.734	--	--
		2	574.666	5b/c1c,5b/c2	123.437	451.229	--	--
		3	729.624	5b/c1c,5b/c2	337.437	392.187	--	--
		4	679.522	5b/c1c,5b/c2	162.500	517.022	--	--
		5a	733.643	5b/c1c,5b/c2	310.937	422.706	--	--
		5b	8.000	--	--	--	8.000	--
	Chandragiri	4	582.113	5b/c1c,5b/c2	85.750	496.363	--	--
		5a	581.902	5b/c1c,5b/c2	321.500	260.402	--	--
		5b	20.000	--	--	--	20.000	--
		6a	447.794	5b/c1c,5b/c2	85.937	361.857	--	--
		6b	12.141	--	--	--	12.141	--
		7a	373.088	5b/c2	--	373.088	--	--
		7b	164.832	5b/c1c	164.832	--	--	--
		8	367.503	5b/c1c,5b/c2	125.000	242.503	--	--
		9	501.335	5b/c1c	501.335	--	--	--
		1	682.881	5b/c1c,5b/c2	260.623	422.258	--	--
		2a	460.957	5b/c1c,5b/c2	224.201	236.756	--	--
		2b	25.000	--	--	--	--	25.000
		3	705.099	5b/c1c,5b/c2	93.889	611.210	--	--
		4	707.042	5b/c1c,5b/c2	324.970	611.210	--	--
		1	534.318	5b/c1c,5b/c2	48.563	485.755	--	--
		2	845.8	5b/c1c,5b/c2	201.1	644.719	--	--

			52		33			
		3	450.748	5b/c1c,5b/c2	399.838	50.910	--	--
		4	243.343	5b/c1c,5b/c2	186.160	57.183	--	--
		5a	522.606	5b/c1c,5b/c2	159.854	362.752	--	--
		5b	40.000	--	--	--	40.000	--
		6a	409.197	5b/c1c,5b/c2	67.989	341.208	--	--
		6b	25.000	--	--	--	25.000	--

Annexure-XI

MAINTENANCE OF RESERVED FOREST BOUNDARY LINE FROM 1995-96 TO 2010-11						
Year	Name of the Forest Block	Length of boundary in Km.	No. of pillars	Boundary line maintained in Km.	No. of pillars repaired	No. of masonry pillar constructed
1	2	3	4	5	6	7
1995-96	Vinjigiri RF	44.22	302	--	20	--
	Tiliki RF	72.58	274	--	5	--
1996-97	Kullada RF	20	100	1.5	--	--
	Gallery RF	124.37	875	8	2	--
	Brahmanasahi RF	42.47	348	8	--	--
	Jagannathprasad RF	113.58	791	8	--	--
	Rambha RF	37	574	2	--	--
1997-98	N I L					
1998-99	Gallery RF	124.37	875	--	--	26
	Kullada RF	20	100	--	--	10
	Brahmanasahi RF	42.47	348	--	10	10
1999-2000	Ragada RF	83.5	607	--	--	20
	Gallery RF	124.37	875	--	--	20
2000-01	Rambha RF	37	574	--	--	10
	Ragada RF	83.5	607	--	--	10
	Chandragiri RF	71.665	544	--	--	10
	Brahmanasahi RF	42.47	348	--	--	10
2001-02	Gallery RF	124.37	875	--	--	10
2002-03	Rambha RF	37	574	--	--	32
	Dumudumi East RF	23.14	74	18.443	--	--
	Chandragiri RF	71.665	544	5	--	2
	Gallery RF	124.37	875	9	--	30
	Brahmanasahi RF	42.47	348	--	--	25
	Jagannathprasad RF	113.58	791	--	--	10
	Darpangia RF	68	552	--	--	18
2003-04	Dimirijholi RF	33.38	376	5	--	11
	Paichallia RF	57.3	483	--	16	--
	Chandragiri RF	71.665	544	--	--	20
	Gallery RF	124.37	875	9	--	9
	Darpangia RF	68	552	--	--	5
	Kullada RF	20	100	9	--	--
	Darpangia RF	68	552	9	--	--
	Baiballi RF	65	478	10	--	--
2004-05	Vinjigiri RF	44.22	302	--	--	7
	Dumudumi West RF	24.33	90	0.5	--	20
	Ambajhara RF	112.125	528	--	--	10
	Jagannathprasad RF	113.58	791	3.5	--	20
	Kullada RF	20	100	3	--	--
2005-06	Jagannathprasad RF	113.58	791	--	--	20

	Kullada RF	20	100	--	--	30
	Vinjigiri RF	44.22	302	--	--	20
	Malati RF	25.77	100	--	--	20
	Dumudumi East RF	23.14	74	--	--	20
	Gallery RF	124.37	875	--	--	50
2006-07	Ragada RF	83.5	607	10	--	--
	Ghogada RF	62.75	301	10	--	--
	Gallery RF	124.37	875	11	93	--
	Chandragiri RF	71.665	544	--	49	--
	Dimirijholi RF	33.38	376	--	20	--
	Baiballi RF	65	478	--	14	--
	Jagannathprasad RF	113.58	791	--	60	--
2007-08	Gallery RF	124.33	875	7	--	59
	Ambajhara RF	112.125	528	2.5	10	--
	Chandragiri RF	71.665	544	47.5	94	45
	Jagannathprasad RF	113.58	791	30.5	25	--
	Dimirijholi RF	33.38	376	10	14	--
	Ragada RF	83.5	607	25	--	--
2008-09	Ragada RF	83.5	607	20.3	--	101
	Gallery RF	124.37	875	--	--	--
	Kaliamba RF	57	299	6	15	--
2009-10	Rambha RF	37	574	14	--	36
	Jagannathprasad RF	113.58	791	40	--	--
2010-11	Gallery RF	124.37	875	25	--	--
	Malati RF	25.77	100	25	--	--
	Ambajhara RF	112.125	528	40	--	75
	Jagannathprasad RF	113.58	791	35	10	--

Annexure-XII

TABLE SHOWING ISSUE OF TITLE UNDER FOREST RIGHTS ACT'2006 IN GHUMSUR NORTH DIVISION, BHANJANAGAR						
Sl. No.	Name of FRC	Name of G.P.	No. of Beneficiaries	Area allotted		
				R.F. (In Ac.)	Revenue (In Ac.)	Total (In Ac.)
1	2	3	4	5	6	7
1	G.Rambha.	Dadaralunda	15	0.000	33.711	33.711
2	Bhaluguda	Dadaralunda	17	0.000	27.999	27.999
3	Durgaprasad (Mitrikia)	Dadaralunda	17	119.483	0.000	119.483
4	Khudrugochha	Brahmanapadara	20	18.800	0.000	18.800
5	Dhoumundia	Sanakodanda	32	6.290	0.000	6.290
6	Dhoumundia	Dumakumpa	2	0.880	0.000	0.880
7	Rajkundpalli	Lalsing	9	0.000	9.538	9.538
8	Rajkundapalli (Community)	Lalsing	1	0.000	3.000	3.000
9	Sidhapadar	Mujagada	3	0.000	11.280	11.280
10	Durgaprasad	Dadaralunda	1	5.780	0.000	5.780
11	Domundia (Community)	Sanakodanda	1	10.000	0.000	10.000
12	Baibali (Baragaon)	Baibali	15	36.600	0.000	36.600
13	Kiridikupa	Baibali	2	2.190	0.000	2.190
14	Narangipalli (Bajrakote)	Baibali	7	15.446	0.000	15.446
15	Narigocha	Brahmanapadara	17	23.485	0.000	23.485
16	Badapada (Kanteipalli)	Badapada	8	2.992	2.250	5.242
17	Bankalidi	Badaborasingi	18	42.955	0.000	42.955
18	Bijayanagar	Lathipada	10	21.131	0.000	21.131
19	Jyotinagar	Lathipada	48	163.513	2.997	166.510
20	Sunapalli (Pudringi)	Tilisingi	17	0.000	53.763	53.763
21	Jireijholi	Gallery	28	56.295	0.000	56.295
22	Chadheyapalli (Harigada)	Harigada	25	37.789	0.000	37.789
23	Ranikiari (Nuapalli)	Brahmanpadar	4	0.000	0.800	0.800
24	Lunabali	Turumu	7	0.000	5.848	5.848
25	Lunabali(Community)	Turumu	1	0.000	0.500	0.500
26	Delingipadar	Delingipadar	13	71.320	0.000	71.320
27	Kathapatini	Kathapatini	5	21.210	0.000	21.210
28	Kainphulia	Rudhapadar	12	56.540	0.000	56.540
29	Rampo	Tolodi	23	11.300	0.000	11.300
30	Khurdupalli	Kathapatini	12	27.320	0.000	27.320
31	Adivasi Colony (Gayaganda)	Adivasi Colony	8	23.290	0.000	23.290
32	Banjara Sahi	Kokolaba	18	3.200	17.960	21.160
33	Ghogada	Ghogada	10	23.800	0.000	23.800
34	Badabhumi	Badabhumi	4	29.270	0.000	29.270
35	Kadaligada	Rudhapadar	25	0.000	63.930	63.930
36	Toladi	Tarasing	22	0.000	26.470	26.470
37	Khajuripalli	Gayaganda	24	4.000	71.250	75.250
38	Khetamunduli	Khetamunduli	40	0.000	74.333	74.333
39	Banta (Kandhabanta)	Rudhapadar	8	6.500	10.510	17.010

40	Rudhapadar	Rudhapadar	19	62.700	0.000	62.700
41	Dhanapaju	Rudhapadar	2	6.800	0.000	6.800
42	Badabhumi	Rudhapadar	1	2.400	0.000	2.400
43	Narayanprasad	Kulangi	6	12.700	0.000	12.700
44	P.Jadapalli	Kudutai	25	117.869	72.785	190.654
45	Hajapalli	Dadarlunda	11	0.000	7.015	7.015
46	Dadarlunda	Rudhapadar	5	0.000	0.000	0.000
47	Jiripada	Rudhapadar	10	16.500	0.000	16.500
48	Kathapatini	Rudhapadar	6	17.700	0.000	17.700
49	Naragadu	Rudhapadar	28	116.200	0.000	116.200
50	Narabadi	Rudhapadar	20	48.900	0.000	48.900
51	Sarangapata	Rudhapadar	13	31.800	0.000	31.800
52	Laxmipur	Palakata	9	84.145	0.000	84.145
53	Barakuda	Gallery	22	4.400	0.000	4.400
		Total	**726**	**1363.493**	**495.939**	**1859.432**

Annexure-XIII

LIST OF RIGHTS IN RESERVED FORESTS				
Name of the Block.	**Name of the Reserve Forest.**	**Name of the Right-holders.**	**Name of extent of right.**	**Remarks.**
1	**2**	**3**	**4**	**5**
Tiliki	Tiliki	…	**I.** Right of way is allowed over the under mentioned Cart-tracks and foot-paths for men, cattle and carts to a width of four yards over the forests and for men and cattle to a width of two yards over the latter. (i) Cart-track from Bolagaon to Indagadu. (ii) Cart-track from Dhimiripalli to Hathiguda. (iii) Cart-track from Tiliki to Nuapalli. (iv) Foot-path from Tiliki to Gudipadaro. (v) Cart-track from Gudipadaro to Madhupuram. (vi) Foot-path from Dandipadaro to Survey No.315 of the same village in the reserve. (vii) Foot-path from Gundiribadi to Russelkonda via: Jillundi. (viii) Foot-path from Gundiribadi to Madhupuram. (ix) Cart-track from Madhupuram. (x) Cart-track from Gundiribadi to Kaliamba and Bank Nadi. (xi) Foot-path from Tiliki to Surada and Boladu. **II.** The following villages have been demarcated out free from reservation and retained as enclosures within the reserve i9n accordance with the Notification under section-4. Tiliki and Tillikipalli. They will both be treated as one as one enclosure. Access will be allowed to the villages by cart-track No.3 and foot-paths No.4 & 11. The area of the enclosure is one hundred & fifteen acres. **III.** The following villages will be demarcated out free from reservation and retained as enclosure with the reserve:- (i)Madhupuram Access will be allowed to the village by cart-track by cart-track Nos.5 & 9 and foot-path No.8. The area of the enclosure is 100 acres. (ii)Gundiribadi Access will be allowed by cart-track No.10 and foot-path Nos.7 & 8. The area of the enclosure is 60 acres. (iv) Claim to Government Patta Rights over Survey No.315 of Dandiapdaro village measuring 2 acres is admitted. The land will be demarcated out free reservation and retained as an enclosure within the reserve with access allowed to it by foot-path No.6.	The rights are not recorded in the name of any person or group of persons but presumably they are to be exercised by the public at large.

Jagannath Prasad	Jagannath Prasad	…	**(a)** The village of (1) Tirikupa, (2) Kondh-Kamasara, (3) Ekaghrriaplli, and (4) Rampa, all demarcated by forest boundary marks have been admitted as enclosures within the reserve though being themselves excluded from reservation. **(b)** The following public rights of way have been admitted in this reserve. (i)Cart-track from Kupari to Uriya Sappongo. (ii)Cart-track from Kuparti to Samarbandho. (iii)Cart-track from Gereda to Kandha Gallery via: Tirikupa. (iv)Cart-track from Khetamundali to Barabora via: Tirikupa and Baindapalli. (v)Cart-track from Khetamundali meeting the track No.3 above. (vi)Cart-track from Khetamundali to Bonta via: Rampa. (vii)Cart-track from Sisunda to Tirikupa. (viii)Cart-track from Kandha-Kamasara meeting the track No.5 above. (ix)Cart-track from Kandha-Kamasar to Samarbandho. (x)Cart-track from Banikhollo to Karadapalli. (xi)Cart-track from Karadapalli to Kadua via: Ekagharia, Ekghari-palli and Pankalasahi. (xii)Cart-track from Ekgharia to Alasu. (xiii)Foot-path from near Dongpalli to the temple of Lankoda Goddess, the same name, for purpose of worship. (xiv)Foot-path from Kandha Benta to Kandha Gallery. N.B: Cart-tracks are allowed for men, cattle and carts to a width of twelve feet and foot-paths are allowed for men to a width of six feet. **(C)**The temple of Lankoda Goddess situated on the summit of Lankoda hill with a space of a quarter of an acre around it, is admitted as an enclosure within the reserve, though being itself excluded from reservation in order to permit worshippers to prepares votive offerings with fire.	The rights are not recorded in the name of any person or group of persons but presumably they are to be exempted by the public at large.
Rambha	Rambha	…	**(a)** The village of Balinkia and Bhalluguda though retained as enclosures are excluded from reservation. **(b)** The following right of ways have been admitted in the reserve: - (i)Foot-path from Rambha to Karadagochha via: Balinkia. (ii)Foot-path from Balinkia to Sologadia. (iii)Foot-path from Bhalluguda to Sologadia via: Brahmanapadara.	The rights are not recorded in the name of any person or group of persons but presumably they are

			N.B: Foot-paths are allowed to a width of six feet for men and cattle only.	to be exercised by the public at large.
Chadhia palli	Chadhia palli	…	Right of way is admitted over the undermentioned foot-paths for men and cattle to a width of two yards:- (i)Foot-path from Chadhiapalli to Kuradhia. (ii)Breach foot-path from Gudibandho to Kuradhia. (iii)Foot-path from Jadaghatuni to Kuradhia.	The rights are not recorded in the name of any person or group of persons but presumably they are to be exercised by the public at large.
Kullada	Kullada	…	Foot-path from Kullada to Bagdevi Goddess shrine. **N.B:** Foot-path is allowed for men and cattle to a width of six feet.	The rights are not recorded in the name of any person or group of persons but presumably they are to be exercised by the public at large.
Darpangia	Darpangia	…	**(a)** The Local Fund Road from Russelkonda to Kalinga to a width of twenty-two yards on either side from the centre is excluded from reservation. It enters the reserve at the 68th mile stone, runs West for about two miles and quits the reserve at the Kalinga Ghat on the Ghumsur Maliah Boundary. **(b)** Right of way is admitted over the under-mentioned cart-tracks and foot-paths for men, cattle and carts to width of four yards over the former and for men and cattle to a width of two yards over the latter: (ii)Foot-path from Durgaprasad to the Ghumsur Maliahs. (iii)Foot-path from Darpangia up to Betuli Ghat to Udayagiri. (iv)Foot-path from Kanbada to Gondapazu. (v)Cart-track from Kondiloti to Darpangia.	

			(vi)Cart-track from Gundiribadi to Nabagochha. (vii)Foot-path from Kanabandha to Birikot. (viii) Cart-track from Gundiribadi to Birikot. (ix)Foot-path from Baniya-Karadabadi to Bapangi.	
	Darpangia (Enclosure)	…	The following public rights of way have been admitted: (i)The foot-path for men only to a width of two yards from Sapahanna to Darpangia. (ii)The foot-path for men only to a width of two yards from Dadaralunda to Darpangia.	
	Darpangia Extension (i)	…	(iii)The cart-track to a width of four yards from Balatuni to Dapangia. (iv)The foot-path for men only to a width of two yards from Diribisingi to Sappohanna.	
	Darpangia Extension (ii)	…	The following rights of way has been admitted: The foot and cattle path, three yards wide to the Patta land and of Rusko Odhano.	
Baibali	Baibali	…	**(a)** Right of way is allowed over the undermentioned cart-tracks and foot-paths for men, cattle and carts to a width of four yards over the former, for men and cattle to a width of two yards over foot-path Nos.5,6,11,12,13,14 and 15 & for men only to a width of two yards over foot-path No.2. (i)Bandy-track from Birikot to Baibali. (ii)Foot-path from Birikot to the shrine of Bapangi hill goddess. (iii)Bandy-track from Birikot to Mahaguda. (iv)Bandy-track from Bapangi to Baniyakaradabadi. (v)Foot-path from Bapangi to Dhoumundia. (vii)Bandy-track from Dhoumundia to Chunnapalli. (viii)Bandy-track from Dhoumundia meeting the Kolagaom-Indguda Bandy-track No.9 below. (ix)Bandy-track from Kolagaom to Indaguda. (x)Bandy-track from Kolagaom to Chunnapalli. (xi)Foot-path from Bargaon to Bongabadi. (xii)Foot-path from Daha to Gjuna. (xiii)Foot-path from Daha to Tiliki. (xiv)Foot-path from Sapaiju to Gidipaballi then to Muttadi and then to Dabo. (xv)Foot-path from Gadingia to Gidipaballi. **(b)** Right to use the water of the following jungle streams and irrigation channel for purposes of irrigations admitted subject to the condition with regard to (i) and (ii) that no danger or damage is done to the forest which they adjoin and with regard to changed No.3 that the channel may be repaired provided that no harm is done to the reserve:	The rights are not recorded in the name of any person or group of persons but presumably they are to be exercised by the public at large.

(i)Odhano Nalo, which rises in the hill called Kasavalli or Gonda and flows for half a mile to the lands of Guna Village.
(ii)Three jungle streams which rise near Tankusoru hill, two of which flow to the Village.
(iii)An irrigation channel leading from Daha nalo and flowing to the village lands of Tiliki, Baiballi, etc. villages.
(c) Right to worship at the following shrines. The shrines with a space of one hundred and twenty five links long and one hundred links broad in front of each will be demarcated out free from reservation and retained as enclosures within the reserve:
(i)Shrine of Bapangi hill goddess situated on a hill by the side of foot-path No.6.
(ii)Shrine of Bapangi situated by the side of cart-track No.9.
(d) The village of Dhoumundia has been excluded from reservation under section4 Notification. Access is provided to the village by cart-track Nos.7 & 8 and foot-path No6.
The following villages have been excluded from reservation with sufficient area for extension of cultivation of communal rights.
(i)Bapangi: Comprising Patta Lands measuring 22.45 acres and an area of 39.37 acres for extension of cultivation.
Access is allowed by cart-track Nos.3&4 and foot-path Nos.5&6.
(ii)Gidipaballi: Access is allowed to the village by foot-path Nos.14 & 15.
(iii)Muttadi: Access is allowed by foot-path No.14.
(e) Claim to Government Patta rights over the following lands of Langalakhola has been admitted. The land will be demarcated out free from reservation & retained as an enclosure with the reserve with access allowed for men and cattle to a width of two yards by a foot-path which branches from cart-track No.14 South-West of Cairn No.113 and runs North for two chains to the land-

Village	**Name of Pattadhar**	**Extension Acre.**
Rambhapalli Or Langalakhola	Konto Pradhan	1.0

<table>
<tr>
<td>Ghogodo</td>
<td>Ghogodo</td>
<td>…</td>
<td>
(a) Right of way is admitted over the under mentioned cart-tracks and foot-paths, for men, cattle and carts to a width of four yards over the former, for men and cattle to a width of two yards over foot-path Nos.1 & 3,6 and for men only to a width of two yards over foot-path Nos.4,7&8.
(i)Foot-path from Delingipadar to Beguma in Nayagarh State via: Ghogodo and Badabhumi.
(ii)Cart-track from Gayaganda to Deulabandha via: Donapaju and Ghogodo.
(iii)Foot-path from Talakhamana to Daspalla State via: Badabhumi.
(iv)Foot-path from Talakhamana to Dhimira in Nayagarh State.
(v)Cart-track from Talakhamana to Kusumagadia in Nayagarh State.
(vi)Foot-path from Talakhamana to Ghogodo.
(vii)Foot-path from Naragadu to Badabhumi & Surada.
(viii)Cart-path from Gayaganda to Gundiribadi in Daspalla State via: Badapadaro, Pukkudasai and Delingapadaro.
(ix)Cart-track from Badapadaro to Ghogodo via: Raigochha.
(b) The following villages will be demarcated out free from reservation and retained as enclosures with the reserve with sufficient area for extension of cultivation and necessary access provided.
<table>
<tr><th>Village</th><th>Patta land in Ac.</th><th>Area of enclosure in Acres.</th><th>Access.</th></tr>
<tr><td>Badabhumi. and Surada</td><td>1.40</td><td>351</td><td>Access allowed by foot-path Nos.1,3&7.</td></tr>
<tr><td>Kanianju</td><td>1.20</td><td>22</td><td>Access allowed by foot-path No.1.</td></tr>
</table>
</td>
<td>The rights are not recorded in the name of any person or group of persons but presumably they are to be exercised by the public at large.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>
(c) The following villages have been excluded from reservation under Section-4 Notification with sufficient area for extension of cultivation and access allowed to them.
<table>
<tr><th>Village</th><th>Area of the enclosure in Ac.</th><th>Access.</th></tr>
<tr><td>Ghogod</td><td>343</td><td>Access allowed by</td></tr>
</table>
</td>
<td></td>
</tr>
</table>

			o		foot-path Nos.1 & 4 and cart-track Nos.2 & 11.	
			Norgadu	124	Access allowed by foot-path Nos.6,7&8.	
	Ghogodo Extension -I	…	The following public right of way has been admitted. The cart-track; four yards wide, from Gayaganda to Ghogodo and Daspalla State.			
Gallery	Gallery	…	**(a)** Right of way over the following forest road, cart-tracks and foot-paths is admitted for men, cattle and carts to a width of four yards over the forest 1.Forest road from Rambha to Gallery. 2.Cart-track from Jayamangala to Brahmanpadar. 3.Foot-path from Jayamangala to Baradapalli. 4.Foot-path from Biripadar to Brahmanpadar. 5.Foot-path from Rangamari to Ballabadi. 6.Foot-path from Turumu to the shrine Kanaka devi. 7.Foot-path from Turumu to Tangamari-Ballabadi foot-path No-5. 8.Cart-track from Ballabadi to Ghontarapalli. 9.Foot-path from Kottipada to the shrine of Bkibhootia Devi. 10.Foot-path from Ballabadi to Kottipada. 11.Cart-track from Kottipada to Ballabadi-Sobuda cart-track. 12.Cart-track from Ballabadi to Sobuda. 13.A branch foot-path from Ballabadi-Sobuda cart-track to the two enclosures of Bakamo village. 14.Cart-track from Konjiridi to Suttangi. 15.Cart-track from Ballabadi to Suttangi. 16.Foot-path from Suttangi to the shrine of Ratna Devi Goddess. 17.Foot-path from Suttangi to Brahmanpadar. 18.Foot-path from Hayamangal to Suttangi. 19.Cart-track from Buduli to Sommapalli. 20.Foot-path from Buduli to Rajakundapalli. 21.Cart-track from Konjirida to Sidhapadara. 22.Foot-path from Sidhapadar to burabi shrine. 23.Cart-track from Sidhapadar to Vinjigiri. 24.Foot-path from Danguapalli to Kalakathi shrine. 25.Cart-track from Badapadara to Kuttunikumpa. 26.Foot-path from Badajhollo to Mangalagada. 27.Foot-path from Kuttunikumpa to Guruchi shrine. 28.Cart-track from Jodabandh to Krrunikumpa. 29.Cart-track from Jujagada to Raipalli. 30.Foot-path from Kaliponga to the shrine of Kaliponga Devi Goddess. 31.Foot-path from Kaliponga to the shrine of		The rights are not recorded in the name of any person or group of persons but presumably they are to be exercised by the public at large.

<table>
<tr><td></td><td></td><td></td><td>Radhabana Devi.
32.Foot-path from Jayamangal to Gindiballi shrine.
33.Foot-path from Khariguda to Jayamangal.
34.Foot-path from Jayamangal to Nidhiapalli.
(b) The Local Forest Road from Russelkonda to Kalinga will be demarcated out free from reservation to a width of twenty-two yards on either side of it from the centre and retained as an enclosure within the reserve. It enters the reserve at the fifty-second mile and quits it at the fifty-fourth mile stone, re-enters it at Cairn No.426, runs in the same direction for about sixty-eight chains North-West of the fifty-sixth mile stone at Cairn No.551 and again enters the reserve at cairn No.626, runs North-West for about seventy-two chains and quits the reserve about fifteen yards North of Cairn No.638.
(c) Right to use the water of the jungle stream which rises near Sukkhikotta Mandya and flows to the village lands of Kuttunikumpa is admitted for the purposes of irrigation on the condition that the stream must not be bunded so as to damage the forest.</td><td></td></tr>
<tr><td></td><td></td><td>Jagannath Patro</td><td>(d) Right to use the water of a tank in Konjirida limits for irrigation is admitted on behalf of Jagannath Patro who will be permitted to keep the tank in such repair as will enable him to store sufficient water for irrigation of five baranams (one Acre) of his land situated below the tank. The tank is situated about eight chains west of cart-track No.14.</td><td></td></tr>
<tr><td></td><td></td><td>Rayivari Bodhan</td><td>(e) right to bound a nala called Jannu nala (which rises North of Thorakavalli hill) and to the use the water so bounded back for the cultivation of the lands of Rayivari Bodhan of Jayamangal is admitted. The casement admitted is as follows-Rayivari Bodhan to have a right to construct a dam across the Jannu nalo of a height from the nala bed. To enter and quit the reserve only by the nala-bed for the purpose of visiting such dam as he may construct. To have right also to enter the reserve yards from the North end of such dam to his cultivated land for the purpose of repairing or removing obstructions from such channel.
(f) The following villages will be demarcated out free from reservation and retained as enclosures within the reserve:
<table>
<tr><th>Village</th><th>Cultivated area in Ac.</th><th>Whole area demarcated in Ac.</th></tr>
</table></td><td></td></tr>
</table>

		Dash setti	Sidhapadara	50.33	90.00	
			Bakamu consisting of two villages.	12.00	20.00	
			Access is allowed to Sidhapadara by cart-track Nos.21, and foot-path Nos.20 & Bakamo by foot-path No.12. **(g)** Claim to Government Patta rights is admitted on behalf of Dasa Setti over a Patta land of Jayamangala consisting of two pieces of land measuring 1.12 acres. The lands will be demarcated out free from reservation and retained as enclosures within the reserve. Access is allowed to the lands by foot-path No.34 above. **(h)** The village of Moholi and Nallabadi have been excluded from reservation under Section-4 and retained as enclosure within the reserve. The village of Moholi is now a deserted one. The area of Ballabadi village is about 95 acres. **(I)** Claim to the following gravel quarried has been admitted. The quarries will be demarcated out free from reservation and retained as enclosures within the reserve with access allowed to them by local Fund Road No.11 above.			
			Village	**No. of Quarries.**		
			Sidhapadara.	2		
			Jodabandha.	1		
			Khariguda.	1		
			(J) Claim to right to worship at the following shrines is admitted. The shrines will be demarcated out free from reservation and retained as enclosures within the reserve with a space measuring six feet long and five feet broad around Nos.3,4,5,6,7,8, and 9and 250 links long and 200 links broad around Nos.1 and 2. (i)Kankana Devi Shrine-Access allowed by foot-path No-I (6). (ii)Bibhutia Devi shrine-Access allowed by foot-path No-I (9). (iii)Ratna Devi shrine-Access allowed by foot-path No.-I (16). (iv)Burubi shrine-Access allowed by foot-path No.I (22). (v)Kalakathi shrine-Access allowed by foot-path No.I (24). (vi)Guruchi shrine-Access allowed by foot-path No.I (16). (vii)Kaliponga Devi Shrine-Access allowed by foot-path No. I (30).			

			(viii)Radhabana Devi Shrine-Access allowed by foot-path No. (31). (ix)Sindhiballi shrine-Access allowed by foot-path No.I (32).	
Chandragiri	Chandragiri	…	**(a)** The villages of (1) Kuttunikumpa (2) Badagochha (3) Pudrangi (4) Chandragiri have been admitted as enclosures within the reserve though being themselves excluded from reservation. **(b)** The following public rights of way have been admitted in this reserve. (1) Cart-track from Kuradhia to Sorisamuli. (2) Cart-track from Kuradhia to Kuttunikumpa. (3) Cart-track from Sorisamuli to Badagochha. (4) Cart-track from Tilisingi to Chandragiri. (5) Cart-track from Beruanbadi to Badagochha. (6) Cart-track from Somorada to Pudrangi. (7) Cart-track from Lembhei meeting the right of way No.5 South of Pudrangi. (8) Cart-track from Lembhei meeting right of way No.5. North of Pudrangi and just South of Chandragiri. (9) Cart-track from Beruanbadi meeting right of way No.5. (10) Cart-track from Lembhei to Barakoli. (11) Cart-track from Ballisahi meeting the right of way No.10. (12) Cart-track from Ballisahi to Garagadapadara. (13) Foot-path from (14) Foot-path from Chandragiri to Hathiguda. (15) Foot-path from Kokolaba to Hathiguda. (16) Foot-path from Tarasing meeting right of way No.15. (17) Foot-path from Garadapadara to Badagochha. (18) Foot-path from Pudrangi meeting the right of way No.17. (19) Foot-path from Badagochha to Chandragiri. (20) Foot-path from Badagochha Kuttunikumpa. (21) Foot-path from Kathachira to Kuttunikumpa. (22) Foot-path from Beruabadi to Pudrangi. N.B: Cart-tracks are allowed to a width of twelve feet for men, cattle and carts, and foot-paths to a width of six feet for men and cattle. **(c)**The temple of "CHAKRA GHATA" Goddess, with a space of a quarter of an acre round it for the preparation of voice offerings by fire, is admitted as an enclosure within the reserve, This temple is alongside the foot-path from Chandragiri to Hathiguda No.14 above.	The rights are not recorded in the name of any person or group of persons but presumably they are to be exercised by the public at large.

<table>
<tr>
<td>Ambazora</td>
<td>Ambazora</td>
<td>…</td>
<td>(a)Right of way is admitted over the undermentioned cart-track and foot-paths for men, cattle and carts to a width of four yards over the former and for men and cattle to a width of two yards over the latter.
(i)Foot-path from Chakapadu to Saratabadi.
(ii)Foot-path from Narayanparasad to Saratabadi.
(iii)Foot-path from Narayanprasad to Sisuli.
(iv)Cart-track from Gayanda to Kathilogodo.
(v)Foot-path from Kathilogodo to Duringi.
(vi)Foot-path from Sisuli to Jiripada.
(vii)Foot-path from Delingapadar to Jiripada.
(viii)Foot-path from Jiripada to Hathiguda via: Khilladi & Tulapadara.
(ix)Foot-path from Jadadhara to Khilladi.
(x)Foot-path from Kokolaba to Khilladi.
(xi)Foot-path from Kokolaba to Tulapadara.
(xii)Foot-path from Hathiguda through Guapadara to Jiripada crossing the Khillabadi Nalo (stream).
(xiii)Foot-path from Billipada to Battiguda.
(xiv)Foot-path from Tulapadara to Guapadara.
(xv)Foot-path from Guapadara to Gurudu.
(xvi)Foot-path from Gurudu to Suttangi.
(xvii)Foot-path from Sisuli to Suttangi.
(xviii)Foot-path from Chakapadu to Sisuli.
(xix)Foot-path from Sisuli to Kondoroddi.
(b)The following villages have been excluded from reservation under Section-4 Notification and retained as enclosures within the reserve with sufficient area for extension of cultivation:
(i)Siuli-Access allowed by foot-path Nos.3,6,13,18 and 19. The area of the enclosure is 342 acres.
(ii)Duringi and Jiripada- These villages form one enclosure. Access allowed to foot-path Nos.5,6,7,8, and 12. The area of the enclosure is 624 acres.
(c)The following villages have been demarcated out free from reservation and retained as enclosures within the reserve with sufficient area for extension of cultivation.
<table>
<tr><th>Village</th><th>Patta Land. In Ac.</th><th>Area of the whole enclosure in Ac.</th></tr>
<tr><td>Khilladi</td><td>0.70</td><td>190.00</td></tr>
<tr><td>Tulapadara</td><td>0.70</td><td>30.00</td></tr>
<tr><td>Guapadara</td><td>5.0</td><td>61.00</td></tr>
<tr><td>Ambazora</td><td>5.0</td><td>17.00</td></tr>
</table>
Access is allowed to No.1 by foot-path Nos.8 and 10 to No.2 by foot-path Nos.8 & 11, to No.3 by foot-path</td>
<td>The rights are not recorded in the name of any person or group of persons but presumably they are to be exercised by the public at large.</td>
</tr>
</table>

			Nos.12,14 & 15 and to No.4 by foot-path No.15.	
Paichalia	Paichalia	…	**(a)**The following villages were excluded from reservation in the original Notification under Section-4 and retained as enclosures in the reserve. (i)Gutri: Access is allowed by foot-path Nos.1,2 and 5 & Cart-Track No.3. Jamjoro: Access is allowed by cart-track Nos.10 & 12 and foot-path No.11. (iii)Kashpadara No.2: Access is allowed by cart-track No.9. **(b)**The following villages have been demarcated out free from reservation and retained as enclosures within the reserve. (1) Dangabhumi: This village lies in the Gutri enclosure. (2) Jhotikapaju: Access is allowed to foot-path Nos.4,5 and 6. (3) Suringibadi: Access is allowed by foot-path Nos. 7 & 8. **(c)**Right of way is admitted over the undermentioned cart-tracks and foot-paths for men, cattle and carts to a width of four yards over the former and for men and cattle to a width of two yards over the latter. (i)Foot-path from Talakhamana to Gutri. (ii)Foot-path from Nimbagochha to Gutri. (iii)Foot-path from Pudrangi to Gurti. (iv)Foot-path from Pudrangi to Nayagarh. (v)Foot-path from Gutri to Jhotikapaju. (vi)Foot-path from Pudrangi to Jhotikapaju. (vii)Foot-path from Rampa to Surangibadi. (viii)Foot-path from Suringibadi to Kashiapdar. (ix)Cart-track from Mundurupadara to Kashipadara No.2. (x)Cart-track from Rampa to Jamjoro. (xi)Foot-path from Kashipadara to Jamjora. (xii)Foot-path from Nuasahi to Nundrupadara. (xiii)Foot-path from Tirigochha to Kondosoro.	The rights are not recorded in the name of any person or group of persons but presumably they are to be exercised by the public at large.
Brahm ansahi	Brahm ansahi	…	Right of way is allowed over the undermentioned cart-tracks and foot-paths for men, cattle & carts to a width of four yards over the letter: (i)Cart-track from Manapuram to Gayaganda. (ii)Foot-path from Dongbhoomi to Nuasahi. (iii)Cart-track Thullidi to Gereda. (iv)Foot-path from Tirigochha to Gadiapada. (v)Foot-path from Khetamundali meeting path No.4 above. (vi)Foot-path from Sisunda meeting the path No.4	The rights are not recorded in the name of any person or group of persons but presumably they are to be

<table>
<tr><td></td><td></td><td></td><td>above.
(vii)Foot-path from Sisunda to Baradonga.</td><td>exercised by the public at large.</td></tr>
<tr><td rowspan="6">Gundiri badi</td><td rowspan="6">Gundiri Badi (Gundiri Badi North And South Extension .)</td><td rowspan="6">…</td><td>(a)Right of way is admitted over the undermentioned cart-tracks and foot-paths for men, cattle and carts to a width of four yards over the former, for men and cattle to a width of two yards over Nos.3,4,5,6 & 10 and for men only to a width of two yards over No.11.
(i)Cart-track from Daspalla to Rudhapadara.
(ii)Cart-track from Gundiribadi to Daspalla.
(iii)Foot-path from Narabadi to Pukkadasi.
(iv)Foot-path from Narayanparasad to Delingapadar.
(v)Foot-path from Rudhapadara to Sukkakhaman.
(vi)Foot-path from Kodalguda to Rudhapadara.
(vii)Cart-track from Kodalaguda to Sarangapatta.
(viii)Cart-track from Kodalaguda to Narayanapatta.
(ix)Foot-path from Narayanaprasad to Narabadi.
(x)Foot-path from Narayanaprasad to Kathapattini.
(xi)Foot-path from Kathapattini to the shrine of Rushi Thakurani.
(b)Right to worship at the shrine of Rushi Thakurani, North of Kattopattini village, is admitted on behalf of the Kondhas of that village. The shrine will be demarcated out free from reservation with a space of two yards square around it and retained as an enclosure within the reserve with access allowed to it by foot-path No.11.
(c)The following villages have been demarcated</td><td></td></tr>
<tr><td colspan="2">out free from reservation and retained as enclosures within the reserve.</td><td rowspan="5">The rights are not recorded in the name of any person or group of persons but presumably they are to be exercised by the public at large.</td></tr>
<tr><td>Village</td><td>Patta Land</td><td>Area of enclosure .</td><td>Access</td></tr>
<tr><td>Katopodini</td><td>25.13</td><td>158</td><td>Access allowed by cart-track No.1 & foot-path No.10.</td></tr>
<tr><td>Narabadi</td><td>2.00</td><td>57</td><td>Access allowed by cart-track No.1 & foot-path No.2&9.</td></tr>
<tr><td>Sarangapatta and Brubu.</td><td>75.69</td><td>567</td><td>Access allowed by cart-track No.1 & 7 and foot-path No.4.</td></tr>
<tr><td>Dimirijholli</td><td>Dimirijholli</td><td>…</td><td>(a) The village of Dimirijholli has been admitted as an enclosure within the reserve though being itself</td><td>The rights are not</td></tr>
</table>

			excluded from reservation. **(b)**The following public rights of way have been admitted in this reserve: (i)Foot-path from Dimirijholli to Golabandha. (ii)Foot-path from Dimirijholli to Ballidiha. (iii)Foot-path from Dimirijholli to Ranikiari.	recorded in the name of any person or group of persons but presumably they are to be exercised by the public at large.
Odinabadi	Odinabadi	…	A path measuring 12 chains and 5 feet wide entering the reserve on the west at a point 40 chains south of Odinabadi hill and leaving on the East at a distance of 32 chains to the North-West of Balinkia.	
Kaliamba	Kaliamba	…	**(a)**The village of Kaliamba was excluded from reservation prior to settlement. **(b)**Baliarsinghpalli, hamlet of Bada Borosingi with a suitable area for extension of cultivation, will demarcated out free from reservation and retained as an enclosure within the reserve with access to it by a foot-path No.7 (of III below). **(c)**Right of way is admitted over the undermentioned cart-tracks and foot-paths for men, cattle and carts to a width of two yards over the latter. (i)The village of Kaliamba was excluded from reservation prior to settlement. (ii)Baliarsinghpalli, hamlet of Bada Borosingi with a suitable area for extension of cultivation, will demarcated out free from reservation and retained as an enclosure within the reserve with access to it by a foot-path No.7 (of III below). (iii)Right of way is admitted over the undermentioned cart-tracks and foot-paths for men, cattle and carts to a width of two yards over the latter: (i)The village of Kaliamba was excluded from reservation prior to settlement. (ii)Baliarsinghapalli, hamlet of Bada Borosingi with a suitable area for extension of cultivation, will demarcated out free from reservation and retained as an enclosure within the reserve with access to it by a foot-path No.7 (of III below). (iii)Right of way is admitted over the undermentioned cart-tracks and foot-paths for	The rights are not recorded in the name of any person or group of persons but presumably they are to be exercised by the public at large.

ANNEXURE XIV

List of Existing Buildings in Ghumsur North Division				
Name of the Building.	**Year of construction.**	**Type of building.**	**Initial cost of construction.**	**Remarks.**
1	**2**	**3**	**4**	**5**
RESIDENTIAL BUILDINGS.				
Divisional Forest office at Bhanjanagar.	1920	Stone memory tiled.	-	Originally Old Saw Mill Office.
Divisional Forest Residence with kitchen, Latrine & compound well.	1891-92	Thatched pucca.	4,171.00	Old Forest Circuit House.
Motor shed No.1 to Divisional Forest Office Residence.	1922-23	Tiled pucca.	542.00	-
Motor Shed No.2 to Divisional Forest Office Residence.	1968-69	Pucca A.C. Sheet.	-	-
Working Plans Officer's Quarters with kitchen and latrine.	1913	Pucca Thatched.	5,726.00	Previously R.A.C.F. Quarter special repairs in 1966-67 reconstructed in 1967-68 after being burnt completely in 1967 with R.C.C. Still under construction.
Meter Shed No.1 to Working Plan Officer's Quarters.	1949	Tiled.	728.00	**Repairs Cost:** 1967-68- k.19874.01 1968-69-k. 5817.78 k.25691.79

Meter Shed No.2 to Working Plans Officer's Quarters.	1955-56	Tiled Pucca.	1,072.00	-
Working Plans Officers No.II Quarters with Kitchen and latrine.	1916-17	Tiled brick in lime.	1,126.00	Special repairs in 1938 for m.200/- in 1967 for k.1,400/-previously Ex-Kullado Range Quarters.
Carriage to Working Plans Officer's Quarters.	1965-66	Tiled pucca.	-	-
Out houses to Working Plans Officer's Quarters.	-	Tiled pucca.	-	-
Assistant Working Plans Officer's Quarters.	1915-16	Tiled pucca.	615.00	Ex-Clerk's Cowewn to B.A.C.F Special Repairs in 1969-61 converted to A.C. Shoot.
Mujagada Range Officer's quarter and Office with 1919-20 kitchen and latrine at Bhanjanagar.	1919-20	Tiled brick in lime.	1,987.00	Office was special repaired in 1966. Cost not known
Central Range Officer's Quarter and office with kitchen and latrine at Bhanjanagar	1903-04	Tiled brick in lime.	1,236.00	-
Gallary Range Officer's and Office with kitchen and latrine at Bhanjanagar	1942-43	Tiled brick in lime.	1,884.00	-

Tarasing Range Officer's and Office with kitchen and latrine.	1912	Tiled brick in lime.	1,292.00	Ex-Bonta Range Quarters. Special repairs in 1949-50 for k.559.00.
Ex-Kullado Range Officers' Quarters with kitchen and latrine.	1911-12	Tilled brick in lime.	1.335.00	Since temporally occupied by local Doctor.
Combined Range Offices of Ex-Bonta and Ex-Kakalaba Range.	1911-12	Tilled brick in lime.	1,000.52	Part occupied for Dispensary.
Forester's Quarter at Rambha.	1925-26	Tiled Stone is mud.	900.00	-
Forester's Quarters at Bhanjanagar of Mujagada Range.	-	Tiled Stone in mud.	-	-
Forester's Quarters at Tarasing.	1925-26	Thatched with wattle & mud.	72.00	-
Forester's Quarters at Gerda.	1954-55	Thatched burnt brick in lime.	2,500.00	-
Forester's Quarters Gayaganda.	1925-26	Tiled pucca.	1,071.00	-
Forester's Quarters at Dholapitta.	1931-43	Tiled burnt brick in lime.	650.00	-
Forester's Quarters at pilisingi.	1931-32	Tiled burnt brick in lime.	1,260.00	-
Forester's Quarters Lathipada.	1927-28	Tiled burnt brick in lime.	625.00	-
Forester's Quarters at Bhanjanagar.	1954-55	Tiled burnt brick in lime.	2,500.00	-

(Central Range)				
Forester's Quarter at Gangapur.	1968-69	A.C. Sheets pucca.	7,300.00	-
T.T. Forester's Quarters at Bhanjanagar.	1963-64	A.C. Sheets pucca.	-	-
Forest Guard Shed at Baiballi (Mujagada Range)	1929-30	Thatched wattle and mud.	142.00	-
Forest Guard sheds at Gundiribadi.	1952-53	Thatched brick in mud.	959.00	-
Forest Guard Sheds of Mujagada Range at Bhanjanagar.	1965-66	R. C. C.	5,500.00	Near Mujagada Range Office.
Forest Guard Sheds of Sidhapadar at Bhanjanagar.	1955-56	Tiled brick in mud.	1,200.00	-
Forest Guard Sheds at Rambha.	1962-63	A.C. Sheets brick in Cement.	3,460.00	-
Forest Guard Sheds at Todoma.	1962-63	R.C.C.	5,500.00	-
Forest Guard Sheds at Vinjigiri.	1966-67	A.C. Sheet.	5,900.00	-
Forest Guard Sheds at Bhanjanagar.	1950-51	Pan tiles Sun-dried brick.	900.00	-
Forest Guard Sheds at Brahmanpadar. (Forest Guard-cum-R.I. shed)	1946-47	Thatched brick in mud.	670.00	Burnt completely in 1967.
Forest Guard Sheds at Durgaprasad (Forest Guard-	1950-51	Thatched Sun-dried brick in mud.	800.00	-

cum-R.I. Shed.)				
C.N.G. Shed at Bhanjanagar.	1950-51	Tiled brick in mud.	1,000.00	-
C.N.G. Shed at Bhanjanagar.	1917-18	Tiled brick in lime.	215.00	Special repair in 1949-59 for m.238/-
C.N.G. Shed a Kullada	1929-30	Thatched Wattle & mud.	160.00	Special repair in 1951-52 for m.708/-
Forest Guard Shed at Central Range at Gangapur.	1911-12	Thatched Wattle & mud.	60.00	-
Forest Guard Shed at Sillundi.	1932-33	Thatched Wattle and mud.	137.00	-
Forest Guard Shed at Bada Borosingi.	1930-31	Thatched Wattle & mud.	140.00	-
Forest Guard Shed at Kanteipalli.	1911-12	Thatched Wattle & mud.	30.00	-
Forest Guard Shed at Lathipada.	1924-25	Thatched Wattle & mud.	80.00	-
Forest Guard Shed at Katiguda.	1956-57	Tiled burnt brick.	1,200.00	-
Forest Guard Shed at Ragada.	1958-60	Tiled burnt brick.	900.00	-
O.P.G.-cum-Chowkidar Shed at Bhanjanagar.	1943-44	Tiled Sun-dried brick in mud.	540.00	-
O.P.G. Shed at Jillundi.	-	Thatched.	-	-
Forest Guard Shed at of Gallery Range at Dholapitta.	1946-48	Tiled brick in lime.	400.00	-
Forest Guard Shed at Tilisingi.	1927-28	Thatched mud.	85.00	-
Forest Guard Shed at Kathachira.	1927-28	Thatched mud.	98.00	-

Forest Guard Shed at naigocha.	-	Thatched mud.	-	-
Forest Guard Shed at Gujaralli.	1946-47	Thatched mad.	434.00	-
Forest Guard Sheds at Barunabadi.	1965-66	R.C.G.	5,500.00	-
Forest Guard Shed at Gallery.	1966-67	A.C. Sheet bricks.	900.00	-
Forest Guard-cum-R.I. Sheds at Baliapatta.	-	-	-	-
Forest Guard-cum-R.I. Sheds at Bodangi.	1947-48	Tiled brick in clay.	369.00	-
Forest Guard Sheds at Bariguda.	-	Pucca tiled.	-	-
Forest Guard Sheds of Tarasing Range at Jaganathprasad.	1910	Tiled mud wall.	-	-
Forest Guard Shed at Tarsing.	1927	Thatched.	131.44	-
Forest Guard Shed at Bonta.	1920	Thatched.	35.00	Special Repairs in 1953-54 for m.250/-.
Forest Guard Shed at Gereda.	1921	Thatched.	35.00	-
Forest Guard Shed at Gayaganda.	1911	Tiled thatched.	55.00	Special repairs in 1950-51 for m.461/-.
Forest Guard Sheds at Ghogodo.	1966-67	R.C.C.	5,500.00	-
Forest Guard Shed-cum-R.I. Shed at Olasu.	-	Pucca tiled.	-	-
Forest Guard Shed-cum-R.I. Shed at	1954-55	Thatched Sun-dried brick.	1,000.00	-

Sapongo.				
C.N.G. Sheds at Bellaguntha.	1953-54	Jhatimatti.	1,200.00	-
Mujagada Sub-ordinate barrack for (1) Forester (2) Forest Guards.	1925-26	Tiled.	1,400.00	Special repairs converted to A.C. Shoots.
Six Clerks Quarters at Bhanjanagar.	-	Tiled burnt brick.	10,254.00	-
Six Clerk's latrine to Quarters 1 to 6.	1952-53	-	182.00	-
Sub-ordinate Rest Shed 1919-20-cum-Barrack near Kujagada Range Office.	1919-20	Thatched mud.	235.00	-
Kitchen Shed at Hartnagar.	1952-53	Thatched Jhatimatti.	200.00	-
1st Set Clerk's quarter at Hartnagar.	1953-54	Tiled brick in mud.	2,500.00	-
7th Set Clerk's Quarter at Hartnagar.	1953-54	Tiled brick in mud.	2,500.00	-
Auction Nail at Hartnagar.	1945-46	Tiled brick in lime.	Not known.	-
Jeep Driver Sheds at Bhanjanagar.	1958-59	Tiled.	Not known.	-
Clerk's Quarters at Hartnagar.	1967-68	A.C. Sheet.	7,300.00	-
Tarasing Bungalow Chowkidar Sheds.	1921	Thatched Jhatimatti.	38.00	Special repairs in 1954-55 for m.160/-.
Tarasing Bungalow combined Range Clerk's Quarters.	1919-20	Tiled.	1,522.25	-

Tarasing combined Range peon's Quarter.	1912-13	Tiled.	226.00	-
REST SHEDS.				
Rest Shed at Rambha without houses.	1904-06	Tiled brick in lime.	1,062.00	Special repairs in 1968-69 work still in progress.
Rest Shed at Ballinkia without housed.	1922-23	Stone in lime at tiled.	6,764.00	-
Rest Shed at Baiballi without houses.	1893	Thatched brick in lime.	699.00	Special repairs in 1968-69.Cost not known.
Rest Shed at Bhanjanagar without houses.	1954-55	A.C. Sheet with lime mortar.	9,999.00	Since occupied for residence from 1961.
Rest Shed at Bhanjanagar without houses.	1913-14	Thatched burnt brick.	946.00	-
Rest Shed at Tarasing without houses.	1924-25	Tiled.	5,088.00	-
Rest Shed at Ragada without houses.	1907	Thatched brick in lime.	835.00	Special repairs in 1969-69.
Rest Shed at Kaliamba without houses.	1908-09	Thatched brick in lime.	1,588.00	-
Rest Shed at Matigua without houses.	1891-92	Thatched brick in lime.	1,495.00	-
Rest Shed at Bada Gunduribadi without houses.	1928-29	Tiled burnt brick in lime.	3,300.00	-
Rest Shed at Bonta without houses.	1909-10	Thatched burnt brick in lime.	1,056.00	-
Rest Shed at Gangapur without houses.	-	Tiled.	-	-
RANGE INSPECTION SHEDS.				

R.I. Shed at Lathipada.	1950-51	Thatched Sun-dried brick.	1,300.00	-
R.I. Shed at Kujagada	1925-26	Tiled.	600.00	Old police station.

Source: Pattanaik's Plan

Annexure-XV

List of buildings from inception till date of Ghumsur North Division					
Sl No.	**Name of the Range**	**Name of the building**	**Year of construction**	**Type of building**	**Cost incurred (in Rs.)**
1	2	3	4	5	6
1	Mujagada	ACFs quarters at Bhanjanagar	1913	A.C Sheet	5353
2		Foresters quarters at Rambha	1925-26	A.C Sheet	993
3		Clerk's quarters at Hartnagar (6 Nos.)	1937	A.C Sheet	9634
4		Clerk's quarter at Hartnagar (8 Nos.)	1968-69	A.C Sheet	7300
5		Forester quarters at Bhanjanagar	1953-54	A.C Sheet	2500
6		Forester's quarters at Hartnagar	1963-64	A.C Sheet	5900
7		DFO's residence at Bhanjanagar	1971-72	Pucca	3640
8		Forester Quarter at Mujagada	1919-20	G.C.I. Sheet	1787
9		Rest House at Rambha	1904-06	A.C Sheet	962
10		Mujagada Range Office, Bhanjanagar	1915-16	A.C Sheet	615
11		Inspection shed at Mujagada	1925-26	A.C Sheet	600
12		F.G. Shed Mujagada North Beat at Mujagada	1925-26	A.C Sheet	700
13		F.G. Shed Mujagada South Beat at Mujagada	1925-26	A.C Sheet	700
14		F.G. Shed at Langalakhola	1925-26	G.C.I. Sheet	700
15		Forest Guard shed at Rambha	1925-26	A.C Sheet	80
16		FG and R.I shed at Durgaprasad	1950-1951	A.C Sheet	805
17		Forest Guard’s shed at Baiballi	1929-30	A.C Sheet	138
18		Forester Guard’s shed at Kullada	1929-30	A.C Sheet	80
19		Forest Check Gate Shed at Kullada	1929-30	A.C Sheet	708
20		FG cum R.I shed at Baliapatta	1953-54	A.C Sheet	9968
21		Forest Rest house at Bhanjanagar	1954-55	A.C Sheet	6000
22		Out house, Bhanjanagar	1955-56	A.C Sheet	3400
23		FG shed at Lalsing Check Gate for Sidhapadar Beat	1955-56	A.C Sheet	1200
24		Auction Hall at Hartnagar		A.C Sheet	
25		FG shed at Bhanjanagar	1965-66	R.C.C	5499.7
26		Driver's shed at Bhanjanagar	1958-59	A.C Sheet	1500

27		Marking shed at DFO's Compound	1969-70	A.C Sheet	
28		FG shed at Brahmanpadar	1971-72	A.C Sheet	6100
29		Marking shed at Biripadar	1979-80	A.C Sheet	10000
30		Marking shed at Hartnagar	1979-80	A.C Sheet	10000
31		Marking shed at Baiballi	1980-81	A.C Sheet	10000
32		Office building of the Divisional Office	1922	A.C Sheet	
33		Training School at Daha		A.C Sheet	
34		Watch Tower at Daha	2009	R.C.C	
35	Tarasingi	Range officers quarter at Tarasingi	1912	A.C Sheet	1288
36		Forester's Quarter at Gayaganda	1925-26	A.C sheet	1068
37		Combined Range Peon's quarter at Tarasingi	1912-13	A.C sheet	265
38		FG Quarter at Barapalli	2010-11	R.C.C	350000
39		Forester Quarter at Ghogoda	2009-10	Pucca	300000
40		Forester's shed at Tarasingi	1925-26	A.C Sheet	67
41		Rest House at Ghogada	1913-14	A.C Sheet	1036
42		FG shed at Ghogada	1965-66	Pucca	5500
43		FG shed at Tarasingi	1927	A.C Sheet	121.7
44		FG shed at Badagundribadi	1911	A.C Sheet	841
45		FG shed at Gayaganda	1911	A.C Sheet	50
46		FG shed at Sarangapata	1925	A.C Sheet	40
47		Chowkidar shed at Tarasingi	1921	A.C Sheet	35
48		Rest House at Tarasingi	1924	A.C Sheet	3000
49		Rest House at Badagundribadi	1928-29	A.C Sheet	3306
50		F.G. shed at Dalak	1979-80	A.C sheet	100000
51		F.G. shed at Jadadhar	1979-80	A.C sheet	
52		Marking shed at Suramani	1979-80	A.C sheet	
53	Gallery	Gallery Range Officer's qtr.-cum-Office at Dholpita	1942-43 1973-74 1974-75	A.C sheet	1645
54		Forester's Quarter at Dholpita	1942-43	A.C sheet	650
55		FG shed at Dholpita	1946-47	A.C sheet	405
56		FG-cum-RI shed at Badangi	1947-48	A.C sheet	369
57		FG shed at Tilisingi	1927-28	A.C sheet	80
58		Forester quarter - Cum - RI shed at Tilisingi	1931-32	A.C sheet	1260
59		FG shed, Kathachira	1927-28	A.C sheet	88

60		FG shed, Gujaralli	1946-47	A.C sheet	434
61		FG shed, Harigada		A.C sheet	
62		FG shed at Beruabadi	1965-67	R.C.C	5500
63		FG shed at Gallery	1966-68	A.C. Sheet	5900
64		Check Gate shed, Dholopita (Rest Shed)	1983-84	A.C. Sheet	1780
65		Marking shed at Dholpita	1982-83	A.C. Sheet	10700
66		FG shed at Ranikiari	2008-09	R.C.C	250000
67	Central	Central Range Office-cum-Quarter	1903-04	A.C. Sheet	1086
68		RI shed combined with FG Qtr. at Lathipada	1950-51	A.C. Sheet	1300
69		Forester's Quarter at Bhanjanagar	1954-55	A.C. Sheet	2500
70		Forester's Quarter at Lathipada	1927-28	A.C. Sheet	625
71		Forester quarter at Gangapur	1968-69	A.C. Sheet	
72		FG shed at Gangapur	1911-12	A.C. Sheet	60
73		FG shed at Nuagaon	1937-38	A.C. Sheet	202
74		FG shed at Jillundi	1932-33	A.C. Sheet	137
75		FG shed at Badaborsing	1930-31	A.C. Sheet	140
76		FG shed at Kanteipalli	1911-12	A.C. Sheet	30
77		FRH at Kaliamba	1908-10	A.C. Sheet	1588
78		FG shed at Lathipada	1924-25	A.C. Sheet	80
79		FRH at Ragada	1907	A.C. Sheet	815
80		FG Shed Dumakumpa	1975-78	A.C. Sheet	
81		FG Shed, Dumudumi (Parsulunda)	2011-12	R.C.C	375000
82		FG Shed, Ragada	2009-10	R.C.C	300000
83		CNG Shed at Gangapur		A.C. Sheet	60000
84	Jagannathprasad	Jagannathprasad Range Office-cum-Residence (Transfer from SF Division after reorganization)	2003-04	A.C. Sheet	
85		Rest Shed	2003-04	A.C. Sheet	
86		Forester's shed at Gereda	1954-55	A.C Sheet	2500
87		FG Shed, Jagannathprasad	1910	A.C. Sheet	3000
88		FG Shed - Cum - R.I. Shed Gereda	1921	A.C. Sheet	30
89		FG shed at Banta	2009-10	Pucca	150000
90		CNG shed at Bellaguntha	2002-03	A.C Sheet	1200

Annexure-XVI-A

List of Plantations carried out from the Year 1951-52 to 1993-94									
District	**Year wise (since inception)**	**Name of the Scheme**	**AR in Ha.**	**ANR with gap Pltn. In Ha.**	**ANR with without gap Pltn. In Ha.**	**Total in Ha.**	**Seedlings planted in Lakh**	**Seedlings distributed in Lakh**	**Amount Spend in Lakh**
2	3	4	5	6	7	8	9	10	11
Ganjam	1951-52	Eco. Plantation	2.6	0	0	2.6	0.039	0.000	0.000
	1952-53	Eco. Plantation	1.6	0	0	1.6	0.024	0.000	0.000
	1953-54	Eco. Plantation	0.4	0	0	0.4	0.006	0.000	0.000
	1954-55	Eco. Plantation	0.6	0	0	0.6	0.009	0.000	0.000
	1955-56	Eco. Plantation	0.64	0	0	0.64	0.010	0.000	0.000
	1956-57	MFP	4	0	0	4	0.060	0.000	0.000
	1957-58	MFP	15.2	0	0	15.2	0.228	0.000	0.000
	1958-59	MFP	3.8	0	0	3.8	0.057	0.000	0.000
	1959-60 to 1961-62	No Plantation taken up	0	0	0	0	0.000	0.000	0.000
	1962-63	Eco. Plantation	33.4	0	0	33.4	0.467	0.000	0.000
		MFP	43.9	0	0	43.9	0.658	0.000	0.000

	1963-64	--	92	0	0	92	1.262	0.000	0.000
	1964-65	--	160.1	0	0	160.1	1.587	0.000	0.744
	1965-66	--	70.3	0	0	70.3	0.795	0.000	0.342
	1966-67	--	80.8	0	0	80.8	0.632	0.000	0.000
	1967-68	--	36	0	0	36	0.512	0.000	0.000
	1968-69	--	40	0	0	40	0.620	0.000	0.000
	1969-70	--	19	0	0	19	0.285	0.000	0.041
	1970-71	--	10	0	0	10	0.150	0.000	0.000
	1971-72	No Plantation taken up		0	0	0	0.000	0.000	0.000
	1972-73	--	13.6	0	0	13.6	0.204	0.000	0.000
	1973-74	--	16	0	0	16	0.240	0.000	0.000
	1974-75	No Plantation taken up		0	0	0	0.000	0.000	0.000
	1975-76	Eco. Plantation	46	0	0	46	0.516	0.000	0.000
	1976-77	--	1.2	0	0	1.2	0.000	0.000	0.000
	1977-78	Mixed Plantation	23.6	0	0	23.6	0.240	0.000	0.000
	1978-79	Mixed Plantation	50	0	0	50	0.750	0.000	0.390
		Eco. Plantation	40	32	0	72	0.592	0.000	0.257
		Farm	5	0	0	5	0.042	0.000	0.025

		Forestry							
Ganjam	1979-80	Mixed Plantation	180	0	0	180	1.683	0.000	0.673
		Eco. Plantation	40	200	0	240	1.821	0.000	1.198
		Development of MAP	0	20	0	20	0.055	0.000	0.087
		IRDP	0	120	0	120	0.909	0.000	0.603
		Avenue Plantation	0	9 Km.	0	0	0.009	0.000	0.100
	1980-81	Mixed Plantation	80	0	0	80	0.923	0.000	0.440
		Eco. Plantation	110	0	0	110	1.661	0.000	0.655
		Avenue Plantation	0	12 Km	0	0	0.036	0.000	0.095
		Farm Forestry	0	0	0	0	0.000	0.300	0.100
	1981-82	Eco. Plantation	0	14	0	14	0.180	0.000	0.111
		Mixed Plantation	20	0	0	20	0.303	0.000	0.299
		Eco. Plantation	60	0	0	60	0.902	0.000	0.590
		Farm Forestry	0	0	0	0	0.000	0.420	0.109

	1982-83	Eco. Plantation	60	20	0	80	0.940	0.000	0.645
		Farm Forestry	0	0	0	0	0.000	0.300	0.060
	1983-84	Eco. Plantation	30	0	0	30	0.480	0.000	0.350
		Mixed Plantation	183	0	0	183	2.852	0.000	2.570
		Mixed Plantation - CSP	210	0	0	210	3.360	0.000	0.000
		Farm Forestry	0	0	0	0	0.000	0.600	0.169
		Social Forestry - NREP	79	0	0	79	1.154	0.000	0.770
	1984-85	KRWF - Mixed Plantation	50	0	0	50	0.798	0.000	0.481
		Farm Forestry	0	0	0	0	0.000	1.320	0.354
		Social Forestry - NREP	290	0	0	290	4.597	0.000	3.527
	1985-86	Eco. Plantation	31	0	0	31	0.493	0.000	0.300
		Social Forestry - NREP	233.2	0	0	233.2	3.690	0.000	5.482
		NREP - Avenue	0	41.4 RKM	0	0	0.210	0.000	1.752

	1986-87	Eco. Plantation	260	0	0	260	4.133	0.000	3.426
		Social Forestry - NREP	40	30 RKM	0	40	0.490	0.000	5.001
		Eco. Plantation	150	0	0	150	2.400	0.000	3.272
		Forest Deposit - NREP	220	0	0	220	3.515	0.000	5.284
	1987-88	Forest Deposit - Drought	320	0	0	320	4.982	0.000	6.814
		Forest Deposit - RLEGP	0	476	0	476	0.765	0.000	3.288
Ganjam	1988-89	Eco. Plantation	200	0	0	200	3.200	0.000	4.601
		Forest Deposit - RLEGP	0	333	0	333	0.902	0.000	0.000
		RLEGP - Farm Forestry	0	0	471	471	0.000	0.000	3.856
	1989-90	Eco. Plantation	265	0	0	265	4.180	0.000	5.038
		RLEGP - Forest Deposit	32	0	0	32	0.172	0.000	0.108
	1990-91	Eco. Plantation	75	0	0	75	1.200	0.000	3.668
		NREP -	5	0	0	5	0.080	0.000	0.088

		Forest Deposit							
		RLEGP - Gap Planting	0	544.8	0	544.8	1.312	0.000	1.420
	1991-92	Eco. Plantation	0	125	0	125	0.342	0.000	3.947
	1992-93	Eco. Plantation	40	50	0	90	0.801	0.000	2.403
	1993-94	No Plantation taken up	0	0	0	0	0.000	0.000	0.000

Annexure XVI -B

List of Plantation Carried out From the year 1995-96 to 2014-15.						
Year	Name of the Range	Name of the Scheme	Name of the Site	Plantation in Ha.		
				Block	RDF	Total
1	**2**	**3**	**4**	**5**	**6**	**7**
1995-96	Central	Eco. Plantation	Dumudumi RF C/1	20		20
			Kaliamba RF C/6		25	25
	Mujagada		Rambha RF C/4	30		30
	Tarasingi		Ghogoda RF C/4	30		30
	Gallery		Chadhiapalli RF	25		25
	Total			**105**	**25**	**130**
	Tarasingi	Compensatory Afforestation	J.N.Prasad RF C/9		42	42
	Gallery		Dhimirijholi RF C/2		50	50
	Central		Tiliki RF C/5		50	50
	Mujagada		Kullada RF C/3		50	50
	Total				**192**	**192**
1996-97	Mujagada	Eco. Plantation	Gallery RF C/5	40		40
	Central		Dumudumi RF C/7	40		40
	Central		Dumudumi RF C/1	20		20
	Total			**100**		**100**
	Central	JFM-RDF	Tiliki RF C/5		101	101
			Dumudumi RF C/1		101	101
	Total			**0**	**202**	**202**
	Central	Forests Deposit (EAS)	Kaliamba RF C/4		30	30
			Tiliki RF C/2		30	30
			Vinjigiri RF C/3		30	30
			Ragada RF C/4		30	30
	Mujagada		Baiballi RF C/2		30	30
			Kullada RF C/2		60	60
	Gallery		Chadhiapalli RF C/1		30	30
	Tarasingi		J.N.Prasad RF C/10		60	60
	Total			**0**	**300**	**300**
1997-98	Central	Eco. Plantation	Dumudumi RF C/1	20		20
	Central	Forest Deposit - DRDA (EAS)	Dumudumi RF C/1		25	25
	Gallery		Gallery RF C/23		25	25
	Tarasingi		J.N.Prasad RF C/8		40	40
			Chandragiri RF C/5		25	25
	Total			**20**	**115**	**135**

1998-99		No Plantation taken up		0		0
1999-2000	Central	DRDA (EAS)	Dumudumi RF C/1	40		40
2000-01		No Plantation taken up		0		0
2001-02	Central	C.R.F. (Block Plantation)	Dumudumi East RF	70		70
			Dumudumi West RF	80		80
		IAEP (Natural Regeneration)	Tiliki RF C/1		200	200
			Tiliki RF C/2		100	100
			Tiliki RF C/3		150	150
			Tiliki RF C/4		100	100
			Tiliki RF C/5		200	200
			Tiliki RF C/6		250	250
			Kaliamba RF C/3		100	100
			Kaliamba RF C/4		150	150
			Kaliamba RF C/5		100	100
			Kaliamba RF C/6		150	150
			Ragada RF C/4		200	200
			Ragada RF C/3		200	200
			Ragada RF C/5		100	100
		IAEP (Management Intervention)	Tiliki RF C/5		50	50
			Kaliamba RF C/5		50	50
			Ragada RF C/4		43	43
			Vinjigiri RF C/2		22	22
			Dumudumi East RF		50	50
	Mujagada	IAEP (Management Intervention)	Kullada RF C/3		65	65
			Galley RF C/4		60	60
			Galley RF C/5		30	30
			Galley RF C/6		30	30
	Total			**150**	**2400**	**2550**
2002-03		No Plantation taken up		0		0
2003-04	Central	Penal Compensatory afforestation	Dumudumi East RF	10		10
	Central	Eco. Plantation	Kaliamba RF C/6	20		20
			Kaliamba RF C/4	30		30
			Dumudumi East RF	45		45
			Malati RF	65		65

			Tiliki RF C/5	40		40
	Central	SGRY - DRDA	Ragada RF C/10	30		30
			Ragada RF C/5	6.5		6.5
			Ragada RF C/6	26.5		26.5
			A.S. College, Bellaguntha	9		9
			Nalimara Village	15		15
			Dhobataila	5		5
	Mujagada		Patulisahi	8		8
	Total			**310**	**0**	**310**
	Mujagada	NAP through FDA	Pankal	20	0	20
			Kotibaradi	0	50	50
			Binjhagiri	0	50	50
			Samapalli	0	40	40
			Badapathara	0	40	40
			Danguapali	0	40	40
			Kalipanka	0	40	40
			Satagharia	0	40	40
			Bhaluguda	0	40	40
			Khurudugochha	20	0	20
			Tajiki	0	40	40
			Sadhugaon	0	40	40
			Nuasahi	0	40	40
			Ripitipalli	0	40	40
	Central		Kanteipalli	0	40	40
			Purunapani	20	0	20
			Dimiripallli	20	0	20
			Somanathpalli	0	40	40
			Mareipata	20	0	20
			Saluapalli	0	30	30
			Keshera	0	50	50
			Gurandia	20	0	20
			Khariguda	0	50	50
			Tokaganda	30	0	30
	Gallery		Ranikiari	0	30	30
			Kotipada	0	25	25
	Total			**150**	**765**	**915**
2004-05	J.N.Prasad	Compensatory Afforestation	Kriyadhara	10		10
			Dimiripallli	5		5
			Kriyadhara		33	33

			Dimiripallli		11	11
			Ekagharia		41	41
	Mujagada		Gallery RF C/7		1	1
	Total			**15**	**86**	**101**
	Tarasingi	RSVY - DRDA	Ghogoda RF C/3 (Rudhapadara)	12		12
			Ghogoda RF C/3 (Talaganda)	12		12
			A.Jhara RF C/3 (Indira Colony)	10		10
	Mujagada		Kullada RF C/2	8		8
			Gallery RF C/1	8		8
	Total			**50**	**0**	**50**
	Central	NAP through FDA	Godipalli	0	40	40
			Tinikhandia	0	40	40
			Kotibadi	0	40	40
			Gudiamba	20	0	20
			Dandipadar	20	0	20
			Parsulunda	40	0	40
	Gallery		Dhimirijholi	20	0	20
			Beruhanbadi	0	20	20
			Khairaputti	0	20	20
			Sambarada	0	20	20
			Kirajhola	0	20	20
			Kalijhari	0	20	20
			Rangameru	0	20	20
	Tarasingi		Suramani	0	50	50
			Nuasahi	0	50	50
			Gramadevati	0	40	40
			Manapur	0	50	50
			Kathapatani	0	40	40
			Badabhumi	0	30	30
	J.N.Prasad		Akulakumpa	0	40	40
			Lundurupadar	0	50	50
			Kriyadhara	0	50	50
			Dungapalli	0	40	40
			Narayanapalli	20	20	40
			Kepiti	0	50	50

	Total			**120**	**750**	**870**
2005-06	Mujagada	NFFWP	Gallery RF C/17	15		15
	Central		Dumudumi East RF	25		25
	Gallery		Gallery RF C/23	5		5
	Tarasingi		A.jhara RF C/13	6		6
			A.jhara RF C/12	9		9
			Badagundribadi RF C/1	5		5
	J.N.Prasad		J.N.Prasad RF C/9	10		10
			J.N.Prasad RF C/10	25		25
	Total			**100**	**0**	**100**
	Tarasingi	NMPB – in-situ & ex-situ conservation for Medicinal Plantation	Ghogoda VSS			10
			Dangabhumi VSS			10
			Salapataila VSS			10
			Kandhasarala VSS			10
			Budurungi VSS			10
			Mandapathara VSS			10
			Budhabari VSS			10
			K.Nabagochha VSS			10
			Nabagochha VSS			10
			Bhogora VSS			10
	Total					**100**
2006-07	Mujagada	Eco. Plantation	Gallery RF C/15	15		15
			Gallery RF C/6		50	50
			Kullada RF C/1		25	25
	Central		Malati RF	29		29
			Tiliki RF C/5		50	50
			Vinjigiri RF C/2		50	50
			Kaliamba RF C/6		25	25
	Tarasingi		G.Badi RF C/1	6		6
			A.Jhara RF C/10	10		10
	J.N.Prasad		A.Jhara RF C/9	10		10
	Total			**70**	**200**	**270**
	Mujagada	12 FCG	Gallery RF C/4		20	20
			Gallery RF C/5		20	
	Central		Dumudumi West RF		35	35
			Tiliki RF C/3		25	25
	J.N.Prasad		J.N.Prasad RF C/10		25	25
	Total			**0**	**125**	**125**
2007-08	Mujagada	12 FCG	Gallery RF C/4		70	70
			Gallery RF C/11		95	95

			Kullada RF C/3		70	70
			Baiballi RF C/10		100	100
			Gallery RF C/5	50		50
	Central		Tiliki RF C/3		50	50
			Tiliki RF C/5		50	50
			Tiliki RF C/6		25	25
			Kaliamba RF C/6		60	60
			Kaliamba RF C/4		50	50
			Vinjigiri RF C/2		50	50
			Ragada RF C/4		50	50
			Ragada RF C/3		50	50
			Vinjigiri RF C/4		50	50
			Vinjigiri RF C/1	50		50
			Malati RF	15		15
			Vinjigiri RF C/4	20		20
			Malati RF	20		20
			Dumudumi East RF	20		20
	Tarasingi		A.Jhara RF C/7		16	16
			A.Jhara RF C/11		19	19
			G.Badi RF C/2		25	25
			Ghogoda RF C/3		15	15
			Chandragiri RF C/5	25		25
	Gallery		Gallery RF C/23		15	15
			Gallery RF C/20		15	15
	J.N.Prasad		J.N.Prasad RF C/6		35	35
			J.N.Prasad RF C/7		30	30
			J.N.Prasad RF C/8		60	60
	Total			**200**	**1000**	**1200**
	Mujagada	12 FCG - Bamboo	Gallery RF C/2	20		20
			Baiballi RF C/10	20		20
	Central		Ragada RF C/8	30		30
			Kaliamba RF C/2	20		20
	Tarasingi		Chandragiri RF C/5	40		40
	Gallery		Chandragiri RF C/1	20		20

			Chandragiri RF C/2	20		20
	J.N.Prasad		J.N.Prasad RF C/2	30		30
	Total			**200**	**0**	**200**
	Tarasingi	Eco. Plantation	G.Badi RF C/3	30		30
	Gallery		Chadhiapalli RF C/1	20		20
			Chadhiapalli RF C/1		25	25
			Gallery RF C/16		15	15
			Gallery RF C/22		15	15
			Gallery RF C/23		20	20
	J.N.Prasad		J.N.Prasad RF C/7 & 8		75	75
	Total			**50**	**150**	**200**
2008-09	Central	Eco. Plantation	Kaliamba RF C/6	20		20
			Vinjigiri RF C/3	20		20
			Vinjigiri RF C/4	20		20
			Ragada RF C/4		50	50
			Ragada RF C/7		50	50
	Mujagada		Gallery RF C/6		50	50
	J.N.Prasad		J.N.Prasad RF C/8		50	50
	Total			**60**	**200**	**260**
	Mujagada	OBDA - NBM	Gallery RF C/7	20		20
			Gallery RF C/6	25		25
	Central		Kaliamba RF C/6	25		25
			Ragada RF C/4	20		20
	Gallery		Dhimirijholi RF C/1	30		30
	Total			**120**	**0**	**120**
	Mujagada	NAP	Pochalundi	50		50
			Kadalundi	50		50
			Tangana	25		25
			Bahakapalli	25		25
			Uldan	50		50

			Raipalli	50		50
			Upar Bagdevi Kullad	50		50
			Maa Bhuinyani	50		50
			Gajapadar	50		50
			Krushnapalli	25		25
			Maa Ratneswari (Benakunda)	50		50
			Chadheiyapalli	50		50
			Gandisula	50		50
			Rajakunda	50		50
			Jogimari	50		50
			Nidhiapalli	50		50
			Miniary	50		50
			Hati Sahi	50		50
			Jaya Mangala	50		50
			Kanabindha	50		50
			Sutangi	50		50
			Mahaguda	50		50
			Langalakhola	50		50
			Gutuliguda	50		50
			Dadhibamana (Birikote)	50		50
			Suradevi (Salapaguda)	50		50
			Maa Thakurani (Dhaumundia)	50		50
			Maa Kali (Baiballi)	50		50
			Maa Bapangi (Naringipalli)	50		50
			Maa Gramadevati (Baragaon)	50		50
			Maa Budhima (Gunakia)	50		50
			Tiliki	50		50
			Tadama	25		25
			Balinkia	50		50
			Bedigoba	50		50
			Durgaprasad	50		50
	Central		Bibhutia	50		50
			Baradhangidi	50		50
			Makarapalli	50		50
			Lathipada	50		50
			Rangabali	50		50
			Balarampur	50		50
			Rampalli	50		50
			Godipadar	50		50
			Dumakumpa	50		50

			Kaliapalli	50		50
			Vinjigiri	50		50
			Dumudumi	50		50
			Malati	50		50
			Mathasahi (Benakunda)	50		50
			Birahanumantapur	50		50
			Sunapalibanjar	50		50
			Neempalli	50		50
			Ragada	50		50
			Gochha & Tikidi	50		50
	Gallery		Puduringi	40		40
			Dhobataila	40		40
			Bilipada	25		25
			Baliapata	40		40
			Bori Bandha	25		25
			Budhagochha	30		30
			Kumbhipalli	40		40
			Kutunikumpa	40		40
			Barhakuda	40		40
			Ranjasahi	40		40
			Harigada	40		40
	Tarasingi		Garudapathara	50		50
			Toladi	50		50
			Tinichhakia	50		50
			Halandakhola	50		50
			Tirigochha	50		50
			Rampoo	50		50
			Sisunda	50		50
			Banzarasahi	50		50
			Maa Gramadevati (Siuli)	50		50
			Khajuripalli	50		50
			Patharaganda	50		50
			Barapalli	50		50
			Patangi	50		50
			Talaganda	50		50
			Indira colony	50		50
			Adibasi colony	50		50
			Khallisahi	50		50
			Highschoolsahi	50		50
			Kadaligada	50		50

			Narayanprasada	50		50
			Jadadhara	50		50
			Kalingapadar	50		50
			Rudhapadar	50		50
			Badagunduribadi	50		50
			Mahadevakhaman	50		50
	J.N.Prasad		Dimiripallli	50		50
			Talapanka	50		50
			Bankatara	50		50
			Ekagharia (Maa Baiani)	25		25
			Kandha Banta	50		50
			Jaripankal (Maa Thakurani)	30		30
			Kandhatirigochha (Maa Bagdevi)	30		30
			Biluamara	40		40
			Baniapalli	50		50
			Lunagundi	50		50
			Kudutei	50		50
			Hajapalli	50		50
			Patrapalli	50		50
			Gothalunda (Balimala)	50		50
			Umasahi	25		25
			Kapilapalli	50		50
	Total			**5000**	**0**	**5000**
2009-10	Mujagada	Eco. Plantation	Gallery RF C/6	15		15
			Tiliki RF C/2	10		10
			Gallery RF C/3		25	25
			Gallery RF C/6		25	25
			Baiballi RF C/11		25	25
	Central		Dumudumi East RF	25		25
			Kaliamba RF C/1		25	25
			Tiliki RF C/1		25	25
			Ragada RF C/3		25	25
	Gallery		Dhimirijholi RF C/2	20		20
	Tarasingi		B.Sahi RF C/4	15		15
			C.Giri RF C/9		25	25
			Ghogoda RF C/1		25	25
	J.N.Prasad		J.N.Prasad RF C/1	15		15
	Total			**100**	**200**	**300**
	Gallery	Bamboo Plantation	Dhimirijholi RF C/1	25		25
	J.N.Prasad	Compensatory	Chudakhai Vill.	8		8

		Afforestation			17.97	17.97
	Total			**8**	**17.97**	**25.97**
2010-11	Mujagada	Eco. Plantation	Gallery RF C/9	20		20
	Central		Malati RF C/1	20		20
	Gallery		C.Giri RF C/12	20		20
	Tarasingi		B.Sahi RF C/6	20		20
	J.N.Prasad		J.N.Prasad RF C/2	20		20
	Total			**100**		**100**
	Gallery	OBDP	D.Jholi RF C/1	25		25
	Mujagada	NBM - OBDA	Gallery RF C/7	20		20
	Central		Kaliamba RF C/5	20		20
	Total			**40**		**40**
	Mujagada	CAMPA APO 2009-10- Block Plantation	Galley RF C/5	80		80
			Galley RF C/12	30		30
			Baiballi RF C/9	50		50
			Tiliki RF C/1	50		50
			Baiballi RF C/4	30		30
	Central		Kaliamba RF C/2	40		40
			Kaliamba RF C/4	30		30
			Tiliki RF C/5	55		55
			Ragada RF C/3	40		40
			Ragada RF C/5	20		20
			Vinjigiri RF C/1	35		35
			Dumudumi East RF	60		60
	Gallery		D.Jholi RF C/1	80		80
			C.Giri RF C/3	40		40
			C.Giri RF C/10	40		40
			C.Giri RF C/11	40		40
	Tarasingi		C.Giri RF C/8	50		50
			B.Sahi RF C/6	30		30
			A.Jhara RF C/12	50		50
			Pachhalia RF C/1	50		50
			Ghogoda RF C/1	50		50
	J.N.Prasad		J.N.Prasad RF C/10	25		25
			J.N.Prasad RF C/7	25		25
			J.N.Prasad RF C/1	50		50
	Total			**1050**	**0**	**1050**
2011-12	Mujagada	Eco. Plantation	Rambha RF C/1	10		10
	Central		Malati RF	25		25
	Gallery		C.Giri RF C/11	15		15

	Tarasingi		B.Sahi RF C/4	25		25
	J.N.Prasad		J.N.Prasad RF C/1	25		25
	Total			**100**		100
	J.N.Prasad	13th FCG	Landei Hill Revenue Land	20		20
			Chudakhai Revenue Land	20		20
			J.N.Prasad RF C/7	50		50
	Total			**90**	**0**	**90**
	Mujagada	OBDP	Gallery RF C/7	20		20
2012-13	Mujagada	Eco. Plantation	Gallery RF C/5	20		20
	Central		Dumudumi RF	20		20
	Gallery		C.Giri RF C/11	20		20
	Tarasingi		B.Sahi RF C/3	20		20
	J.N.Prasad		J.N.Prasad RF C/8	20		20
	Total			**100**		100
	J.N.Prasad	13th FCG	Tarafa	30		30
	Gallery		Gangajhola PRF	10		10
	Total			**40**		40
	Central	Saraca Asoca	Kaliamba RF C/5	5		5
			Tiliki RF /5	5		5
	Total			**10**	**0**	**10**
	Mujagada	OBDP	Gallery RF C/7	20		20
	Central	NBM - OBDA	Malati RF	20		20
	Tarasingi		C.Giri RF C/9	20		20
	Total			**40**		40
	Central	MGNREGS	Tilliki RF C/6		25	25
			Dumudumi (W) RF		25	25
	Gallery		Chandragiri RF C/10		25	25
			Chandragiri RF C/3		25	25
	Tarasingi		Brahmanasahi RF C/3		50	50
			Paichallia RF C/4		25	25
			Ghogada RF C/1		25	25
			Ghogada RF C/1		25	25
			Gunduribadi RF C/1		25	25
			Ambajhara RF C/14		25	25
			Ambajhara RF C/9		25	25
			Ambajhara RF C/9		25	25
			Chandragiri RF C/9		25	25
			Ghogada RF C/2		25	25
	Total			**0**	**375**	**375**
	Mujagada	NAP - FDA	Sri Bira Hanuman, Buduli		8	8

			Maa Soradevi, Sidhapadara		8	8
			Bira Chakra Bisoi, Gambharigochha		8	8
			Shanpalli, Sahanpalli		8	8
			Daha, Daha		8	8
			Balunkeswar, Akhupadar		8	8
			Om Santi, Indagada		8	8
			Gochapalli, Gochapalli		8	8
			Maa kandhunidevi, Nuapalli		8	8
			Kutunikumpa, Kutunikumpa		8	8
			Khandikoti		8	8
			Nabagochha, Nabagochha		8	8
			Maha Bira Hanuman, Dirbising		8	8
			Maa Ghodarekha, Banjargaon		8	8
			Sarapada, Sarapada		8	8
			Binagaon, Binagaon		8	8
			Khariguda Kandhasahi, Khariguda		8	8
			Khariguda Badasahi, Khariguda		8	8
	Central		Gudibandha, Gudibandha		8	8
			Haripur, Haripur		8	8
			Kadalijhola, Kadalijhola		8	8
			Sardula, Sardula		8	8
			Kaliamba, Kaliamba		8	8
			Buduli, Buduli		8	8
			Kulangi, Kulangi		8	8
	Tarasingi		Baradanda,Baradanda		8	8
			Dubapalli, Dubapalli		8	8
			Khetamundali, Khetamundali		8	8
			Beniasahi, Beniasahi		8	8
			Naraguda, Naraguda		8	8
			Dasasahi, Dasasahi		8	8
	Gallery		Tuinpadar, Domuhani		8	8
			Manisahi, Ranikiari		8	8
			Banjarsahi, Raigochha		8	8
			Maa Chudakhai, Lembhai		8	8
			Maa Karadabani, Lembhai		8	8
	J.N. Prasad		Banta		6	6
			Banta Nuasahi,		6	6
	Total			**0**	**300**	**300**

2013-14	Gallery	13th FCG - IWP	Burudei Revenue Hill	20		20
	J.N.Prasad		Karadabani	20		20
	Total			**40**		40
	Mujagada	OBDP	Gallery RF C/11	20		20
	Tarasingi		C.Giri RF C/9	20		20
	Total			**40**		40
	Mujagada	Eco. Plantation	Gallery RF C/5	20		20
	Central		Malati RF	20		20
	J.N.Prasad		J.N.Prasad RF C/7	20		20
	Total			**60**		60
	Tarasingi	NAP - FDA	G. Nabagochha	12	10	22
			Ghogada	12	10	22
			K. Nabagochha	12	10	22
			Khurudupalli	12	10	22
			Mallick Sahi	12	0	12
			Salapataila	12	0	12
			Talakhamana	12	0	12
			Sarangapata	12	0	12
	Mujagada		Darapangia	12	0	12
			Bhalingia	12	0	12
	Total			**120**	**40**	**160**
	Gallery	NBM - OBDA	C.Giri RF C/11	30		30
	Central		Beneficiary 10 Nos.	10		10
	Total			**40**		40
	Central	MGNREGS	Ragada RF C/10			25
			Ragada RF C/5			50
			Vinjigiri RF C/1			50
			Vinjigiri RF C/4			25
			Dumudumi East RF			50
			Dumudumi East RF			50
			Tiliki RF C/6			50
			Kaliamba RF C/1			50
	Mujagada		Kullada RF C/1			50
			Gallery RF C/5			50
			Tiliki RF C/1			50
			Baiballi RF C/10			50
	Gallery		C.Giri RF C/10			50
			Gallery RF C/16			50
			C.Giri RF C/12			50
			D.Jholi RF C/1			50

	J.N.Prasad		J.N.Prasad RF C/9			50
			J.N.Prasad RF C/10			50
	Total			**0**	**0**	**850**
2014-15	Mujagada	Eco. Plantation	Gallery RF C/3	20		20
	Gallery		Gallery RF C/16	20		20
	J.N.Prasad		J.N.Prasad RF C/7	20		20
	Total			**60**		60
	Mujagada	13th FCG	Ripitipalli Revenue Land	30		30
	Central		Bibhutia	20		20
	J.N.Prasad		Karadabani	20		20
	Total			**70**		70
	Mujagada	OBDP	Gallery RF C/11	20		20
	Tarasingi		B.Sahi RF C/13	20		20
	Total			**40**		40
	Mujagada	MGNREGS	Dirbisingh Revenue Land	20		20
			Baiballi RF C/12		50	50
			Gallery RF C/14		50	50
			Tiliki RF C/2		20	20
			Galley RF C/5		30	30
	Tarasingi		C.Giri RF C/8		20	20
			Pachhalia RF C/4		20	20
			B.Sahi RF C/3		20	20
			B.Sahi RF C/3		20	20
			A.Jhara RF C/12		20	20
			A.Jhara RF C/12		20	20
			B.Sahi RF C/4		20	20
			C.Giri RF C/5		20	20
			Ghogoda RF C/4		20	20
			Ghogoda RF C/1		20	20
			A.Jhara RF C/16		20	20
			A.Jhara RF C/10		20	20
	Gallery		C.Giri RF C/11		20	20
			Gallery RF C/23		20	20
			Gallery RF C/16		20	20
			C.Giri RF C/3		20	20
			D.Jholi RF C/3		20	20
	Central		Tiliki RF C/4		20	20
			Kaliamba RF C/4		20	20
			Kaliamba RF C/6		20	20
			Dumudumi East RF		20	20

			Ragada RF C/3		20	20
			Ragada RF C/10		20	20
			Vinjigiri RF C/2		20	20
			Ragada RF C/4		20	20
	J.N.Prasad		J.N.Prasad RF C/9		20	20
			J.N.Prasad RF C/10		20	20
	Total			**20**	**690**	**710**
	Tarasingi	NBM - OBDA	C.Giri RF C/8	20		20
	Gallery		Gallery RF C/23	25		25
	Mujagada		Baiballi RF C/12	20		20
			Darpangia RF C/12	20		20
	Central		Kaliamba RF C/5	35		35
	Total			**120**	**0**	**120**
	Mujagada	NAP - FDA	Darpangia VSS			5
			Bhalingia VSS			5
	Central		Kaliaguda VSS			17
			Baghuapalli VSS			17
			Gobarabandha VSS			17
	J.N.Prasad		Tirikupa VSS			17
			Samarabandha VSS			17
			Bhusubhusa VSS			17
	Tarasingi		G.Nabagochha VSS			5
			K.Nabagochha VSS			5
			Ghogoda VSS			5
			Khurudupalli VSS			5
			Malika Sahi VSS			5
			Salapataila VSS			5
			Sarangapata VSS			5
			Talakhamana VSS			5
			Budhabari VSS			17
			Burudungi VSS			17
			Dangabhumi VSS			17
			Kandhasarala VSS			17
	Total			**0**	**0**	**220**
			Total	**9108**	**7641**	**17919**

Annexure XVII

Outturn of timber from 12 Felling Series in Selection Working Circle, (Pattnaik Plan)			
Year/Coupe No.	**Name of the Felling Series.**	**No. of trees.**	**Volume/Unit.**
1	**2**	**3**	**4**
1980-81 C/10	Baiballi	535	1542
	Darpangia	408	1248
	Rambha	765	2409
	Chandragiri	153	356
	Gundiribadi	947	2480
	Ghogodo	373	1091
	Siuli	342	1069
	Tarasing	192	559
	Paichalia	1075	1456
	Jagannathprasad	445	556
	Bodangi	117	207
	Ragada	475	1080
1981-82 C/11	Baiballi	357	1148
	Darpangia	750	1543
	Rambha	615	1309
	Chandragiri	607	1296
	Gundiribadi	712	2426
	Ghogodo	340	1080
	Siuli	201	654
	Tarasing	454	1142
	Paichalia	831	1432
	Jagannathprasad	308	444
	Bodangi	678	1986
	Ragada	517	1103
1982-83 C/12	Baiballi	417	1278
	Darpangia	608	1773
	Rambha	474	1996
	Chandragiri	280	555
	Gundiribadi	815	2098
	Ghogodo	330	638
	Siuli	345	882
	Tarasing	511	1386
	Paichalia	260	362
	Jagannathprasad	226	433
	Bodangi	524	1214
	Ragada	372	597
1983-84 C/13	Baiballi	1425	4793
	Darpangia	151	290

	Rambha	453	1578
	Chandragiri	504	1262
	Gundiribadi	1987	5094
	Ghogodo	762	1048
	Siuli	707	1796
	Tarasing	455	1304
	Paichalia	297	471
	Jagannathprasad	255	338
	Bodangi	702	1766
	Ragada	889	1722
1984-85 C/14	Baiballi	240	622
	Darpangia	187	466
	Rambha	243	888
	Chandragiri	802	2091
	Gundiribadi	1001	2848
	Ghogodo	411	862
	Siuli	158	792
	Tarasing	331	803
	Paichalia	435	1062
	Jagannathprasad	556	943
	Bodangi	695	1649
	Ragada	802	1289
1985-86 C/15	Baiballi	400	1047
	Darpangia	316	452
	Rambha	317	780
	Chandragiri	557	1002
	Gundiribadi	900	2095
	Ghogodo	927	1690
	Siuli	521	1262
	Tarasing	430	829
	Paichalia	585	1108
	Jagannathprasad	306	428
	Bodangi	1094	1931
	Ragada	173	298
1986-87 C/16	Baiballi	585	1313
	Darpangia	206	371
	Rambha	497	1743
	Chandragiri	351	1174
	Gundiribadi	1090	3035
	Ghogodo	462	1177
	Siuli	777	2011
	Tarasing	670	1748
	Paichalia	571	1049
	Jagannathprasad	--	--
	Bodangi	461	239
	Ragada	250	386
1987-88 C/17	Baiballi	672	1590
	Darpangia	159	501

	Rambha	217	469
	Chandragiri	509	981
	Gundiribadi	1045	3015
	Ghogodo	571	1825
	Siuli	563	1750
	Tarasing	377	760
	Paichalia	565	1560
	Jagannathprasad	--	--
	Bodangi	185	1030
	Ragada	405	686
1988-89 C/18	Baiballi	383	1343
	Darpangia	122	255
	Rambha	131	479
	Chandragiri	310	720
	Gundiribadi	604	2011
	Ghogodo	371	961
	Siuli	303	1093
	Tarasing	509	1130
	Paichalia	384	956
	Jagannathprasad	--	--
	Bodangi	1524	1887
	Ragada	402	612
1989-90 C/19	Baiballi	236	559
	Darpangia	205	527
	Rambha	201	921
	Chandragiri	305	527
	Gundiribadi	--	--
	Ghogodo	487	1297
	Siuli	555	1652
	Tarasing	435	1183
	Paichalia	174	614
	Jagannathprasad	--	--
	Bodangi	--	--
	Ragada	--	--
1990-91		--	--
1991-92		--	--
1993-94		--	--
1993-94 C/4	Baiballi	42	60
	Darpangia	128	181
	Rambha	121	74
	Chandragiri	8	7
	Gundiribadi	280	229
	Ghogodo	224	298
	Siuli	15	41
	Tarasing	110	140
	Paichalia	--	--
	Jagannathprasad	102	85
	Bodangi	32	34

	Ragada	18	23

Note: 1unit=0.283cum.

Source: Pattanaik's Plan

Outturn of timber from 8 Felling Series in Coppice Working Circle			
Year/Coupe No.	**Name of the Felling Series.**	**No. of trees.**	**Volume/Unit.**
1	**2**	**3**	**4**
1980-81 C/10	Kaliamba	462	513
	Gereda	964	371
	Kullada	257	335
	Tiliki	2398	767
	Jillundi	391	946
	Kaladhar	220	445
	Lenkada	916	158
	Vinjigiri	--	--
1981-82 C/11	Kaliamba	315	353
	Gereda	1610	578
	Kullada	284	554
	Tiliki	2249	738
	Jillundi	--	--
	Kaladhar	262	344
	Lenkada	785	169
	Vinjigiri	--	--
1982-83 C/12	Kaliamba	507	891
	Gereda	301	115
	Kullada	318	607
	Tiliki	2271	1190
	Jillundi	--	--
	Kaladhar	210	243
	Lenkada	--	--
	Vinjigiri	--	--
1983-84 C/13	Kaliamba	680	1158
	Gereda	201	66
	Kullada	165	412
	Tiliki	411	272
	Jillundi	1049	1986
	Kaladhar	--	--
	Lenkada	2062	400
	Vinjigiri	--	--
1984-85 C/14	Kaliamba	818	2878
	Gereda	--	--
	Kullada	--	--
	Tiliki	1200	1757
	Jillundi	215	424
	Kaladhar	--	--
	Lenkada	946	135
	Vinjigiri	--	--

1985-86 C/15	Kaliamba	236	609
	Gereda	--	--
	Kullada	--	--
	Tiliki	1286	1492
	Jillundi	--	--
	Kaladhar	--	--
	Lenkada	697	142
	Vinjigiri	--	--
1986-87 C/16	Kaliamba	161	302
	Gereda	--	--
	Kullada	--	--
	Tiliki	684	745
	Jillundi	--	--
	Kaladhar	--	--
	Lenkada	--	--
	Vinjigiri	--	--
1987-88 C/17	Kaliamba	201	653
	Gereda	--	--
	Kullada	--	--
	Tiliki	175	275
	Jillundi	--	--
	Kaladhar	--	--
	Lenkada	--	--
	Vinjigiri	--	--
1988-89 C/18	Kaliamba	131	702
	Gereda	--	--
	Kullada	--	--
	Tiliki	175	275
	Jillundi	--	--
	Kaladhar	--	--
	Lenkada	--	--
	Vinjigiri	--	--
1989-90 C/19	Kaliamba	--	--
	Gereda	--	--
	Kullada	--	--
	Tiliki	--	--
	Jillundi	--	--
	Kaladhar	--	--
	Lenkada	--	--
	Vinjigiri	--	--

Source: Pattanaik's Plan

Outturn of timber from 3 Felling Series in Sal Improvement Working Circle						
Year	Eastern Felling Series.		Central Felling Series.		Western Felling Series.	
	No. of trees.	Volume in Unit.	No. of trees.	Volume in Unit.	No. of trees.	Volume in Unit.
1	2	3	4	5	6	7
1980-81	181	513	782	1246	329	1076
1981-82	122	315	873	2143	247	774
1982-83	125	670	273	395	64	232
1983-84	283	904	74	299	545	1997
1984-85	124	496	496	1923	138	566
1985-86	133	443	88	301	276	1122
1986-87	177	530	256	1088	152	586
1987-88	170	499	252	1230	359	1216
1988-89	135	396	386	1360	425	1309
1989-90	98	190	248	652	519	1988

Source: Pattanaik's Plan

Annexure-XVIII

Outturn of timber from 17 Felling Series in Selection Working Circle of Ghumsur North division (Rebecca Nair Plan)								
Year	**Name of the felling series**	**No. of coupes offered**	**No. of coupes taken delivery**	**No. of coupes worked**	**No. of trees marked**	**No. of trees felled and converted**	**Outturn of timber (cum)**	**Outturn of F/W (stacks)**
1	2	3	4	5	6	7	8	9
1995-96	No coupe working							
1996-97	No coupe working							
1997-98	No coupe working							
1998-99	No coupe working							
1999-00	No coupe working							
2000-01	No coupe working							
2001-02	No coupe working							
2002-03	No coupe working							
2003-04	No coupe working							
2004-05	No coupe working							
2005-06	Bodangi	14	14	14	131	131	44.0392	
	Siuli				61	61	21.2605	
	Paichalia				20	20	20.8744	
	Gunduribadi				25	25	32.2597	6
	Eastern				02	02	0.9013	
	Ghogodo				98	98	97.7900	18
	Rambha				09	09	3.2926	
	Tarasing				63	63	29.4667	
	Ragada				02	02	0.6348	1
	Central				11	11	11.2710	
	Chandragiri				32	32	17.4153	
	Darpangia				07	07	4.4860	
	Western				34	34	11.6537	
	Baiballi				33	33	33.5412	6
	TOTAL	**14**	**14**	**14**	**588**	**588**	**328.8864**	**31**
2006-07	Western	11	11	11	269	269	117.8027	24
	Chandragiri				23	23	9.7759	
	Siuli				01	01	0.7818	
	Tarasing				16	16	12.1544	
	Ghogada				155	155	110.7212	30
	Gunduribadi				127	127	108.2260	24
	Baiballi				84	84	45.5380	48
	Darpangia				13	13	12.1772	
	Paichalia				15	15	7.4119	
	Bodangi				65	65	48.4749	
	Rambha				07	07	3.2023	
	TOTAL	**11**	**11**	**11**	**775**	**775**	**476.2663**	**126**
2007-	Western	13	13	13	67	67	51.9023	1.50

08	Central				21	21	5.5971	0
	Rambha				11	11	9.8377	3
	Darpangia				18	18	5.5427	6
	Baiballi				142	142	76.4448	24
	Bodangi				330	330	112.6458	25
	Chandragiri				75	75	32.1252	6
	Paichalia				17	17	31.4187	3
	Tarasing				104	104	55.6993	2
	Siuli				151	151	65.6692	6
	Ghogada				301	301	206.2658	24
	Gunduribadi				371	371	295.5163	48
	Eastern				333	333	305.2306	90
	TOTAL	**13**	**13**	**13**	**1941**	**1941**	**1253.8955**	**238.50**
2008-09	Western	14	14	14	97	97	63.3091	6
	Rambha				5	5	0	6
	Darpangia				15	15	4.8950	0
	Baiballi				28	28	7.8853	10
	Central				15	15	28.5689	0
	Bodangi				333	333	151.4433	12
	Chandragiri				32	32	11.4283	0
	Eastern				257	257	168.3177	21
	Paichalia				117	117	85.4611	6
	Tarasing				112	112	67.9826	3
	Siuli				32	32	24.5288	3
	Gunduribadi				291	291	164.9980	6
	J.N.Prasad				9	9	1.6449	0
	Ghogada				383	383	338.8530	18
	TOTAL	**14**	**14**	**14**	**1726**	**1726**	**1119.3160**	**91**
2009-10	Western	13	13	13	208	208	52.9823	0
	Rambha				34	34	28.9732	6
	Darpangia				6	6	0	6
	Baiballi				205	205	49.8830	5
	Chandragiri				29	29	24.9107	6
	Bodangi				301	301	91.1851	15
	Eastern				261	261	144.9326	24
	Paichalia				37	37	20.8952	3
	Tarasing				301	301	200.6954	18
	Siuli				555	555	293.7186	30
	Gunduribadi				237	237	161.8932	33
	Ghogada				316	316	223.0333	24
	J.N.Prasad				10	10	9.2861	0
	TOTAL	**13**	**13**	**13**	**2500**	**2500**	**1302.3887**	**170**
2010-11	Western	13	13	13	139	139	54.6744	6
	Darpangia				51	51	29.1060	11
	Baiballi				15	15	0	6
	Ragada				10	10	10.4640	2
	Central				52	52	63.3537	3
	Chandragiri				22	22	16.7648	3
	Bodangi				68	68	35.6041	6
	Eastern				248	248	142.7401	12
	J.N.Prasad				24	24	21.1660	3
	Tarasing				201	201	163.6594	24
	Siuli				291	291	173.8774	54
	Ghogada				376	376	266.7097	42
	Gunduribadi				717	717	640.4212	110
	TOTAL	**13**	**13**	**13**	**2214**	**2214**	**1618.5408**	**282**
2011-12	Western	12	12	12	98	98	34.1916	6
	Chandragiri				37	37	31.9178	6

	Gunduribadi				521	521	383.0793	72
	Bodangi				39	39	13.7674	12
	Darpangia				421	421	182.6771	18
	Ghogada				365	365	269.9770	90
	Tarasing				141	141	97.6314	18
	Eastern				222	222	158.0014	24
	Baiballi				97	97	54.2382	12
	Rambha				106	106	73.8532	12
	Siuli				392	392	322.5444	48
	Ragada				12	12	9.2104	2
	TOTAL	**12**	**12**	**12**	**2451**	**2451**	**1631.0892**	**320**
2012-13	J.N.Prasad	13	13	13	71	71	58.0183	6
	Tarasing				25	25	19.5983	6
	Siuli				87	87	99.2111	30
	Ghogada				325	325	363.6260	90
	Gunduribadi				447	447	427.0378	48
	Western				127	127	32.2304	6
	Rambha				217	217	189.1843	18
	Darpangia				56	56	34.2119	6
	Baiballi				21	21	8.3889	0
	Central				42	42	27.6096	3
	Chandragiri				105	105	87.9696	15
	Bodangi				117	117	103.5182	18
	Eastern				287	287	302.7905	30
	TOTAL	**13**	**13**	**13**	**1927**	**1927**	**1753.3949**	**276**
2013-14	Ragada	13	13	13	750	750	120.8106	40
	Rambha				1363	1363	379.9080	82
	Western				1445	1445	682.7166	96
	Darpangia				250	250	79.0783	12
	Gunduribadi				480	480	238.0070	30
	Ghogada				336	336	144.5939	24
	Siuli				20	20	19.7124	6
	J.N.Prasad				25	25	14.8849	6
	Tarasing				548	548	300.4722	60
	Eastern				1260	1260	1181.1868	166
	Chandragiri				221	221	160.5635	12
	Bodangi				594	594	124.0038	76
	Central				53	53	42.6120	6
	TOTAL	**13**	**13**	**13**	**7345**	**7345**	**3488.5500**	**616**

Annexure-XIX

Outturn of Bamboo from 17 Cutting Series of Bamboo overlapping Working Circle in Pattanaik's Plan period										
Coupe Name	**1980-81**	**1981-82**	**1982-83**	**1983-84**	**1984-85**	**1985-86**	**1986-87**	**1987-88**	**1988-89**	**1989-90**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Kaliamba	1638.4100	4351.7433	-	1140.4295	2772.5043	1962.0423	-	1265.2443	1289.1750	1997.2251
Ragada	1329.6491	606.7975	1463.5091	763.4795	1943.8011	892.3626	1002.4480	412.1696	1785.0015	1055.3113
Ambasora	1768.8960	6225.1418	2658.5026	3949.7395	1506.7756	2191.4408	2192.4408	5012.9971	112235 41	2057.0150
Gundiribadi.	5203.9056	1161.5981	1478.7045	2270.0261	4335.2521	1440.5684	1499.3291	2679.5296	3418.8861	2242.9029
Nabagochha.	1380.4810	840.5203	999.0820	430.8130	960.4588	779.6625	989.9847	348.8097	373.1132	253.4005
Tarsing	2024.8165	967.4992	1267.7642	927.1135	1719.8510	869.4905	951.3690	818.5675	546.0381	248.5071
Banta	855.7955	1193.7323	493.3140	280.1601	959.3587	1287.9160	387.8220	291.7722	251.6530	689.3181
Lembhei.	1440.9263	1169.9467	702.5201	603.4413	1136.7102	1214.0070	898.0366	462.6971	861.9738	722.6350
Kathachira.	330.5128	712.7770	503.7286	373.9525	395.5770	398.5414	569.4489	431.6611	352.4290	262.5876
Gopadar	2495.4865	2415.9450	1458.4510	1467.8165	2022.3410	1600.8967	1466.0961	2090.4876	2382.1490	354.7433
Khamanasahi	948.8400	952.7074	560.7529	369.1461	625.9175	649.5645	631.9752	463.7470	559.9813	566.6395
Dimirijholli	-	49.4773	22.9559	139.0335	7.5871	30.7711	101.4493	145.7050	-	-
Rambha	864.8114	891.4570	734.2122	475.6606	568.4507	730.8795	600.2917	708.8628	719.3177	571.2179
Birikota	1778.3154	2110.4986	2071.1542	1789.7464	1862.3272	2295.4978	2084.8091	1567.6267	874.9384	887.8156
Bapangi	1215.9055	849.8787	2453.0441	290.4741	803.2932	954.0523	1732.1788	330.2311	430.4644	240.7498
Baiballi	-	496.1215	408.8896	937.9557	-	407.6016	363.8801	539.4405	123.5266	181.1250
Durgaprasad	234.0247	17.7142	130.5428	48.6964	49.2982	-	42.8571	-	54.9010	104.6298

Outturn of Bamboo from 17 Cutting Series of Bamboo overlapping Working Circle in Pattanaik's Plan period (Contd.)					
Coupe Name	**1090-91**	**1991-92**	**1992-93**	**1993-94**	**1994-95**
1	**2**	**3**	**4**	**5**	**6**
Gunduribadi	812.1846	2346.4986	3463.5125	859.0859	585.738
Ambazora	740.1935	1968.3826	870.3392	2334.1645	581.243
Lembhei	423.8327	325.4213	307.3289	423.1247	519.578
Tarasingi	299.5966	4.3.9960	524.8600	223.5284	378.952
Nabagochha	429.1745	291.9802	260.2901	331.1233	689.012
Banta	242.7478	274.9209	315.9659	502.4877	226.366
Ragada	556.4463	--	1002.0138	187.1659	814.056

Kaliamba	--	1018.4256	1124.4508	1345.4802	--
Birikota	864.1474	1025.6103	665.6142	895.8641	2197.529
Rambha	196.5408	435.7767	465.3571	392.4375	123.366
Baiballi	163.5156	392.8400	--	104.6500	141.780
Bapangi	813.3015	134.0325	302.1970	164.6426	1320.7030
Durgaprasad	144.2359	216.9475	211.7653	135.9444	116.1213
Gopadar	615.1206	1074.4335	987.1313	807.2473	647.1529
Khamanasahi	252.5788	562.6648	308.2244	173.3769	354.8038
Kathachira	189.7083	179.7565	144.7793	168.6676	165.9508
Dimirijholli	--	--	--	--	--

Annexure-XX

Working of Bamboo coupes of Ghumsur North Division in Rebecca Nayar's Plan period

Year	Name of the felling series	No. of coupes offered	Name of coupes offered	No. of coupes taken delivery	Name of coupes taken delivery	No. of coupes worked	Name of coupes worked	Outturn of Commercial bamboo in SU	Outturn of IB/SU
1995-96	Gunduribadi	17 Nos.	Gunduribadi A	17 Nos.	Gunduribadi A	14 Nos.	Gunduribadi A	7.59	1392.8512
	Ambajhara		Ambajhara A		Ambajhara A		Ambajhara A	6.14	1528.8660
	Lembhei		Lembhei A		Lembhei A		Lembhei A	0	292.0942
	Tarasing		Tarasing A		Tarasing A		Tarasing A	0	338.0798
	Nabagochha		Nabagochha A		Nabagochha A		Nabagochha A	0	190.9862
	Banta		Banta A		Banta A		Banta A	0	200.9078
	Ragada		Ragada A		Ragada A		-	0	0
	Kaliamba		Kaliamba A		Kaliamba A		Kaliamba A	0	245.7564
	Birikote		Birikote A		Birikote A		Birikote A	0	709.6075
	Rambha		Rambha A		Rambha A		Rambha A	0	146.1175
	Baiballi		Baiballi A		Baiballi A		Baiballi A	0	525.7656
	Bapangi		Bapangi A		Bapangi A		-	0	0
	Durgaprasad		Durgaprasad A		Durgaprasad A		Durgaprasad A	0	50.1917
	Gopadar		Gopadar A		Gopadar A		Gopadar A	0	875.4274
	Khamanasahi		Khamanasahi A		Khamanasahi A		Khamanasahi A	0	323.9722
	Kathachira		Kathachira A		Kathachira A		Kathachira A	0	122.4612
	Dimirijholli		Dimirijholli A		Dimirijholli A		-	0	0
							TOTAL	**13.73**	**6943.0847**
1996-97	Gunduribadi	17 Nos.	Gunduribadi B	17 Nos.	Gunduribadi B	15 Nos.	Gunduribadi B	54.4485	2427.5881
	Ambajhara		Ambajhara B		Ambajhara B		Ambajhara B	0	772.8905
	Lembhei		Lembhei B		Lembhei B		Lembhei B	0	393.4035
	Tarasing		Tarasing B		Tarasing B		Tarasing B	0	559.3039
	Nabagochha		Nabagochha B		Nabagochha B		Nabagochha B	4.1285	774.8728
	Banta		Banta B		Banta B		Banta B	11.3828	435.666
	Ragada		Ragada B		Ragada B		Ragada B	73.6771	764.7902
	Kaliamba		Kaliamba B		Kaliamba B		Kaliamba B	0	1113.3854
	Birikote		Birikote B		Birikote B		Birikote B	26.7571	683.5858
	Rambha		Rambha B		Rambha B		Rambha B	0	271.4057
	Baiballi		Baiballi B		Baiballi B		Baiballi B	0	0
	Bapangi		Bapangi B		Bapangi B		Bapangi B	0	473.2091
	Durgaprasad		Durgaprasad B		Durgaprasad B		Durgaprasad B	0	78.6384
	Gopadar		Gopadar B		Gopadar B		Gopadar B	12.8771	861.672
	Khamanasahi		Khamanasahi B		Khamanasahi B		Khamanasahi B	0	261.5847
	Kathachira		Kathachira B		Kathachira B		Kathachira B	0	125.6605
	Dimirijholli		Dimirijholli B		Dimirijholli B		-	0	0
							TOTAL	**183.2711**	**9997.6566**
1997-98	Gunduribadi	17 Nos.	Gunduribadi C	17 Nos.	Gunduribadi C	16 Nos.	Gunduribadi C	31.30	680.869
	Ambajhara		Ambajhara C		Ambajhara C		Ambajhara C	48.8885	2103.3241
	Lembhei		Lembhei C		Lembhei C		Lembhei C	0	226.7886
	Tarasing		Tarasing C		Tarasing C		Tarasing C	0	233.0776
	Nabagochha		Nabagochha C		Nabagochha C		Nabagochha C	0	294.2677
	Banta		Banta C		Banta C		Banta C	0	581.049
	Ragada		Ragada C		Ragada C		Ragada C	0	160.3358
	Kaliamba		Kaliamba C		Kaliamba C		Kaliamba C	31.94	1025.0467
	Birikote		Birikote C		Birikote C		Birikote C	30.5571	710.3118
	Rambha		Rambha C		Rambha C		Rambha C	0	254.7623
	Baiballi		Baiballi C		Baiballi C		Baiballi C	0	130.3596
	Bapangi		Bapangi C		Bapangi C		Bapangi C	0	204.6209

	Durgaprasad		Durgaprasad C		Durgaprasad C		Durgaprasad C	0	180.5413
	Gopadar		Gopadar C		Gopadar C		Gopadar C	12.4428	729.6821
	Khamanasahi		Khamanasahi C		Khamanasahi C		Khamanasahi C	0	316.687
	Kathachira		Kathachira C		Kathachira C		Kathachira C	0	101.0878
	Dimirijholli		Dimirijholli C		Dimirijholli C		-	0	0
							TOTAL	**155.1284**	**7932.8113**
1998-99	Gunduribadi	17 Nos.	Gunduribadi D	17 Nos.	Gunduribadi D	15 Nos.	Gunduribadi D	0	224.6855
	Ambajhara		Ambajhara D		Ambajhara D		Ambajhara D	12.8571	170.1166
	Lembhei		Lembhei D		Lembhei D		Lembhei D	0	129.6050
	Tarasing		Tarasing D		Tarasing D		Tarasing D	0	75.2675
	Nabagochha		Nabagochha D		Nabagochha D		Nabagochha D	0	120.7500
	Banta		Banta D		Banta D		Banta D	0	93.5812
	Ragada		Ragada D		Ragada D		Ragada D	0	164.7231
	Kaliamba		Kaliamba D		Kaliamba D		-	0	0
	Birikote		Birikote D		Birikote D		Birikote D	0	135.2299
	Rambha		Rambha D		Rambha D		Rambha D	0	65.6075
	Baiballi		Baiballi D		Baiballi D		Baiballi D	0	41.8197
	Bapangi		Bapangi D		Bapangi D		Bapangi D	0	168.9695
	Durgaprasad		Durgaprasad D		Durgaprasad D		Durgaprasad D	0	36.2250
	Gopadar		Gopadar D		Gopadar D		Gopadar D	0	198.3922
	Khamanasahi		Khamanasahi D		Khamanasahi D		Khamanasahi D	0	145.2723
	Kathachira		Kathachira D		Kathachira D		Kathachira D	0	17.1062
	Dimirijholli		Dimirijholli D		Dimirijholli D		-	0	0
							TOTAL	**12.8571**	**1787.3512**
1999-2000	Gunduribadi	17 Nos.	Gunduribadi A	17 Nos.	Gunduribadi A	15 Nos.	Gunduribadi A	76.1371	1221.2856
	Ambajhara		Ambajhara A		Ambajhara A		Ambajhara A	30.0628	560.5315
	Lembhei		Lembhei A		Lembhei A		Lembhei A	0	33.4578
	Tarasing		Tarasing A		Tarasing A		Tarasing A	0	220.8215
	Nabagochha		Nabagochha A		Nabagochha A		Nabagochha A	0	115.2055
	Banta		Banta A		Banta A		Banta A	0	119.9349
	Ragada		Ragada A		Ragada A		Ragada A	0	234.6373
	Kaliamba		Kaliamba A		Kaliamba A		Kaliamba A	0	155.1235
	Birikote		Birikote A		Birikote A		Birikote A	7.12	296.9343
	Rambha		Rambha A		Rambha A		Rambha A	0	20.2658
	Baiballi		Baiballi A		Baiballi A		Baiballi A	8.64	165.7193
	Bapangi		Bapangi A		Bapangi A		-	0	0
	Durgaprasad		Durgaprasad A		Durgaprasad A		Durgaprasad A	0	9.5392
	Gopadar		Gopadar A		Gopadar A		Gopadar A	0	586.3418
	Khamanasahi		Khamanasahi A		Khamanasahi A		Khamanasahi A	0	167.7620
	Kathachira		Kathachira A		Kathachira A		Kathachira A	0	99.4879
	Dimirijholli		Dimirijholli A		Dimirijholli A		-	0	0
							TOTAL	**121.9599**	**4007.0479**
								2000-2001, 2001-2002 & 2002-2003 not worked	
2003-04	Gunduribadi	17 Nos.	Gunduribadi A	17 Nos.	Gunduribadi A	06 Nos.	Gunduribadi A	22.8571	765.1525
	Ambajhara		Ambajhara A		Ambajhara A		Ambajhara A	32.8571	636.57
	Lembhei		Lembhei A		Lembhei A		-	0	0
	Tarasing		Tarasing A		Tarasing A		-	0	0
	Nabagochha		Nabagochha A		Nabagochha A		-	0	0
	Banta		Banta A		Banta A		-	0	0
	Ragada		Ragada A		Ragada A		Ragada A	0	103.7443
	Kaliamba		Kaliamba A		Kaliamba A		Kaliamba A	0	174.6346
	Birikote		Birikote A		Birikote A		Birikote A	0	76.5957
	Rambha		Rambha A		Rambha A		-	0	0
	Baiballi		Baiballi A		Baiballi A		-	0	0

	Bapangi		Bapangi A		Bapangi A		-	0	0
	Durgaprasad		Durgaprasad A		Durgaprasad A		-	0	0
	Gopadar		Gopadar A		Gopadar A		Gopadar A	21.4285	251.5625
	Khamanasahi		Khamanasahi A		Khamanasahi A		-	0	0
	Kathachira		Kathachira A		Kathachira A		-	0	0
	Dimirijholli		Dimirijholli A		Dimirijholli A		-	0	0
							TOTAL	**77.1427**	**2008.2596**
2004-05	Gunduribadi	17 Nos.	Gunduribadi B	17 Nos.	Gunduribadi B	14 Nos.	Gunduribadi B	62.4485	2468.1300
	Ambajhara		Ambajhara B		Ambajhara B		Ambajhara B	0	430.0611
	Lembhei		Lembhei B		Lembhei B		Lembhei B	0	187.0316
	Tarasing		Tarasing B		Tarasing B		Tarasing B	0	46.8308
	Nabagochha		Nabagochha B		Nabagochha B		Nabagochha B	0	253.4508
	Banta		Banta B		Banta B		Banta B	0	190.1007
	Ragada		Ragada B		Ragada B		Ragada B	7.8685	995.2281
	Kaliamba		Kaliamba B		Kaliamba B		Kaliamba B	5.777	1106.0934
	Birikote		Birikote B		Birikote B		Birikote B	0	604.7361
	Rambha		Rambha B		Rambha B		Rambha B	0	23.4053
	Baiballi		Baiballi B		Baiballi B		-	0	0
	Bapangi		Bapangi B		Bapangi B		-	0	0
	Durgaprasad		Durgaprasad B		Durgaprasad B		Durgaprasad B	0	51.0168
	Gopadar		Gopadar B		Gopadar B		Gopadar B	0	642.6415
	Khamanasahi		Khamanasahi B		Khamanasahi B		Khamanasahi B	0	206.4020
	Kathachira		Kathachira B		Kathachira B		Kathachira B	0	61.1498
	Dimirijholli		Dimirijholli B		Dimirijholli B		-	0	0
							TOTAL	**76.0940**	**7266.278**
2005-06	Gunduribadi	17 Nos.	Gunduribadi C	17 Nos.	Gunduribadi C	15 Nos.	Gunduribadi C	0	1669.53
	Ambajhara		Ambajhara C		Ambajhara C		Ambajhara C	13.4285	2628.21
	Lembhei		Lembhei C		Lembhei C		Lembhei C	0	303.92
	Tarasing		Tarasing C		Tarasing C		Tarasing C	0	93.43
	Nabagochha		Nabagochha C		Nabagochha C		Nabagochha C	0	328.02
	Banta		Banta C		Banta C		Banta C	0	355.39
	Ragada		Ragada C		Ragada C		Ragada C	4.4000	301.89
	Kaliamba		Kaliamba C		Kaliamba C		-	0	1808.02
	Birikote		Birikote C		Birikote C		Birikote C	0	655.98
	Rambha		Rambha C		Rambha C		Rambha C	0	65.06
	Baiballi		Baiballi C		Baiballi C		Baiballi C	0	233.43
	Bapangi		Bapangi C		Bapangi C		Bapangi C	0	198.34
	Durgaprasad		Durgaprasad C		Durgaprasad C		Durgaprasad C	0	100.85
	Gopadar		Gopadar C		Gopadar C		Gopadar C	0	868.30
	Khamanasahi		Khamanasahi C		Khamanasahi C		Khamanasahi C	0	443.45
	Kathachira		Kathachira C		Kathachira C		Kathachira C	0	98.93
	Dimirijholli		Dimirijholli C		Dimirijholli C		-	0	0
							TOTAL	**17.8285**	**10152.75**
2006-07	Gunduribadi	17 Nos.	Gunduribadi D	17 Nos.	Gunduribadi D	15 Nos.	Gunduribadi D	0	322.00
	Ambajhara		Ambajhara D		Ambajhara D		Ambajhara D	14.857	1043.62
	Lembhei		Lembhei D		Lembhei D		Lembhei D	0	221.74
	Tarasing		Tarasing D		Tarasing D		Tarasing D	0	282.36
	Nabagochha		Nabagochha D		Nabagochha D		Nabagochha D	8.571	1475.05
	Banta		Banta D		Banta D		Banta D	0	244.26
	Ragada		Ragada D		Ragada D		Ragada D	8.571	1224.12
	Kaliamba		Kaliamba D		Kaliamba D		Kaliamba D	0	114.59
	Birikote		Birikote D		Birikote D		Birikote D	0	451.70
	Rambha		Rambha D		Rambha D		Rambha D	0	132.57
	Baiballi		Baiballi D		Baiballi D		Baiballi D	0	189.92

	Bapangi		Bapangi D		Bapangi D		Bapangi D	0	444.58
	Durgaprasad		Durgaprasad D		Durgaprasad D		-	0	0
	Gopadar		Gopadar D		Gopadar D		Gopadar D	0	575.28
	Khamanasahi		Khamanasahi D		Khamanasahi D		Khamanasahi D	0	300.09
	Kathachira		Kathachira D		Kathachira D		Kathachira D	0	103.57
	Dimirijholli		Dimirijholli D		Dimirijholli D		-	0	0
							TOTAL	**31.999**	**7125.45**
2007-08	Gunduribadi	17 Nos.	Gunduribadi A	17 Nos.	Gunduribadi A	15 Nos.	Gunduribadi A	11.428	1020.00
	Ambajhara		Ambajhara A		Ambajhara A		Ambajhara A	5.714	1160.58
	Lembhei		Lembhei A		Lembhei A		Lembhei A	0	324.26
	Tarasing		Tarasing A		Tarasing A		Tarasing A	0	346.20
	Nabagochha		Nabagochha A		Nabagochha A		Nabagochha A	0	344.25
	Banta		Banta A		Banta A		Banta A	0	155.46
	Ragada		Ragada A		Ragada A		Ragada A	0	298.78
	Kaliamba		Kaliamba A		Kaliamba A		Kaliamba A	0	423.00
	Birikote		Birikote A		Birikote A		Birikote A	0	258.12
	Rambha		Rambha A		Rambha A		Rambha A	0	142.14
	Baiballi		Baiballi A		Baiballi A		Baiballi A	0	175.31
	Bapangi		Bapangi A		Bapangi A		Bapangi A	0	118.04
	Durgaprasad		Durgaprasad A		Durgaprasad A		-	0	0
	Gopadar		Gopadar A		Gopadar A		Gopadar A	0	660.01
	Khamanasahi		Khamanasahi A		Khamanasahi A		Khamanasahi A	0	60.73
	Kathachira		Kathachira A		Kathachira A		Kathachira A	0	66.40
	Dimirijholli		Dimirijholli A		Dimirijholli A		-	0	0
							TOTAL	**17.142**	**5553.28**
2008-09	Gunduribadi	17 Nos.	Gunduribadi B	17 Nos.	Gunduribadi B	15 Nos.	Gunduribadi B	20.000	1518.391
	Ambajhara		Ambajhara B		Ambajhara B		Ambajhara B	0	392.68
	Lembhei		Lembhei B		Lembhei B		Lembhei B	0	326.621
	Tarasing		Tarasing B		Tarasing B		Tarasing B	0	311.052
	Nabagochha		Nabagochha B		Nabagochha B		Nabagochha B	0	305.654
	Banta		Banta B		Banta B		Banta B	0	214.304
	Ragada		Ragada B		Ragada B		Ragada B	8.600	1120.157
	Kaliamba		Kaliamba B		Kaliamba B		Kaliamba B	5.714	1007.719
	Birikote		Birikote B		Birikote B		Birikote B	0	500.911
	Rambha		Rambha B		Rambha B		Rambha B	0	78.89
	Baiballi		Baiballi B		Baiballi B		Baiballi B	0	84.525
	Bapangi		Bapangi B		Bapangi B		Bapangi B	0	286.298
	Durgaprasad		Durgaprasad B		Durgaprasad B		-	0	0
	Gopadar		Gopadar B		Gopadar B		Gopadar B	0	585.637
	Khamanasahi		Khamanasahi B		Khamanasahi B		Khamanasahi B	0	202.205
	Kathachira		Kathachira B		Kathachira B		Kathachira B	0	50.513
	Dimirijholli		Dimirijholli B		Dimirijholli B		-	0	0
							TOTAL	**34.314**	**6985.557**
2009-10	Gunduribadi	17 Nos.	Gunduribadi C	17 Nos.	Gunduribadi C	11 Nos.	Gunduribadi C	15.234	1067.389
	Ambajhara		Ambajhara C		Ambajhara C		Ambajhara C	0	1074.443
	Lembhei		Lembhei C		Lembhei C		Lembhei C	0	70.437
	Tarasing		Tarasing C		Tarasing C		-	0	0
	Nabagochha		Nabagochha C		Nabagochha C		Nabagochha C	0	236.709
	Banta		Banta C		Banta C		Banta C	0	195.303
	Ragada		Ragada C		Ragada C		Ragada C	0	245.883
	Kaliamba		Kaliamba C		Kaliamba C		Kaliamba C	4.614	845.179
	Birikote		Birikote C		Birikote C		Birikote C	0	271.335
	Rambha		Rambha C		Rambha C		-	0	0
	Baiballi		Baiballi C		Baiballi C		-	0	0

	Bapangi		Bapangi C		Bapangi C		Bapangi C	0	86.034
	Durgaprasad		Durgaprasad C		Durgaprasad C		-	0	0
	Gopadar		Gopadar C		Gopadar C		Gopadar C	0	184.385
	Khamanasahi		Khamanasahi C		Khamanasahi C		Khamanasahi C	0	43.852
	Kathachira		Kathachira C		Kathachira C		-	0	0
	Dimirijholli		Dimirijholli C		Dimirijholli C		-	0	0
							TOTAL	**19.848**	**4320.949**
2010-11	Gunduribadi	17 Nos.	Gunduribadi D	17 Nos.	Gunduribadi D	14 Nos.	Gunduribadi D	0	409.479
	Ambajhara		Ambajhara D		Ambajhara D		Ambajhara D	14.285	1444.703
	Lembhei		Lembhei D		Lembhei D		Lembhei D	0	170.579
	Tarasing		Tarasing D		Tarasing D		Tarasing D	0	165.085
	Nabagochha		Nabagochha D		Nabagochha D		Nabagochha D	0	1044.031
	Banta		Banta D		Banta D		Banta D	0	171.306
	Ragada		Ragada D		Ragada D		Ragada D	5.300	2748.538
	Kaliamba		Kaliamba D		Kaliamba D		Kaliamba D	0	219.999
	Birikote		Birikote D		Birikote D		Birikote D	0	362.954
	Rambha		Rambha D		Rambha D		-	0	0
	Baiballi		Baiballi D		Baiballi D		Baiballi	0	222.270
	Bapangi		Bapangi D		Bapangi D		Bapangi	0	605.188
	Durgaprasad		Durgaprasad D		Durgaprasad D		-	0	0
	Gopadar		Gopadar D		Gopadar D		Gopadar D	0	645.445
	Khamanasahi		Khamanasahi D		Khamanasahi D		Khamanasahi D	0	148.935
	Kathachira		Kathachira D		Kathachira D		Kathachira D	0	33.608
	Dimirijholli		Dimirijholli D		Dimirijholli D		-	0	0
							TOTAL	**19.585**	**8392.12**
2011-12	Gunduribadi	17 Nos.	Gunduribadi A	17 Nos.	Gunduribadi A	13 Nos.	Gunduribadi A	10.614	901.207
	Ambajhara		Ambajhara A		Ambajhara A		Ambajhara A	0	895.562
	Lembhei		Lembhei A		Lembhei A		Lembhei A	0	159.430
	Tarasing		Tarasing A		Tarasing A		Tarasing A	0	251.562
	Nabagochha		Nabagochha A		Nabagochha A		Nabagochha A	0	400.869
	Banta		Banta A		Banta A		Banta A	0	153.664
	Ragada		Ragada A		Ragada A		Ragada A	0	531.293
	Kaliamba		Kaliamba A		Kaliamba A		Kaliamba A	0	463.750
	Birikote		Birikote A		Birikote A		Birikote A	5.028	126.042
	Rambha		Rambha A		Rambha A		-	0	0
	Baiballi		Baiballi A		Baiballi A		Baiballi A	0	195.232
	Bapangi		Bapangi A		Bapangi A		Bapangi A	0	98.572
	Durgaprasad		Durgaprasad A		Durgaprasad A		-	0	0
	Gopadar		Gopadar A		Gopadar A		Gopadar A	0	411.730
	Khamanasahi		Khamanasahi A		Khamanasahi A		Khamanasahi A	0	158.684
	Kathachira		Kathachira A		Kathachira A		-	0	0
	Dimirijholli		Dimirijholli A		Dimirijholli A		-	0	0
							TOTAL	**15.642**	**4747.597**
2012-13	Gunduribadi	17 Nos.	Gunduribadi B	17 Nos.	Gunduribadi B		Gunduribadi B	22.857	50.31
	Ambajhara		Ambajhara B		Ambajhara B		-	0	0
	Lembhei		Lembhei B		Lembhei B		-	0	0
	Tarasing		Tarasing B		Tarasing B		-	0	0
	Nabagochha		Nabagochha B		Nabagochha B		-	0	0
	Banta		Banta B		Banta B		-	0	0
	Ragada		Ragada B		Ragada B		Ragada B	37.142	5.23
	Kaliamba		Kaliamba B		Kaliamba B		Kaliamba B	5.714	4.70
	Birikote		Birikote B		Birikote B		-	0	0
	Rambha		Rambha B		Rambha B		-	0	0
	Baiballi		Baiballi B		Baiballi B		-	0	0

	Bapangi		Bapangi B		Bapangi B		-	0	0
	Durgaprasad		Durgaprasad B		Durgaprasad B		-	0	0
	Gopadar		Gopadar B		Gopadar B		-	0	0
	Khamanasahi		Khamanasahi B		Khamanasahi B		-	0	0
	Kathachira		Kathachira B		Kathachira B		-	0	0
	Dimirijholli		Dimirijholli B		Dimirijholli B		-	0	0
							TOTAL	**65.713**	**60.24**
2013-14	Gunduribadi	17 Nos.	Gunduribadi C	17 Nos.	Gunduribadi C	05 Nos.	Gunduribadi C	0	322.00
	Ambajhara		Ambajhara C		Ambajhara C		Ambajhara C	0	181.13
	Lembhei		Lembhei C		Lembhei C		-	0	0
	Tarasing		Tarasing C		Tarasing C		-	0	0
	Nabagochha		Nabagochha C		Nabagochha C		-	0	0
	Banta		Banta C		Banta C		-	0	0
	Ragada		Ragada C		Ragada C		Ragada C	5.911	61.69
	Kaliamba		Kaliamba C		Kaliamba C		Kaliamba C	0	105.48
	Birikote		Birikote C		Birikote C		Birikote C	0	86.05
	Rambha		Rambha C		Rambha C		-	0	0
	Baiballi		Baiballi C		Baiballi C		-	0	0
	Bapangi		Bapangi C		Bapangi C		-	0	0
	Durgaprasad		Durgaprasad C		Durgaprasad C		-	0	0
	Gopadar		Gopadar C		Gopadar C		-	0	0
	Khamanasahi		Khamanasahi C		Khamanasahi C		-	0	0
	Kathachira		Kathachira C		Kathachira C		-	0	0
	Dimirijholli		Dimirijholli C		Dimirijholli C		-	0	0
							TOTAL	**5.911**	**756.35**

Annexure-XXI

Block Wise Stand Table of SWC											
Range Name	**Block Name**	**Sl. No.**	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-180 cm**	**above 180**	**Total**
Mujagada	Gallery	1	Sal	243600	140840	104740	57880	36420	12100	1127	596707
		2	Bahada	600	600	200	60	0	0	0	1460
		3	Dhau	32440	18260	9040	4560	2120	160	20	66600
		4	Jamun	8360	6400	4200	1560	720	100	40	21380
		5	Kasi	1320	1020	1040	660	160	40	0	4240
		6	kendu	50960	17140	10080	2820	1460	260	20	82740
		7	Mahula	33600	23600	12540	3280	1780	240	40	75080
		8	Mundi	660	560	440	60	0	0	0	1720
		9	Piasal	1160	2400	1680	580	100	0	0	5920
		10	Sahaja	22440	16300	6220	2620	480	140	0	48200
		11	Misce	394680	232700	99520	28780	12760	1680	400	770520
		Total		***789820***	***459820***	***249700***	***102860***	***56000***	***14720***	***1647***	***1674567***
Mujagada	Darpangia	1	Sal	99740	99940	85860	47240	37200	13160	840	383980
		2	Bahada	540	800	560	360	80	0	0	2340
		3	Dhau	10020	11800	18680	14920	9740	1840	40	67040
		4	Jamun	3760	4420	2600	1060	380	0	0	12220
		5	Kasi	2380	3220	3460	1840	840	20	0	11760
		6	kendu	9300	8040	6180	2040	800	140	0	26500
		7	Mahula	10780	10440	7700	3860	1760	1040	240	35820
		8	Mundi	1380	620	860	440	140	20	0	3460
		9	Piasal	80	400	300	160	40	0	0	980
		10	Sahaja	25740	20260	17800	8180	3720	1200	20	76920
		11	Misce	181320	202100	148060	55980	27580	10840	740	626620
		Total		***345040***	***362040***	***292060***	***136080***	***82280***	***28260***	***1880***	***1247640***

Mujagada	Baibali	1	Sal	71100	61160	60420	36500	25860	12260	520	267820
		2	Bahada	0	0	40	0	0	0	0	40
		3	Dhau	15040	25080	14320	11940	8380	2580	40	77380
		4	Jamun	3960	4840	3440	2560	920	200	0	15920
		5	Kasi	1940	2200	3260	1000	580	40	80	9100
		6	kendu	6460	7820	6680	3680	1860	140	0	26640
		7	Mahula	10880	10260	10080	7800	3180	1040	20	43260
		8	Mundi	40	140	40	0	0	0	0	220
		9	Piasal	120	380	500	460	0	0	0	1460
		10	Sahaja	34060	27920	20180	8960	4900	1340	40	97400
		11	Misce	182600	172740	105180	43620	16960	5120	260	526480
		Total		***326200***	***312540***	***224140***	***116520***	***62640***	***22720***	***960***	***1065720***
Mujagada	Odinabadi	1	Sal	5620	5320	6600	3300	2820	420	0	24080
		2	Bahada	20	20	20	0	0	0	0	60
		3	Dhau	20	0	180	140	60	0	0	400
		4	Jamun	120	40	140	220	40	40	0	600
		5	Kasi	40	60	200	120	20	0	0	440
		6	Kendu	100	80	20	60	0	0	0	260
		7	Mahula	140	240	140	80	60	0	0	660
		8	Mundi	0	0	0	0	0	0		0
		9	Piasal	0	80	240	40	20	0	0	380
		10	Sahaja	1020	820	820	660	120	0	0	3440
		11	Misce	3740	5220	7680	4960	1480	40	20	23140
		Total		***10820***	***11880***	***16040***	***9580***	***4620***	***500***	***20***	***53460***
Mujagada	Rambha	1	Sal	181580	43140	44820	29720	18140	7460	1300	326160
		2	Bahada	60	380	360	120	20	0	0	940
		3	Dhau	15320	11340	11520	11740	7200	1000	20	58140
		4	Jamun	7320	2400	3320	1660	300	20	0	15020
		5	Kasi	2180	2340	2900	940	260	40	0	8660
		6	Kendu	0	0	0	0	0	0	0	0

		7	Mahula	41320	10800	10580	4340	1380	360	20	68800
		8	Mundi	1020	460	680	480	160	20	0	2820
		9	Piasal	1660	560	840	440	0	0	0	3500
		10	Sahaja	46340	10840	11340	4200	840	0	160	73720
		11	Misce	365480	142720	114680	43460	15400	2820	520	685080
		Total		***662280***	***224980***	***201040***	***97100***	***43700***	***11720***	***2020***	***1242840***
Gallery	Dimirijholi	1	Sal	35720	25780	14080	8700	6540	5280	1100	97200
		2	Bahada	0	0	0	0	0	0	0	0
		3	Dhau	140	560	740	0	20	0	0	1460
		4	Jamun	1160	880	600	100	20	20	0	2780
		5	Kasi	60	80	80	0	0	0	0	220
		6	Kendu	5800	2500	300	80	100	0	0	8780
		7	Mahula	24820	7500	6180	3860	1920	280	0	44560
		8	Mundi	0	0	0	0	0	0	0	0
		9	Piasal	6480	6560	6080	8240	3560	1180	180	87680
		10	Sahaja	23260	17660	9500	6260	3520	2600	160	62960
		11	Misce	29820	22260	8920	4280	1320	340	60	67000
		Total		***127260***	***83780***	***46480***	***31520***	***17000***	***9700***	***1500***	***372640***
Gallery	Ambazora	1	Sal	77500	35440	23980	42880	18040	7780	840	206460
		2	Bahada	900	140	420	440	20	0	0	1920
		3	Dhau	70420	10580	5500	17760	2880	660	180	107980
		4	Jamun	3320	1940	940	2580	140	0	0	8920
		5	Kasi	2720	2300	1940	3360	960	120	0	11400
		6	Kendu	17640	4400	2040	4300	240	60	20	28700
		7	Mahula	10180	3420	2600	9700	960	360	120	27340
		8	Mundi	460	300	120	840	180	0	0	1900
		9	Piasal	520	60	340	520	360	0	0	1800
		10	Sahaja	19840	6300	4620	12020	2800	560	180	46320
		11	Misce	306920	109660	64000	101080	19620	5080	1900	608260
		Total		***510420***	***174540***	***106500***	***195480***	***46200***	***14620***	***3240***	***1051000***

Gallery	Gallery	1	Sal	115780	94660	36420	20040	10340	6020	1680	284940
		2	Bahada	180	340	100	0	0	0	0	620
		3	Dhau	23200	20580	5200	1860	640	160	0	51640
		4	Jamun	8680	4180	2280	380	40	0	20	15580
		5	Kasi	2620	3780	620	1220	80	0	0	8320
		6	Kendu	25620	18820	7180	3540	160	0	20	55340
		7	Mahula	16300	14620	4320	300	300	20	40	35900
		8	Mundi	560	1100	140	0	0	0	0	1800
		9	Piasal	1620	1460	660	120	0	0	0	3860
		10	Sahaja	28220	22960	4440	640	80	0	0	56340
		11	Misce	184780	164520	47180	14660	5320	1320	80	417860
		Total		***407560***	***347020***	***108540***	***42760***	***16960***	***7520***	***1840***	***932200***
Gallery	Chandragiri	1	Sal	136600	110300	63800	41280	21620	10020	2780	426340
		2	Bahada	100	120	60	60	20	0	0	920
		3	Dhau	5740	5960	3300	2240	1620	220	0	22320
		4	Jamun	3480	4020	1380	420	140	40	0	21540
		5	Kasi	2400	1740	860	620	120	80	0	8920
		6	Kendu	10580	10260	2660	900	100	100	0	39660
		7	Mahula	13020	13720	5760	1680	280	20	20	36840
		8	Mundi	0	0	0	0	0	0	0	0
		9	Piasal	380	520	100	0	0	0	0	5060
		10	Sahaja	16520	14920	4260	2220	540	80	0	69340
		11	Misce	96200	98660	40160	11940	4700	1260	400	344440
		Total		***285020***	***260220***	***122340***	***61360***	***29140***	***11820***	***3200***	***975380***
Tarasingi	Brahmanasahi	1	Sal	32100	38820	40180	38000	19880	7960	460	177340
		2	Bahada	120	200	140	80	0	20	0	560
		3	Dhau	1500	2000	820	800	100	160	60	5400
		4	Jamun	800	680	520	260	60	0	0	2320
		5	Kasi	80	200	340	60	60	0	0	740
		6	Kendu	4060	4740	1380	400	120	0	0	10700

		7	Mahula	4580	5100	2480	500	120	20	0	12800
		8	Mundi	20	60	100	120	0	0	0	300
		9	Piasal	20	0	0	0	0	0	0	20
		10	Sahaja	3000	6240	4940	2480	740	80	0	17480
		11	Misce	24780	32380	13540	4960	1460	300	20	77420
		Total		***71060***	***90420***	***64440***	***47660***	***22540***	***8540***	***540***	***305080***
Tarasingi	Ghogodo	1	Sal	57860	50380	53960	42380	31840	15620	4140	256180
		2	Bahada	0	300	320	20	20	0	0	660
		3	Dhau	24820	7500	6180	3860	1920	280	0	44560
		4	Jamun	1460	3040	4060	1320	540	160	0	10580
		5	Kasi	3060	8680	7300	3360	940	0	0	23340
		6	Kendu	14760	7860	4640	3040	980	400	60	31740
		7	Mahula	7400	11320	8480	3560	880	360	60	32060
		8	Mundi	0	1240	260	160	60	0	0	1720
		9	Piasal	600	1440	180	40	0	0	0	2260
		10	Sahaja	27580	25040	26280	17280	12020	3320	400	111920
		11	Misce	197140	122280	89460	37380	16360	5980	1220	469820
		Total		***334680***	***239080***	***201120***	***112400***	***65560***	***26120***	***5880***	***984840***
Tarasingi	Gunduribadi	1	Sal	30060	110740	41200	34680	19560	11580	3260	251080
		2	Bahada	0	700	380	80	0	60	0	1220
		3	Dhau	1140	7880	3740	1620	720	40	0	15140
		4	Jamun	80	620	1380	540	0	0	0	2620
		5	Kasi	180	3500	1060	340	120	40	20	5260
		6	Kendu	4760	17260	4440	2120	140	160	0	28880
		7	Mahula	1860	7960	4120	2240	560	160	0	16900
		8	Mundi	0	300	60	140	20	0	0	520
		9	Piasal	20	60	60	0	0	0	0	140
		10	Sahaja	7520	44080	10600	6960	3440	360	0	72960
		11	Misce	43340	189300	53640	24200	6940	3100	260	320780
		Total		***88960***	***382400***	***120680***	***72920***	***31500***	***15500***	***3540***	***715500***

Tarasingi	Ambazora	1	Sal	44920	69000	54100	52420	28320	15460	4740	362480
		2	Bahada	800	620	340	60	20	0	20	1860
		3	Dhau	3360	6640	5800	2900	600	100	0	19400
		4	Jamun	3820	6900	4940	2260	460	60	120	18560
		5	Kasi	3760	4260	4140	4880	2600	1060	180	76280
		6	Kendu	17300	16980	8180	3960	1520	60	60	54180
		7	Mahula	5820	10440	9840	4500	2040	180	60	33440
		8	Mundi	180	940	980	400	340	20	20	2880
		9	Piasal	800	940	400	500	20	60	0	2720
		10	Sahaja	15720	23580	19280	15600	10100	5140	2020	140580
		11	Misce	172680	222280	133640	64580	27980	10920	1340	1109120
		Total		***269160***	***362580***	***241640***	***152060***	***74000***	***33060***	***8560***	***1821500***
Tarasingi	Chandragiri	1	Sal	36880	39560	33400	25800	68120	11240	760	215760
		2	Bahada	20	100	20	20	0	0	0	160
		3	Dhau	5760	7560	4340	2740	4520	440	0	25360
		4	Jamun	1900	4600	1780	860	140	160	20	9460
		5	Kasi	760	880	820	940	940	40	0	4380
		6	Kendu	5140	6680	3260	1060	980	380	20	17520
		7	Mahula	5260	6640	2740	1500	2360	540	180	19220
		8	Mundi	0	40	60	0	200	40	0	340
		9	Piasal	40	40	20	0	0	0	0	100
		10	Sahaja	7220	9780	5360	2080	2980	400	60	27880
		11	Misce	53000	82980	40980	19860	16960	2260	180	216220
		Total		***115980***	***158860***	***92780***	***54860***	***97200***	***15500***	***1220***	***536400***

Annexure-XXII

Range Wise Stand Table of SWC									
Sl.No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-180 cm**	**above 180**	**Total**
Mujagada Range									
1	Sal	601640	350400	302440	174640	120440	45400	3787	1598747
2	Bahada	1220	1800	1180	540	100	0	0	4840
3	Dhau	72840	66480	53740	43300	27500	120	120	269560
4	Jamun	23520	18100	13700	7060	2360	360	40	65140
5	Kasi	7860	8840	10860	4560	1860	140	80	34200
6	kendu	66820	33080	22960	8600	4120	540	20	136140
7	Mahula	96720	55340	41040	19360	8160	2680	320	223620
8	Mundi	3100	1780	2020	980	300	40	0	8220
9	Piasal	3020	3820	3560	1680	160	0	0	12240
10	Sahaja	129600	76140	56360	24620	10060	2680	220	299680
11	Misce	1127820	755480	475120	176800	74180	20500	1940	2631840
Total		***2134160***	***1371260***	***982980***	***462140***	***249240***	***72460***	***6527***	***5284227***
Sl.No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-180 cm**	**above 180**	**Total**
Gallery Range									
1	Sal	365600	266180	138280	112900	56540	29100	6400	1014940
2	Bahada	1180	600	580	500	40	0	0	3460
3	Dhau	99500	37680	14740	21860	5160	1040	180	183400
4	Jamun	16640	11020	5200	3480	340	60	20	48820
5	Kasi	7800	7900	3500	5200	1160	200	0	28860
6	kendu	59640	35980	12180	8820	600	160	40	132480
7	Mahula	64320	39260	18860	15540	3460	680	180	144640
8	Mundi	1020	1400	260	840	180	0	0	3700

9	Piasal	9000	8600	7180	8880	3920	1180	180	98400
10	Sahaja	87840	61840	22820	21140	6940	3240	340	234960
11	Misce	617720	395100	160260	131960	30960	8000	2440	1437560
Total		***1330260***	***865560***	***383860***	***331120***	***109300***	***43660***	***9780***	***3331220***
Sl.No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-180 cm**	**above 180**	**Total**
Tarasingi Range									
1	Sal	201820	308500	222840	193280	167720	61860	13360	1262840
2	Bahada	940	1920	1200	260	40	80	20	4460
3	Dhau	36580	31580	20880	11920	7860	1020	60	109860
4	Jamun	8060	15840	12680	5240	1200	380	140	43540
5	Kasi	7840	17520	13660	9580	4660	1140	200	110000
6	Kendu	46020	53520	21900	10580	3740	1000	140	143020
7	Mahula	24920	41460	27660	12300	5960	1260	300	114420
8	Mundi	200	2580	1460	820	620	60	20	5760
9	Piasal	1480	2480	660	540	20	60	0	5240
10	Sahaja	61040	108720	66460	44400	29280	9300	2480	370820
11	Misce	490940	649220	331260	150980	69700	22560	3020	2193360
Total		***879840***	***1233340***	***720660***	***439900***	***290800***	***98720***	***19740***	***4363320***

Annexure-XXIII

Divisions Stand Table of SWC									
Sl. No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-179 cm**	**above180 cm**	**Total**
1	Sal	1169060	925080	663560	480820	344700	136360	23547	3743127
2	Bahada	3340	4320	2960	1300	180	80	20	12200
3	Dhau	208920	135740	89360	77080	40520	7640	360	559620
4	Jamun	48220	44960	31580	15780	3900	800	200	145440
5	Kasi	23500	34260	28020	19340	7680	1480	280	114560
6	kendu	172480	122580	57040	28000	8460	1700	200	390460
7	Mahula	185960	136060	87560	47200	17580	4620	800	479780
8	Mundi	4320	5760	3740	2640	1100	100	20	17680
9	Piasal	13500	14900	11400	11100	4100	1240	180	56420
10	Sahaja	278480	246700	145640	90160	46280	15220	3040	825520
11	Misce	2236480	1799800	966640	459740	174840	51060	7400	5695960
Total		***4344260***	***3470160***	***2087500***	***1233160***	***649340***	***220300***	***36047***	***12040767***

Annexure-XXIV

Range wise Stand Table of RWC									
Range Name	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-179 cm**	**above180 cm**	**Total**
Mujagada	Bahada	1300	500	200	78	16	4	2	2100
	Dhau	29200	38700	1000	78	16	4	2	69000
	Jamu	4400	3000	1000	234	48	12	6	8700
	Kasi	2800	2100	1300	546	112	28	14	6900
	Kendu	50100	8700	1400	546	112	28	14	60900
	Mahula	12600	6900	1800	780	160	40	20	22300
	Misc.	362600	169800	33000	9360	1920	480	240	577400
	Mundi	300	300	100	234	48	12	6	1000
	Piasal	3400	4900	900	78	16	4	2	9300
	Sahaja	40500	10000	3800	624	128	32	16	55100
	Sal	140600	244900	48100	16770	3440	860	430	455100
	Total	***647800***	***489800***	***92600***	***29328***	***6016***	***1504***	***752***	***1267800***
Gallery	Bahada	200	0	200	0	0	0	0	400
	Dhau	2300	1000	200	0	0	0	0	3500
	Jamu	300	500	100	0	0	0	0	900
	Kasi	200	100	0	0	0	0	0	300
	Kendu	8000	1600	100	78	16	4	2	9800
	Mahula	3800	2000	200	0	0	0	0	6000
	Misc.	44400	21000	6600	3042	624	156	78	75900
	Mundi	300	100	0	0	0	0	0	400
	Piasal	600	700	100	78	16	4	2	1500
	Sahaja	14100	10900	2000	234	48	12	6	27300
	Sal	13600	12000	4000	1872	384	96	48	32000
	Total	***87800***	***49900***	***13500***	***5304***	***1088***	***272***	***136***	***158000***

Central	Bahada	7600	3800	600	78	16	4	2	12100
	Dhau	58600	24900	7600	3900	800	200	100	96100
	Jamu	13000	29200	1400	78	16	4	2	43700
	Kasi	105400	23600	4500	1170	240	60	30	135000
	Kendu	7300	6000	1500	156	32	8	4	15000
	Mahula	44600	21800	5200	1248	256	64	32	73200
	Misc.	532200	439600	103300	24102	4944	1236	618	1106000
	Mundi	1900	900	400	702	144	36	18	4100
	Piasal	3300	3700	1700	0	0	0	0	8700
	Sahaja	92400	31400	9600	3978	816	204	102	138500
	Sal	284700	467300	66000	3666	752	188	94	822700
	Total	***1151000***	***1052200***	***201800***	***39078***	***8016***	***2004***	***1002***	***2455100***
Tarasingi	Bahada	200	200	100	0	0	0	0	500
	Dhau	6300	5800	1200	1248	256	64	32	14900
	Jamu	700	2900	2000	1248	256	64	32	7200
	Kasi	2000	2900	500	1716	352	88	44	7600
	Kendu	22700	8000	1300	936	192	48	24	33200
	Mahula	5400	3100	800	468	96	24	12	9900
	Misc.	101500	103500	50600	21606	4432	1108	554	283300
	Mundi		0	0	0	0	0	0	0
	Piasal	100	900	1000	156	32	8	4	2200
	Sahaja	13200	8300	2600	1794	368	92	46	26400
	Sal	94600	76900	47900	49920	10240	2560	1280	283400
	Total	***246700***	***212500***	***108000***	***79092***	***16224***	***4056***	***2028***	***668600***
J.Prasad	Bahada	1300	1100	700	78	16	4	2	3200
	Dhau	33200	35100	8500	3588	736	184	92	81400
	Jamu	2600	4900	2700	468	96	24	12	10800
	Kasi	3400	2100	3100	624	128	32	16	9400
	Kendu	36700	20200	5600	624	128	32	16	63300
	Mahula	6900	9900	3100	546	112	28	14	20600
	Misc.	273900	323200	148400	30966	6352	1588	794	785200

	Mundi	600	100	300	0	0	0	0	1000
	Piasal	3000	3700	1400	0	0	0	0	8100
	Sahaja	33200	22600	14800	3900	800	200	100	75600
	Sal	76400	96500	51100	15132	3104	776	388	243400
	Total	***471200***	***519400***	***239700***	***55926***	***11472***	***2868***	***1434***	***1302000***

Annexure-XXV

Divisions Stand Table of RWC									
Sl.No.	**Species**	**Under 30**	**30-60**	**60-90**	**90-120**	**120-150**	**150-180**	**Above 180**	**Total**
1	Bahada	10600	5600	1800	234	48	12	6	18300
2	Dhau	129600	105500	18500	8814	1808	452	226	264900
3	Jamu	21000	40500	7200	2028	416	104	52	71300
4	Kasi	113800	30800	9400	4056	832	208	104	159200
5	Kendu	124800	44500	9900	2340	480	120	60	182200
6	Mahula	73300	43700	11100	3042	624	156	78	132000
7	Misc.	1314600	1057100	341900	89076	18272	4568	2284	2827800
8	Mundi	3100	1400	800	936	192	48	24	6500
9	Piasal	10400	13900	5100	312	64	16	8	29800
10	Sahaja	193400	83200	32800	10530	2160	540	270	322900
11	Sal	609900	897600	217100	87360	17920	4480	2240	1836600
Total		***2604500***	***2323800***	***655600***	***208728***	***42816***	***10704***	***5352***	***5851500***

Annexure-XXVI

Compartment wise Stand Table of Protection Working Circle											
Range	**Block**	**Compt.**	**Species**	**Under 30**	**30-60**	**60-90**	**90-120**	**120-150**	**150-180**	**180 & above**	**Total**
Mujagada	Gallery	1	Sal	200	600	200	100	0	0	0	1100
			Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			kendu	200	200	100	0	0	0	0	500
			Mahula	0	200	0	0	0	0	0	200
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	100	200	300	0	100	0	0	700
			Misce	700	1600	700	0	0	0	0	300
			Total	***1200***	***2800***	***1300***	***100***	***100***	***0***	***0***	***2800***
Mujagada	Gallery	2	Sal	2200	2700	1800	1200	200	0	0	8100
			Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			kendu	400	200	300	100	0	0	0	100
			Mahula	0	0	0	0	0	0	0	0
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0

			Sahaja	400	700	900	100	0	0	0	2100
			Misce	200	3100	2800	800	100	0	0	8800
			Total	***3200***	***6700***	***5800***	***2200***	***300***	***0***	***0***	***19100***
Mujagada	Gallery	4	Sal	1200	900	400	600	100	0	0	3200
			Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	200	300	0	0	0	0	0	500
			Misce	1400	2200	2500	1300	100	0	0	7500
			Total	***2800***	***3400***	***2900***	***1900***	***200***	***0***	***0***	***11200***
Mujagada	Gallery	5	Sal	1300	1600	1100	700	200	0	0	4900
			Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			kendu	200	400	200	0	0	0	0	800
			Mahula	0	0	0	0	0	0	0	0
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	0	200	400	300	300	0	0	1200
			Misce	1700	3800	3100	100	100	0	0	9700

			Total	***3200***	***6000***	***4800***	***1100***	***600***	***0***	***0***	***16600***
Mujagada	Gallery	10	Sal	1200	1400	900	400	100	0	0	400
			Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			kendu	0	0	0	0	0	0	0	0
			Mahula	0	200	100	0	0	0	0	300
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	300	500	700	200	0	0	0	1700
			Misce	1600	2600	1700	300	100	0	0	6300
			Total	***3100***	***4700***	***3400***	***900***	***200***	***0***	***0***	***8700***
Mujagada	Gallery	12	Sal	400	700	300	300	200	0	0	1900
			Bahada	0	0	0	0	0	0	0	0
			Dhau	0	100	300	200	100	0	0	700
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	200	100	0	0	0	0	300
			Kendu	200	300	200	100	0	0	0	800
			Mahula	0	0	0	0	0	0	0	0
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	0	0	0	0	0	0	0	0
			Misce	100	1700	2400	1600	300	0	0	700
			Total	***700***	***3000***	***3300***	***2200***	***600***	***0***	***0***	***4400***
Mujagada	Gallery	13	Sal	200	500	100	100	0	0	0	900

			Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	200	100	300	0	0	0	0	600
			Mahula	100	200	0	0	0	0	0	300
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	0	0	0	0	0	0	0	0
			Misce	1200	1700	900	100	0	0	0	3900
			Total	***1700***	***2500***	***1300***	***200***	***0***	***0***	***0***	***5700***
Mujagada	Gallery	14	Sal	300	500	200	100	0	0	0	1100
			Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	100	200	0	0	0	0	0	300
			Mahula	0	0	0	0	0	0	0	0
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	0	0	0	0	0	0	0	0
			Misce	1200	900	600	100	0	0	0	2800
			Total	***1600***	***1600***	***800***	***200***	***0***	***0***	***0***	***4200***
Mujagada	Gallery	15	Sal	1100	700	400	200	0	0	0	2400
			Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0

			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			kendu	300	200	600	200	0	0	0	1300
			Mahula	0	0	0	0	0	0	0	0
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	0	300	500	600	200	0	0	1600
			Misce	1600	3100	3300	1500	400	0	0	9900
			Total	***3000***	***4300***	***4800***	***2500***	***600***	***0***	***0***	***15200***
Mujagada	Gallery	17	Sal	400	600	300	100	0	0	0	1400
			Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	200	300	100	0	0	0	0	600
			Mahula	0	0	0	0	0	0	0	0
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	0	200	300	100	0	0	0	600
			Misce	600	1300	1700	600	400	0	0	4600
			Total	***1200***	***2400***	***2400***	***800***	***400***	***0***	***0***	***7200***
Mujagada	Baibali	1	Bahada	500	200	200	0	0	0	0	900
			Dhau	1700	700	1200	300	700	600	0	5200
			Jamu	0	0	0	0	0	0	0	0
			Kasi	1400	300	200	500	0	0	0	2400
			Kendu	400	100	100	0	0	0	0	600

			Mahula	900	400	300	500	600	0	0	2700
			Misc.	8900	2800	3600	2300	700	700	0	18100
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	200	600	400	400	500	0	0	3900
			Sal	0	0	0	0	0	0	0	0
			Total	***14000***	***5100***	***6000***	***4000***	***2500***	***1300***	***0***	***33800***
Mujagada	Baibali	2	Bahada	400	0	400	200	100	0	0	1100
			Dhau	700	100	400	600	100	0	0	1900
			Jamu	0	100	200	0	0	0	0	300
			Kasi	700	200	300	300	0	0	0	1500
			kendu	0	0	0	0	0	0	0	0
			Mahula	600	300	500	500	300	0	0	2200
			Misc.	5600	2000	3600	1100	300	0	0	11700
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	1100	600	100	300	0	0	0	300
			Sal	1600	400	800	800	800	400	100	4900
			Total	***10700***	***3700***	***6300***	***3800***	***1600***	***400***	***100***	***23900***
Mujagada	Baibali	3	Bahada	0	0	0	0	0	0	0	0
			Dhau	300	0	200	100	100	0	0	700
			Jamu	200	0	0	200	100	0	0	500
			Kasi	0	0	0	0	0	0	0	0
			kendu	0	0	0	0	0	0	0	0
			Mahula	300	0	0	400	200	0	0	900
			Misc.	2200	100	800	900	300	100	0	3300

			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaj	400	0	0	200	100	0	0	600
			Sal	500	100	200	200	400	0	0	1400
			Total	***3900***	***200***	***1200***	***2000***	***1200***	***100***	***0***	***7400***
Mujagada	Baibali	5	Bahada	100	200	500	0	0	0	0	1700
			Dhau	0	0	0	0	0	0	0	0
			Jamun	0	0	0	0	0	0	0	0
			Kasi	100	100	0	0	0	0	0	1100
			kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	10100	2400	2100	2100	100	0	0	15900
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	0	0	0	0	0	0	0	0
			Sal	0	0	0	0	0	0	0	0
			Total	***10300***	***2700***	***2600***	***2100***	***100***	***0***	***0***	***18700***
Mujagada	Baibali	7	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			kendu	1200	1400	900	400	100	0	0	400
			Mahula	0	0	0	0	0	0	0	0
			Misce	1500	300	200	100	100	0	0	2200
			Mundi	1900	1300	500	500	0	0	0	4200
			Piasal	0	0	0	0	0	0	0	0

			Sahaja	0	0	0	0	0	0	0	0
			Sal	300	200	0	0	0	0	0	500
			Total	***4900***	***3200***	***1600***	***1000***	***200***	***0***	***0***	***7300***
Mujagada	Rambha	2	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	1700	2900	2900	1900	300	100	0	8900
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	200	600	500	400	100	0	0	1800
			Sal	200	600	900	1100	200	100	0	3100
			Total	***2100***	***4100***	***4300***	***3400***	***600***	***200***	***0***	***13800***
Mujagada	Rambha	3	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	900	2500	2000	1300	800	300	0	7800
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	200	400	300	200	100	0	0	1200
			Sal	900	700	800	600	200	0	0	3200

			Total	***2000***	***3600***	***3100***	***2100***	***1100***	***300***	***0***	***12200***
Mujagada	Rambha	4	Bahada	0	0	0	0	0	0	0	0
			Dhau	200	100	300	100	100	0	0	800
			Jamun	0	0	0	0	0	0	0	0
			Kasi	100	200	400	100	0	0	0	800
			Kendu	300	300	400	200	0	0	0	1200
			Mahula	100	0	200	100	0	0	0	400
			Misc.	2200	5200	5700	2800	400	100	0	16200
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	700	1200	1500	900	200	0	0	4500
			Sal	2300	3600	2500	1400	600	100	0	1500
			Total	***5900***	***10600***	***11000***	***5600***	***1300***	***200***	***0***	***25400***
Mujagada	Rambha	5	Bahada	0	0	0	0	0	0	0	0
			Dhau	200	500	300	300	200	200	0	1700
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	800	600	200	0	0	0	0	1600
			Mahula	200	100	0	0	0	0	0	300
			Misc.	3000	4200	3500	1000	200	0	0	11900
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	100	200	200	100	100	0	0	700
			Sal	100	300	200	100	0	0	0	1600
			Total	***4400***	***5900***	***4400***	***1500***	***500***	***200***	***0***	***17800***
Mujagada	Rambha	6	Bahada	0	0	0	0	0	0	0	0

			Dhau	0	300	100	200	300	100	0	100
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	200	100	0	0	0	0	300
			kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	1200	2900	1900	1200	100	0	0	6400
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	300	400	700	200	0	0	0	1600
			Sal	500	200	2200	600	500	0	0	5800
			Total	***2000***	***4000***	***5000***	***2200***	***900***	***100***	***0***	***14200***
Mujagada	Rambha	7	Bahada	0	0	0	0	0	0	0	0
			Dhau	300	800	100	100	200	0	0	3300
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	800	900	300	300	0	0	0	2300
			Mahula	600	800	300	100	0	0	0	1800
			Misc.	2900	5000	3200	1800	100	0	0	12100
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	300	600	800	100	0	0	0	1800
			Sal	3400	1700	2400	1600	400	100	0	9600
			Total	***8300***	***9800***	***7100***	***4000***	***700***	***100***	***0***	***30900***
Mujagada	Darpangia	1	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamun	0	0	0	0	0	0	0	0

			Kasi	0	0	0	0	0	0	0	0
			Kendu	300	400	400	100	0	0	0	1200
			Mahula	200	100	300	0	0	0	0	600
			Misc.	2000	2900	1900	1000	200	0	0	8000
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	100	300	400	300	100	0	0	1200
			Sal	800	1100	600	400	200	0	0	3100
			Total	***3400***	***4800***	***3600***	***1800***	***500***	***0***	***0***	***14100***
Mujagada	Darpangia	2	Bahada	0	0	0	0	0	0	0	0
			Dhau	400	300	200	200	500	100	0	1700
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	3100	4500	4000	2100	400	0	0	14100
			Mundi	200	100	300	200	0	0	0	800
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	0	0	0	0	0	0	0	0
			Sal	300	600	500	300	100	0	0	1800
			Total	***4000***	***5500***	***5000***	***2800***	***1000***	***100***	***0***	***18400***
Mujagada	Darpangia	3	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	200	800	0	0	0	1000
			Jamun	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	400	200	100	0	0	0	0	700

			Mahula	0	0	0	0	0	0	0	0
			Misc.	3600	3600	2500	1300	700	0	0	11700
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	0	100	400	0	0	0	0	500
			Sal	400	1200	700	200	100	0	0	2600
			Total	***4400***	***5100***	***3900***	***2300***	***800***	***0***	***0***	***16500***
Mujagada	Darpangia	6	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	300	500	500	100	0	0	1400
			Jamu	0	200	400	0	0	0	0	600
			Kasi	0	0	0	0	0	0	0	0
			Kendu	300	200	100	0	0	0	0	600
			Mahula	100	400	400	200	0	0	0	1100
			Misc.	4300	3900	3100	2900	100	100	0	14400
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	0	0	0	0	0	0	0	0
			Sal	1400	700	700	600	300	100	0	3800
			Total	***6100***	***5700***	***5200***	***4200***	***500***	***200***	***0***	***21900***
Mujagada	Darpangia	7	Bahada	0	0	0	0	0	0	0	0
			Dhau	200	400	800	300	200	0	0	1900
			Jamu	400	100	600	200	0	0	0	1300
			Kasi	0	0	0	0	0	0	0	0
			Kendu	500	900	400	100	0	0	0	1900
			Mahula	100	600	400	400	0	0	0	1500
			Misc.	3100	4500	3800	2400	1100	0	0	14900

			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	500	500	700	700	300	0	0	2700
			Sal	200	1800	1200	1900	700	300	0	6100
			Total	***5000***	***8800***	***7900***	***6000***	***2300***	***300***	***0***	***30300***
Mujagada	Darpangia	12	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	600	300	100	0	0	0	0	1000
			Mahula	300	300	0	0	0	0	0	600
			Misc.	3100	2400	2100	400	0	0	0	8000
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	300	400	200	0	0	0	0	900
			Sal	2300	1300	1600	900	400	0	0	6500
			Total	***6600***	***4700***	***4000***	***1300***	***400***	***0***	***0***	***17000***
Mujagada	Darpangia	8	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	400	200	100	0	0	0	0	700
			Mahula	0	0	0	0	0	0	0	0
			Misc.	600	1000	700	200	100	0	0	2600
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0

			Sahaja	100	300	200	100	0	0	0	700
			Sal	700	300	200	0	0	0	0	1200
			Total	***1800***	***1800***	***1200***	***300***	***100***	***0***	***0***	***5200***
Mujagada	Darpangia	9	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	300	500	200	200	0	0	1200
			Jamu	0	0	0	0	0	0	0	0
			Kasi	200	600	300	500	0	0	0	1600
			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	1400	2700	4100	1700	200	0	0	10100
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	300	200	0	0	0	0	0	500
			Sahaja	200	900	1800	1600	300	0	0	4800
			Sal	2100	2700	1600	1100	800	100	0	8400
			Total	***4200***	***7400***	***8300***	***5100***	***1500***	***100***	***0***	***26600***
Mujagada	Darpangia	10	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	200	100	100	0	0	0	0	400
			Mahula	0	0	0	0	0	0	0	0
			Misc.	1400	2200	800	0	0	0	0	4400
			Mundi	0	0	0	0	0	0	0	0
			P. Sal	300	100	0	0	0	0	0	400
			Sahaja	300	600	300	0	0	0	0	1200
			Sal	1800	2200	1400	800	0	0	0	6200

			Total	***4000***	***5200***	***2600***	***800***	***0***	***0***	***0***	***12600***
Mujagada	Darpangia	11	Bahada	0	0	0	0	0	0	0	0
			Dhau	500	100	200	100	0	0	0	900
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	900	500	200	100	0	0	0	1700
			Mahula	0	0	0	0	0	0	0	0
			Misc.	4700	2200	1700	600	0	0	0	9200
			Mundi	0	0	0	0	0	0	0	0
			P. Sal	0	0	0	0	0	0	0	0
			Sahaja	2300	1700	700	300	200	0	0	5200
			Sal	2500	1800	800	300	200	0	0	5600
			Total	***10900***	***6300***	***3600***	***1400***	***400***	***0***	***0***	***22600***
Mujagada	Darpangia	4	Bahada	0	0	0	0	0	0	0	0
			Dhau	1200	1200	300	200	0	0	0	2900
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	100	500	400	100	0	0	0	1100
			Mahula	0	0	0	0	0	0	0	0
			Misc.	10900	6900	2600	1200	200	0	0	21800
			Mundi	0	0	0	0	0	0	0	0
			P. Sal	0	0	0	0	0	0	0	0
			Sahaja	2500	1900	600	200	200	0	0	5400
			Sal	5100	2600	1600	900	300	0	0	10500
			Total	***19800***	***13100***	***5500***	***2600***	***700***	***0***	***0***	***41700***
Tarasingi	Ambazora	13	Bahada	0	0	0	0	0	0	0	0

			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	1400	1000	1200	1600	0	400	200	5800
			Kendu	0	0	0	0	0	0	0	0
			Mahula	2300	1000	1200	0	1100	400	100	6100
			Misc.	16000	11200	5800	7600	2200	1600	1100	45500
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	1700	1200	1300	1400	800	700	1200	8300
			Sal	1400	1000	2100	800	400	1100	1600	8400
			Total	***22800***	***15400***	***11600***	***11400***	***4500***	***4200***	***4200***	***74100***
Tarasingi	Ambazora	15	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	1800	1200	1000	1700	1100	0	700	7500
			Kendu	0	0	0	0	0	0	0	0
			Mahula	1100	2100	2800	1200	800	700	400	9100
			Misc.	10600	15900	9800	6900	4600	6000	4100	57900
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	2700	2000	1800	1200	800	600	800	9900
			Sal	900	2200	2700	500	1000	1800	1700	10800
			Total	***17100***	***23400***	***18100***	***11500***	***8300***	***9100***	***7700***	***95200***
Tarasingi	Ambazora	16	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	100	0	0	0	0	100

			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	1100	800	200	400	0	0	0	2500
			Mundi	200	0	300	0	100	0	0	600
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	300	0	100	0	0	0	0	400
			Sal	300	0	200	100	0	0	0	600
			Total	***1900***	***800***	***900***	***500***	***100***	***0***	***0***	***4200***
Tarasingi	Ambazora	19	Bahada	0	0	0	0	0	0	0	0
			Dhou	0	0	300	200	200	0	0	700
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	100	0	0	0	0	1000	1100
			kendu	0	500	500	500	200	100	0	1800
			Mahula	0	0	200	0	0	200	0	400
			Misc.	100	900	1500	1500	1100	1200	900	7200
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	200	0	0	0	0	0	200
			Sahaj	0	0	0	200	300	200	0	700
			Sal	700	300	300	300	400	300	500	2800
			Total	***800***	***2000***	***2800***	***2700***	***2200***	***2000***	***2400***	***14900***
Tarasingi	Chandragiri	4	Bahada	0	0	0	0	0	0	0	0
			Dhau	300	0	0	200	100	200	0	800
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	300	500	500	400	700	300	0	2700

			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	0	0	0	200	300	300	200	1000
			Sal	200	0	0	300	300	200	400	1400
			Total	***800***	***500***	***500***	***1100***	***1400***	***1000***	***600***	***5900***
Tarasingi	Chandragiri	5	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	200	300	400	600	0	0	0	1500
			Kasi	0	0	0	0	0	0	0	0
			Kendu	1100	800	1400	1000	200	0	0	4500
			Mahula	200	300	100	100	100	0	0	800
			Misc.	3100	2600	1900	3400	1200	100	0	12300
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	1100	1000	900	400	0	0	0	3400
			Sal	1300	900	800	700	400	300	0	4400
			Total	***7000***	***5900***	***5500***	***6200***	***1900***	***400***	***0***	***26900***
Tarasingi	Chandragiri	6	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	100	500	0	0	0	0	600
			Kasi	0	0	0	0	0	0	0	0
			Kendu	300	400	0	100	200	100	0	1100
			Mahula	100	0	300	0	0	0	0	400
			Misc.	400	1000	900	400	100	0	0	2800
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	0	0	300	0	0	0	0	300

			Sal	300	0	400	100	0	100	0	900
			Total	***1100***	***1500***	***2400***	***600***	***300***	***200***	***0***	***6100***
Tarasingi	Chandragiri	7	Bahada	0	0	0	0	0	0	0	0
			Dhou	0	0	200	0	0	0	0	200
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	1100	1100	700	200	0	0	0	3100
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	0	0	0	0	0	0	0	0
			Sal	300	0	400	0	100	0	0	800
			Total	***1400***	***1100***	***1300***	***200***	***100***	***0***	***0***	***4100***
Tarasingi	Chandragiri	8	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	0	0	0	0	0	0	0	0
			Sal	1000	800	200	200	200	0	0	2400
			Misc.	3600	2000	3600	600	0	0	0	9800
			Total	***4600***	***2800***	***3800***	***800***	***200***	***0***	***0***	***12200***
Tarasingi	Chandragiri	9	Bahada	0	0	0	0	0	0	0	0

			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	600	0	0	0	0	600
			Kasi	0	0	0	0	0	0	0	0
			Kendu	600	0	400	0	0	0	0	1000
			Mahula	800	0	600	600	0	0	0	2000
			Misc.	2600	1600	1100	1400	800	0	0	7500
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	800	0	0	200	0	0	0	1000
			Sal	2200	1400	2400	600	200	0	0	6800
			Total	***7000***	***3000***	***5100***	***2800***	***1000***	***0***	***0***	***18900***
Tarasingi	B.Sahi	3	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	400	400	800	500	0	400	100	2600
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaj	0	0	200	200	100	0	0	500
			Sal	300	0	300	200	400	300	200	1700
			Total	***700***	***400***	***1300***	***900***	***500***	***700***	***300***	***4800***
Tarasingi	B.Sahi	5	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0

			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	400	300	100	0	0	0	0	800
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaj	100	100	0	0	0	0	0	200
			Sal	0	0	0	0	100	0	0	100
			Total	***500***	***400***	***100***	***0***	***100***	***0***	***0***	***1100***
Tarasingi	B.Sahi	6	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	1400	600	1000	200	0	0	0	3200
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	300	0	200	100	0	0	0	600
			Sal	1200	500	1300	200	100	0	0	3300
			Total	***2900***	***1100***	***2500***	***500***	***100***	***0***	***0***	***7100***
Tarasingi	Ghogoda	1	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	200	0	500	0	0	0	0	700
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	0	0	0	0	0	0	0
			Mahula	400	300	300	0	0	0	0	1000
			Misc.	3800	1300	2200	1100	100	0	600	9100

			Mundi	300	900	100	0	0	0	0	1300
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	200	400	100	0	0	0	0	700
			Sal	1900	900	1400	1400	700	200	0	6500
			Total	***6800***	***3800***	***4600***	***2500***	***800***	***200***	***600***	***19300***
Tarasingi	Ghogoda	2	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	300	0	0	0	0	400	0	700
			Kasi	200	0	0	0	300	400	100	1000
			Kendu	200	200	0	0	0	0	0	400
			Mahula	200	0	0	300	200	0	0	700
			Misc.	100	0	500	700	900	300	0	2500
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	200	200	0	0	0	200	600
			Sahaja	200	0	400	200	300	0	0	1100
			Sal	300	700	300	200	400	0	700	2600
			Total	***1500***	***1100***	***1400***	***1400***	***2100***	***1100***	***1000***	***9600***
Tarasingi	Ghogoda	3	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	100	0	0	300	0	400
			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	1100	800	200	400	0	200	0	2700
			Mundi	200	0	300	0	100	100	0	700
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	300	0	100	0	200	100	100	800

			Sal	300	0	200	100	0	0	200	800
			Total	***1900***	***800***	***900***	***500***	***300***	***700***	***300***	***5400***
Tarasingi	Ghogoda	6	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			kendu	900	300	0	0	100	200	0	1500
			Mahula	0	0	0	0	0	0	0	0
			Misc.	2900	3900	1400	800	200	200	300	9700
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	0	0	0	0	0	0	0	0
			Sal	1700	1800	1100	700	800	200	100	6400
			Total	***5500***	***6000***	***2500***	***1500***	***1100***	***600***	***400***	***17600***
Tarasingi	Gunduribadi	1	Bahada	0	0	0	0	0	0	0	0
			Dhou	200	200	100	0	0	0	0	500
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	400	1100	300	200	200	100	2300
			Misc.	1600	2200	700	800	300	200	100	5900
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	100	300	500	200	100	0	0	1200
			Sal	700	2000	1500	200	100	100	300	4900
			Total	***2600***	***5100***	***3900***	***1500***	***700***	***500***	***500***	***14800***
Tarasingi	Gunduribadi	4	Bahada	200	100	0	0	200	200	0	700

			Dhou	300	200	300	100	0	0	0	900
			Jamu	0	0	0	0	0	0	0	0
			Kasi	400	0	0	300	200	0	0	900
			Kendu	0	300	200	0	0	0	0	500
			Mahula	0	200	400	0	500	0	100	1200
			Misc.	400	200	200	700	1300	400	100	3300
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	0	0	0	0	0	0	0	0
			Sal	200	800	1000	500	200	100	100	2900
			Total	***1500***	***1800***	***2100***	***1600***	***2400***	***700***	***300***	***10400***
Gallery	Gallery	22	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	200	100	0	0	0	0	300
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	200	200	0	0	0	0	400
			Misc.	500	1300	500	400	0	0	0	2700
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	0	100	100	200	0	0	0	400
			Sal	0	300	200	200	100	0	0	800
			Total	***500***	***2100***	***1100***	***800***	***100***	***0***	***0***	***4600***
Gallery	Gallery	16	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0

			Kendu	200	200	0	0	0	0	0	400
			Mahula	100	0	0	0	0	0	0	100
			Misc.	1100	300	0	0	0	0	0	1400
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	200	100	0	0	0	0	0	300
			Sal	300	200	100	0	0	0	0	600
			Total	***1900***	***800***	***100***	***0***	***0***	***0***	***0***	***2800***
Gallery	Gallery	19	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	100	0	0	0	0	100
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	100	0	200	0	0	0	300
			Mahula	0	200	0	0	0	0	0	200
			Misc.	0	400	300	200	0	0	0	900
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	0	100	200	0	0	0	0	300
			Sal	0	300	100	100	200	0	0	700
			Total	***0***	***1100***	***700***	***500***	***200***	***0***	***0***	***2500***
Gallery	Gallery	21	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	200	0	100	0	0	0	300
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	200	200	0	100	0	0	500
			Mahula	0	0	0	0	0	0	0	0
			Misc.	0	400	300	300	0	0	0	1000

			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	0	0	0	0	0	0	0	0
			Sal	0	300	300	100	100	0	0	800
			Total	***0***	***1100***	***800***	***500***	***200***	***0***	***0***	***2600***
Gallery	Gallery	20	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	100	0	0	0	0	100
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	100	700	300	100	0	0	0	1200
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	0	100	0	0	0	0	0	100
			Sal	100	200	300	100	100	0	0	800
			Total	***200***	***1000***	***700***	***200***	***100***	***0***	***0***	***2200***
Gallery	Gallery	23	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	100	200	100	0	0	0	400
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	200	700	400	200	0	0	0	1500
			Mundi	0	0	0	0	0	0	0	0
			Piasal	0	0	0	0	0	0	0	0
			Sahaja	0	100	100	200	0	0	0	400

			Sal	100	500	200	100	100	0	0	100
			Total	***300***	***1400***	***900***	***600***	***100***	***0***	***0***	***2400***
Gallery	Chandragiri	1	Bahada	0	0	0	0	0	0	0	0
			Dhau	500	100	100	100	100	0	0	900
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	200	0	0	0	0	0	0	200
			Mahula	100	0	0	0	0	0	0	100
			Misc.	2400	100	200	400	100	100	0	3300
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	100	0	200	0	0	0	0	300
			Sahaja	400	0	200	0	0	0	0	600
			Sal	500	100	0	0	0	0	0	600
			Total	***4200***	***300***	***700***	***500***	***200***	***100***	***0***	***6000***
Gallery	Chandragiri	2	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	0	0	0	0	0	0	0
			Mahula	300	200	200	0	0	0	0	700
			Misc.	1600	700	400	100	0	0	0	2800
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	200	0	0	100	0	0	0	300
			Sal	700	200	400	300	0	0	0	1600
			Total	***2800***	***1100***	***1000***	***500***	***0***	***0***	***0***	***5400***
Gallery	Chandragiri	3	Bahada	0	0	0	0	0	0	0	0

			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	600	400	200	0	0	0	0	1200
			Mahula	0	0	0	0	0	0	0	0
			Misc.	700	500	0	0	0	0	0	1200
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	400	300	0	0	0	0	0	700
			Sal	100	300	100	0	0	0	0	500
			Total	***1800***	***1500***	***300***	***0***	***0***	***0***	***0***	***3600***
Gallery	Chandragiri	10	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	0	800	400	400	0	0	0	1600
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	0	0	0	0	0	0	0	0
			Sal	100	300	400	200	0	0	0	100
			Total	***100***	***1100***	***800***	***600***	***0***	***0***	***0***	***1700***
Gallery	Chandragiri	11	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	200	100	0	0	0	0	300
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0

			Kendu	0	200	300	100	0	0	0	600
			Mahula	0	0	0	0	0	0	0	0
			Misc.	400	1500	1200	500	0	0	0	2700
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	0	100	200	100	0	0	0	400
			Sal	0	400	200	300	100	0	0	100
			Total	***400***	***2400***	***2000***	***1000***	***100***	***0***	***0***	***4100***
Gallery	Chandragiri	12	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	1500	0	0	0	0	0	0	1500
			Mahula	300	0	0	0	0	0	0	300
			Misc.	2700	0	0	0	0	0	0	2700
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaj	400	500	0	0	0	0	0	900
			Sal	1500	300	0	0	400	300	0	2500
			Total	***6400***	***800***	***0***	***0***	***400***	***300***	***0***	***7900***
Gallery	Ambazora	1	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	200	100	300	200	0	0	0	800
			Kasi	700	200	200	100	0	200	0	1400
			Kendu	0	0	0	0	0	0	0	0
			Mahula	0	0	0	0	0	0	0	0
			Misc.	3000	1700	1400	1200	700	100	200	8300

			Mundi	0	0	0	0	0	0	0	0
			P.Sal	700	500	200	500	300	100	0	2300
			Sahaja	100	700	500	500	500	100	100	3400
			Sal	500	500	600	700	700	100	0	400
			Total	***5200***	***3700***	***3200***	***3200***	***2200***	***600***	***300***	***16600***
Gallery	Ambazora	3	Bahada	0	0	0	0	0	0	0	0
			Dhau	1300	300	0	0	0	0	0	1600
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	800	500	100	100	0	0	0	1500
			Mahula	800	300	0	100	0	0	0	1200
			Misc.	4700	1200	500	0	100	0	0	8300
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	1200	300	200	0	100	0	0	1800
			Sahaja	200	500	300	0	0	0	0	2800
			Sal	2200	1100	100	200	0	100	0	4600
			Total	***11200***	***4200***	***1200***	***400***	***200***	***100***	***0***	***21800***
Gallery	Dimirijholi	2	Bahada	0	0	0	0	0	0	0	0
			Dhau	0	0	0	0	0	0	0	0
			Jamu	0	0	0	0	0	0	0	0
			Kasi	0	0	0	0	0	0	0	0
			Kendu	100	1100	0	0	0	0	0	2100
			Mahula	1200	300	0	0	0	0	0	1500
			Misc.	5100	3100	1300	400	0	0	0	10800
			Mundi	0	0	0	0	0	0	0	0
			P.Sal	0	0	0	0	0	0	0	0
			Sahaja	1400	500	700	300	100	0	0	300

			Sal	1800	1200	1200	300	200	100	0	4800
			Total	***9600***	***6200***	***3200***	***1000***	***300***	***100***	***0***	***19500***

Annexure- XXVII

Range Wise Stand Table of Protection Working Circle									
Sl.No.	**Species**	**Under 30 cm.**	**30 – 60 cm.**	**60 – 90 cm.**	**90 – 120 cm.**	**120 – 150 cm.**	**150 – 180 cm.**	**Above 180 cm.**	**Total**
	Gallery Range								
1	Bahada	0	0	0	0	0	0	0	0
2	Dhau	1800	800	200	200	100	0	0	3100
3	Jamu	200	400	800	300	0	0	0	1700
4	Kasi	700	200	200	100	0	200	0	1400
5	Kendu	4300	2700	800	400	100	0	0	8300
6	Mahula	2800	1200	400	100	0	0	0	4500
7	Misc.	26800	14200	7300	4300	900	200	200	53900
8	Mundi	0	0	0	0	0	0	0	0
9	Piasal	2000	800	600	500	400	100	0	4400
10	Sahaja	6000	3100	2300	1400	600	100	100	13600
11	Sal	7900	6200	5100	2600	2000	1500	0	25300
Total		***52500***	***29600***	***17700***	***9900***	***4100***	***2100***	***300***	***116200***
	Tarasingi Range								
1	Bahada	400	100	0	600	400	200	0	1700
2	Dhau	800	400	900	500	300	200	0	3100
3	Jamu	700	400	2000	600	0	400	0	4100
4	Kasi	3800	2300	2400	3600	1600	1100	2000	16800
5	Kendu	3100	2500	2500	1600	700	400	0	10800
6	Mahula	5100	4300	7000	2500	2900	1500	700	24000
7	Misc.	51100	47500	33600	27400	13300	10900	7300	191100
8	Mundi	700	900	700	0	200	100	0	2600
9	P.Sal	0	400	200	0	0	0	200	800
10	Sahaja	7800	5000	5900	4300	2900	1900	2300	30100
11	Sal	15200	13300	16600	7100	5800	4700	5800	68500
Total		***88700***	***77100***	***71800***	***48200***	***28100***	***21400***	***18300***	***353600***
	Mujagada Range								
1	Bahada	1900	400	1100	200	100	0	0	3700
2	Dhau	5700	5200	6500	5100	2800	1000	0	26400
3	Jamun	600	400	1200	400	100	0	0	2700
4	Kasi	3400	1800	1400	1400	0	0	0	8000
5	Kendu	8700	7100	4700	1300	0	0	0	21800
6	Mahula	4400	3600	2500	2200	1100	0	0	13800
7	Misc.	65038	76359	60257	27925	6204	600	0	235183
8	Mundi	300	400	500	200	0	0	0	1400
9	P.Sal	600	300	0	0	0	0	0	900

10	Sahaja	12600	13700	13800	7300	2800	0	0	50100
11	Sal	38300	35900	26600	17600	7000	1200	100	126700
Total		***141538***	***145159***	***118557***	***63625***	***20104***	***2800***	***100***	***490683***

Annexure-XXVIII

Divisions Stand Table of Protection Working Circle									
Sl.No.	**Species**	**Under 30 cm.**	**30 – 60 cm.**	**60 – 90 cm.**	**90 – 120 cm.**	**120 – 150 cm.**	**150 – 180 cm.**	**Above 180 cm.**	**Total**
1	Bahada	2300	500	1100	800	500	200	0	5400
2	Dhau	8300	6400	7600	5800	3200	1200	0	32600
3	Jamun	1500	1200	4000	1300	100	400	0	8500
4	Kasi	7900	4300	4000	5100	1600	1300	2000	26200
5	Kendu	16100	12300	8000	3300	800	400	0	40900
6	Mahula	12300	9100	9900	4800	4000	1500	700	42300
7	Misc.	142938	138059	101157	59625	20404	11700	7500	480183
8	Mundi	1000	1300	1200	200	200	100	0	4000
9	P.Sal	2600	1500	800	500	400	100	200	6100
10	Sahaja	26400	21800	22000	13000	6300	2000	2400	93800
11	Sal	61400	55400	48300	27300	14800	7400	5900	220500
Total		***282738***	***251859***	***208057***	***121725***	***52304***	***26300***	***18700***	***960483***

Annexure-XXIX

Range wise Growing Stock (SWC)									
Mujagada Range									
Sl. No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-179 cm**	**above180 cm**	**Total**
1	Sal	23265.74	20692.39	81625.94	111025	149091.1	88798.49	12892.58	487391.2
2	Bahada	46.94849	117.7845	331.6557	349.9035	124.7686	0	0	971.0608
3	Dhau	31382.21	33485.7	41303.95	50752.84	49609.1	304.5309	478.8185	207317.2
4	Jamu	185.4565	1166.39	3359.472	3812.962	2456.901	600.3643	120.4732	11702.02
5	Kasi	113.1599	687.2403	3298.841	2948.827	2199.786	252.6416	242.7729	9743.268
6	Kendu	759.9226	2344.238	7132.553	5646.728	4884.58	967.5714	59.5973	21795.19
7	Mahula	1688.255	3510.839	9180.42	9013.131	6876.982	3430.108	685.986	34385.72
8	Mundi	2479.471	1492.41	2109.356	1351.547	575.2612	102.071	0	8110.115
9	Piasal	265.5927	837.1424	1889.482	1598.389	251.9415	0	0	4842.548
10	Sahaja	4987.315	4982.284	15840.78	15953.01	12551.72	5253.526	746.724	60315.36
11	Misc.	36832.08	42977.31	116339.8	99688.37	80464.92	34918.05	5718.474	416939.1
Gallery Range									
Sl. No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-179 cm**	**above180 cm**	**Total**
1	Sal	14137.95	15718.9	37320.58	71774.62	69990.14	56917.09	21788.36	287647.6
2	Bahada	45.4092	39.2615	163.0172	323.9847	49.90744	0	0	621.5801
3	Dhau	42868.35	18979.26	11329	25622.57	9308.47	2639.268	718.2278	111465.1
4	Jamu	131.2073	710.1447	1275.128	1879.477	353.9603	100.0607	60.23662	4510.215
5	Kasi	112.2961	614.1627	1063.162	3362.697	1371.909	360.9165	0	6885.144
6	Kendu	678.2668	2549.749	3783.732	5791.179	711.3466	286.6878	119.1946	13920.16
7	Mahula	1122.71	2490.704	4218.877	7234.714	2915.975	870.326	385.8671	19239.17
8	Mundi	815.8258	1173.805	271.5012	1158.469	345.1567	0	0	3764.758

9	Piasal	791.5013	1884.666	3810.81	8448.627	6172.567	2685.383	653.4749	24447.03
10	Sahaja	3380.291	4046.551	6413.885	13698.07	8658.941	6351.277	1154.028	43703.05
11	Misc.	20173.35	22476.22	39241.92	74405.42	33583.09	13626.56	7192.307	210698.9
Tarasingi Range									
Sl. No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-179 cm**	**above180 cm**	**Total**
1	Sal	7804.486	18218.05	60142.59	122875.1	207618.4	120992.8	45483.19	583134.7
2	Bahada	36.17343	125.6368	337.277	168.4721	49.90744	156.8217	67.884	942.1724
3	Dhau	15760.04	15906.71	16048.13	13971.68	14179.18	2588.513	239.4093	78693.67
4	Jamu	63.55354	1020.752	3109.351	2830.017	1249.272	633.7179	421.6564	1109.783
5	Kasi	112.8719	1362.042	4149.37	6195.123	5511.291	2057.224	606.9323	19994.85
6	Kendu	523.3708	3792.734	6803.262	6946.789	4434.06	1791.799	417.1811	24709.2
7	Mahula	434.9805	2630.274	6187.388	5726.318	5022.894	1612.663	643.1119	22257.63
8	Mundi	159.9659	2163.155	1524.584	1130.887	1188.873	153.1065	76.40414	6396.975
9	Piasal	130.158	543.4851	350.2973	513.7679	31.49269	136.5449	0	1705.746
10	Sahaja	2348.964	7114.183	18679.53	28769.84	36532.25	18230.52	8417.616	120092.9
11	Misc.	16033	36932.45	81113.69	85129.81	75605.35	38426.89	8901.954	342143.2

Annexure-XXX

Volume of Growing Stock by Species and by Girth Class-wise in SWC of Ghumsur North Forest Division.									
Sl. No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-179 cm**	**above180 cm**	**Total**
1	**Sal**	45208.17	54629.34	179089.1	305674.7	426699.7	266708.4038	80164.13	1358173.53
2	**Bahada**	128.5311	282.6828	831.95	842.3603	224.5835	156.821662	67.884	2534.81333
3	**Dhau**	90010.6	68371.67	68681.08	90347.09	73096.75	304.5309164	1436.456	392248.174
4	**Jamun**	380.2173	2897.287	7743.951	8522.456	4060.133	1334.142985	602.3662	25540.5533
5	**Kasi**	338.3279	2663.445	8511.373	12506.65	9082.985	2670.782345	849.7052	36623.2656
6	**kendu**	1961.56	8686.722	17719.55	18384.7	10029.99	3046.058175	595.973	60424.5434
7	**Mahula**	3245.946	8631.817	19586.69	21974.16	14815.85	5913.096967	1714.965	75882.5232
8	**Mundi**	3455.262	4829.37	3905.44	3640.903	2109.291	255.1775696	76.40414	18271.8492
9	**Piasal**	1187.252	3265.294	6050.59	10560.78	6456.001	2821.928284	653.4749	30995.3242
10	**Sahaja**	10716.57	16143.02	40934.19	58420.93	57742.91	29835.32119	10318.37	224111.304
11	**Misce**	73038.43	102386	236695.5	259223.6	189653.4	86971.50253	21812.73	969781.08
	Total	**229670.9**	**272786.6**	**589749.4**	**790098.3**	**793971.5**	**400017.7664**	**118292.5**	**3194586.96**

Annexure-XXXI

Range wise Growing Stock (RWC)

Mujagada Range

Sl.No.	Species	under 30	30-59 cm	60-89 cm	90-119 cm	120-149 cm	150-179 cm	above180 cm	Total
1	Sal	5437.077	14462.24	12981.77	10661.3	4258.332	1682.086	1463.905	50946.71
2	Bahada	50.02708	32.71791	56.21284	50.54162	19.96298	7.841083	6.7884	224.0919
3	Dhau	12580.46	19493.03	768.5886	91.42544	28.86347	10.15103	7.980308	32980.5
4	Jamu	34.69424	193.3243	245.2169	126.3786	49.97087	20.01214	18.07099	687.6681
5	Kasi	40.31141	163.2584	394.8888	353.0832	132.4602	50.52831	42.48526	1177.016
6	Kendu	-569.771	616.5319	434.9117	358.5016	132.7847	50.17037	41.71811	1064.847
7	Mundi	239.9488	251.5297	104.4235	322.7164	92.04179	30.62131	22.92124	1064.203
8	Mahula	219.934	437.7446	402.65	363.1323	134.8428	51.19564	42.87413	1652.373
9	Piasal	299.0116	1073.821	477.6782	74.21091	25.19415	9.102994	7.260832	1966.28
10	Sahaja	1558.536	654.3583	1068.044	404.3329	159.7038	62.72866	54.3072	3962.011
11	Misc.	11841.7	9659.485	8080.516	5277.62	2082.672	817.5934	707.44	38467.03

Gallery Range

Sl.No.	Species	under 30	30-59 cm	60-89 cm	90-119 cm	120-149 cm	150-179 cm	above180 cm	Total
1	Bahada	7.696474	0	56.21284	0	0	0	0	63.90931
2	Dhau	990.9266	503.6958	153.7177	0	0	0	0	1648.34
3	Jamu	2.365516	32.22072	24.52169	0	0	0	0	59.10793
4	Kasi	2.879386	7.774211	0	0	0	0	0	10.6536
5	Kendu	-90.9815	113.3852	31.06512	51.21451	18.96924	7.167196	5.95973	136.7795
6	Mahula	66.32929	126.8825	44.73889	0	0	0	0	237.9507
7	Misc.	1450.005	1194.636	1616.103	1715.226	676.8686	265.7179	229.918	7148.475
8	Mundi	239.9488	83.84323	0	0	0	0	0	323.792
9	Piasal	52.76676	153.4031	53.07535	74.21091	25.19415	9.102994	7.260832	375.0141

10	Sahaja	542.6014	713.2505	562.1284	151.6249	59.88893	23.52325	20.3652	2073.383
11	Sal	525.9192	708.6436	1079.565	1190.098	475.3486	187.7677	163.4127	4330.756
Central Range									
Sl.No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-179 cm**	**above180 cm**	**Total**
1	Bahada	292.466	248.6561	168.6385	50.54162	19.96298	7.841083	6.7884	794.8947
2	Dhau	25247.09	12542.03	5841.273	4571.272	1443.174	507.5515	399.0154	50551.4
3	Jamu	102.5057	1881.69	343.3037	42.12621	16.65696	6.670715	6.023662	2398.977
4	Kasi	1517.436	1834.714	1366.923	756.6069	283.8433	108.275	91.03984	5958.838
5	Kendu	-83.0206	425.1944	465.9769	102.429	37.93848	14.33439	11.91946	974.772
6	Mahula	778.4964	1383.019	1163.211	581.0117	215.7484	81.91303	68.5986	4271.999
7	Misc.	17380.46	25007.71	25294.46	13589.87	5362.882	2105.303	1821.658	90562.35
8	Mundi	1519.676	754.5891	417.6942	968.1493	276.1254	91.86393	68.76372	4096.861
9	Piasal	290.2172	810.8448	902.281	0	0	0	0	2003.343
10	Sahaja	3555.771	2054.685	2698.216	2577.622	1018.112	399.8952	346.2084	12650.51
11	Sal	11009.5	27595.76	17812.83	2330.609	930.8911	367.7118	320.0165	60367.32
Tarasingi Range									
Sl.No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-179 cm**	**above180 cm**	**Total**
1	Bahada	7.696474	13.08717	28.10642	0	0	0	0	48.89006
2	Dhau	2714.277	2921.436	922.3063	1462.807	461.8156	162.4165	127.6849	8772.743
3	Jamu	5.519538	186.8802	490.4339	674.0193	266.5113	106.7314	96.3786	1826.474
4	Kasi	28.79386	225.4521	151.8803	1109.69	416.3035	158.8033	133.5251	2224.448
5	Kendu	-258.16	566.9259	403.8466	614.5741	227.6309	86.00635	71.51677	1712.341
6	Mahula	94.25741	196.6679	178.9556	217.8794	80.90567	30.71739	25.72448	825.1078
7	Misc.	3314.763	5887.849	12390.12	12182.51	4807.502	1887.278	1633.007	42103.03
8	Mundi	0	0	0	0	0	0	0	0
9	Piasal	8.794459	197.2325	530.7535	148.4218	50.3883	18.20599	14.52166	968.3183
10	Sahaja	507.9673	543.1174	730.7669	1162.457	459.1485	180.3449	156.1332	3739.935
11	Sal	3658.232	4541.224	12927.8	31735.95	12675.96	5007.139	4357.671	74903.98

Jagannath Prasad Range									
Sl.No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-179 cm**	**above180 cm**	**Total**
1	Bahada	50.02708	71.97941	196.7449	50.54162	19.96298	7.841083	6.7884	403.8855
2	Dhau	14303.81	17679.72	6533.003	4205.57	1327.72	466.9474	367.0942	44883.87
3	Jamu	20.50114	315.7631	662.0857	252.7572	99.94173	40.02429	36.14197	1427.215
4	Kasi	48.94956	163.2584	941.658	403.5237	151.3831	57.74665	48.55458	1815.074
5	Kendu	-417.377	1431.488	1739.647	409.7161	151.7539	57.33757	47.67784	3420.243
6	Mahula	120.44	628.0684	693.4528	254.1926	94.38995	35.83695	30.01189	1856.393
7	Misc.	8944.961	18386.02	36337.84	17460.13	6890.175	2704.872	2340.447	93064.43
8	Mundi	479.8976	83.84323	313.2706	0	0	0	0	877.0114
9	Piasal	263.8338	810.8448	743.0549	0	0	0	0	1817.733
10	Sahaja	1277.615	1478.85	4159.75	2527.081	998.1489	392.0542	339.42	11172.92
11	Sal	2954.429	5698.676	13791.45	9619.961	3842.402	1517.789	1320.919	38745.62

Annexure-XXXII

Division wise Growing stock (RWC)									
Sl.No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-179 cm**	**above180 cm**	**Total**
1	**Sal**	23585.16	53006.54	58593.42	55537.92	22182.94	8762.493759	7625.924	229294.387
2	**Bahada**	407.9131	366.4406	505.9155	151.6249	59.88893	23.52324929	20.3652	1535.67152
3	**Dhau**	55836.56	53139.91	14218.89	10331.07	3261.573	1147.066452	901.7748	138836.846
4	**Jamu**	165.5862	2609.878	1765.562	1095.281	433.0808	173.4385881	156.6152	6399.44258
5	**Kasi**	1638.371	2394.457	2855.35	2622.904	983.9901	375.3531944	315.6048	11186.0297
6	**Kendu**	-1419.31	3153.525	3075.447	1536.435	569.0773	215.0158712	178.7919	7308.98209
7	**Mahula**	1279.457	2772.383	2483.008	1416.216	525.8868	199.6630145	167.2091	8843.82321
8	**Mundi**	2479.471	1173.805	835.3883	1290.866	368.1672	122.4852334	91.68497	6361.86741
9	**Piasal**	914.6238	3046.147	2706.843	296.8437	100.7766	36.41197786	29.04333	7130.68877
10	**Sahaja**	7442.49	5444.261	9218.906	6823.118	2695.002	1058.546218	916.434	33598.757
11	**Misc.**	42931.89	60135.7	83719.04	50225.35	19820.1	7780.764269	6732.471	271345.319
	Total	**135262.2**	**187243**	**179977.8**	**131327.6**	**51000.48**	**19894.76183**	**17135.92**	**721841.814**

Annexure-XXXIII

Protection Working Circle Growing Stock Volume									
Sl.No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-179 cm**	**above180 cm**	**Total**
	Gallery Pr WC								
1	Bahada	0	0	0	0	0	0	0	0
2	Dhau	775.5078	402.9567	153.7177	234.4242	180.3967	0	0	1747.003
3	Jamu	1.577011	25.77658	196.1735	162.0239	0	0	0	385.551
4	Kasi	10.07785	15.54842	60.75213	64.66725	0	360.9165	0	511.9622
5	Kendu	-48.9025	191.3375	248.521	262.6385	118.5578	0	0	772.1522
6	Mahula	48.87421	76.1295	89.47778	46.55543	0	0	0	261.0369
7	Misc.	875.228	807.8015	1787.508	2424.548	976.2527	340.6639	589.5334	7801.535
8	Mundi	0	0	0	0	0	0	0	0
9	Piasal	175.8892	175.3178	318.4521	475.711	629.8538	227.5749	0	2002.799
10	Sahaja	230.8942	202.8511	646.4476	907.1572	748.6116	196.0271	339.42	3271.409
11	Sal	305.4972	366.1325	1376.446	1652.914	2475.774	2933.871	0	9110.635
Sl.No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-179 cm**	**above180 cm**	**Total**
	Mujagada Pr WC								
1	Bahada	73.1165	26.17433	309.1706	129.5939	124.7686	0	0	662.8239
2	Dhau	2455.775	2619.218	4995.826	5977.817	5051.108	2537.758	0	23637.5
3	Jamun	4.731033	25.77658	294.2603	216.0318	104.106	0	0	644.9057
4	Kasi	48.94956	139.9358	425.2649	905.3415	0	0	0	1519.492
5	Kendu	-98.9423	503.1467	1460.061	853.5752	0	0	0	2717.84
6	Mahula	76.80233	228.3885	559.2361	1024.219	927.0441	0	0	2815.69
7	Misc.	2123.996	4343.867	14754.78	15745.46	6729.635	1021.992	0	44719.73
8	Mundi	239.9488	335.3729	522.1177	275.826	0	0	0	1373.265
9	P.Sal	52.76676	65.74417	0	0	0	0	0	118.5109
10	Sahaja	484.8779	896.4708	3878.686	4730.177	3493.521	0	0	13483.73
11	Sal	1481.081	2120.025	7179.11	11188.96	8665.21	2347.097	340.4431	33321.92

Sl.No.	Species	under 30	30-59 cm	60-89 cm	90-119 cm	120-149 cm	150-179 cm	above180 cm	Total
	Tarasingi Pr WC								
1	Bahada	15.39295	6.543583	0	388.7817	499.0744	392.0542	0	1301.847
2	Dhau	344.6701	201.4783	691.7297	586.0605	541.1901	507.5515	0	2872.68
3	Jamu	5.519538	25.77658	490.4339	324.0477	0	667.0715	0	1512.849
4	Kasi	54.70834	178.8069	729.0256	2328.021	1892.289	1985.041	6069.323	13237.21
5	Kendu	-35.2553	177.1643	776.6281	1050.554	829.9043	716.7196	0	3515.715
6	Mahula	89.02089	272.7974	1565.861	1163.886	2444.025	1919.837	1500.594	8956.022
7	Mundi	559.8805	754.5891	730.9648	0	383.5075	255.1776	0	2684.119
8	P.Sal	0	87.65889	106.1507	0	0	0	726.0832	919.8928
9	Sahaja	300.1625	327.1791	1658.279	2786.269	3618.29	3724.514	7806.66	20221.35
10	Sal	0	23.62145	53.97827	0	0	0	680.8861	758.4858
11	Misc.	1668.812	2702.153	8227.434	15449.44	14426.85	18566.18	21517.97	82558.84

Annexure- XXXIV

Divisions Growing Stock (Protection Working Circle)									
Sl.No.	**Species**	**under 30**	**30-59 cm**	**60-89 cm**	**90-119 cm**	**120-149 cm**	**150-179 cm**	**above180 cm**	**Total**
1	Bahada	88.50945	32.71791	309.1706	518.3756	623.843	392.0542	0	1964.671
2	Dhau	3575.952	3223.653	5841.273	6798.302	5772.695	3045.309	0	28257.19
3	Jamu	11.82758	77.32973	980.8677	702.1035	104.106	667.0715	0	2543.306
4	Kasi	113.7358	334.2911	1215.043	3298.03	1892.289	2345.957	6069.323	15268.67
5	Kendu	-183.1	871.6485	2485.21	2166.768	948.4621	716.7196	0	7005.708
6	Mahula	214.6974	577.3154	2214.575	2234.661	3371.07	1919.837	1500.594	12032.75
7	Misc.	4668.035	7853.821	24769.72	33619.45	22132.73	19928.84	22107.5	135080.1
8	Mundi	799.8293	1089.962	1253.083	275.826	383.5075	255.1776	0	4057.385
9	P.Sal	228.6559	328.7209	424.6028	475.711	629.8538	227.5749	726.0832	3041.202
10	Sahaja	1015.935	1426.501	6183.412	8423.603	7860.422	3920.542	8146.08	36976.49
11	Sal	2374.371	3271.571	13035.75	17355.6	18320.73	14473.76	20086.14	88917.93

Annexure-XXXV

Regeneration Status					
Block	**Range**	**Compartment no.**	**Area allotted to SWC in Ha**	**Density**	**Regeneration status**
Gallery	Mujagada	1	379.597	0.5	Excellent
Gallery	Mujagada	2	354.778	0.4	Excellent
Gallery	Mujagada	3a	487.05	0.4	Excellent
Gallery	Mujagada	4a	324.796	0.4	Moderate
Gallery	Mujagada	5a	543.328	0.3	Excellent
Gallery	Mujagada	6a	191.059	0.4	Excellent
Gallery	Mujagada	7a	304.35	0.5	Excellent
Gallery	Mujagada	8a	422.675	0.4	Excellent
Gallery	Mujagada	9a	393.926	0.3	Excellent
Gallery	Mujagada	10	498.853	0.5	Excellent
Gallery	Mujagada	11a	355.704	0.5	Excellent
Gallery	Mujagada	12	204.515	0.4	Moderate
Gallery	Mujagada	13	304.322	0.3	Moderate
Gallery	Mujagada	14	435.183	0.4	Excellent
Gallery	Mujagada	15	644.329	0.3	Good
Gallery	Gallery	16a	432.495	0.4	Good
Gallery	Mujagada	17	514.301	0.4	Good
Gallery	Gallery	18a	375.436	0.3	Fair
Gallery	Gallery	19a	466.613	0.4	Moderate
Gallery	Gallery	20a	295.476	0.3	Fair
Gallery	Gallery	21	386.064	0.5	Fair
Gallery	Gallery	22	388.711	0.4	Fair
Gallery	Gallery	23a	432.333	0.3	Fair
Darpangia	Mujagada	1a	689.441	0.5	Excellent
Darpangia	Mujagada	2	662.1	0.5	Excellent
Darpangia	Mujagada	3	622.315	0.6	Excellent
Darpangia	Mujagada	4	444.27	0.4	Excellent
Darpangia	Mujagada	5	476.473	0.5	Excellent
Darpangia	Mujagada	6	433.931	0.5	Excellent
Darpangia	Mujagada	7	862.874	0.5	Moderate
Darpangia	Mujagada	8	236.271	0.5	Moderate
Darpangia	Mujagada	9	343.524	0.4	Good
Darpangia	Mujagada	10	443.336	0.3	Moderate
Darpangia	Mujagada	11	154.051	0.5	Excellent
Darpangia	Mujagada	12	306.174	0.5	Excellent
Odinabadi	Mujagada	1	233.104	0.5	Excellent
Baibali	Mujagada	1	666.689	0.3	Good
Baibali	Mujagada	2	698.562	0.4	Moderate

Baibali	Mujagada	3	688.72	0.3	Moderate
Baibali	Mujagada	4	793.363	0.3	Good
Baibali	Mujagada	5	419.424	0.3	Good
Baibali	Mujagada	6	548.118	0.4	Good
Baibali	Mujagada	7	933.468	0.3	Excellent
Baibali	Mujagada	8	677.944	0.3	Excellent
Baibali	Mujagada	9	572.804	0.4	Excellent
Rambha	Mujagada	1a	646.508	0.5	Excellent
Rambha	Mujagada	2	794.154	0.5	Moderate
Rambha	Mujagada	3	467.919	0.5	Moderate
Rambha	Mujagada	4a	577.056	0.5	Moderate
Rambha	Mujagada	5	576.627	0.6	Moderate
Rambha	Mujagada	6a	490.957	0.5	Moderate
Rambha	Mujagada	7a	823.678	0.5	Moderate
Dimirijholi	Gallery	1a	644.163	0.4	Moderate
Dimirijholi	Gallery	2a	856.511	0.4	Moderate
Ambazora	Gallery	1	559.525	0.4	Good
Ambazora	Gallery	2	644.881	0.6	Good
Ambazora	Gallery	3a	587.943	0.5	Good
Ambazora	Gallery	4	713.76	0.4	Good
Ambazora	Gallery	5	583.691	0.5	Good
Ambazora	Gallery	6a	694.86	0.5	Moderate
Chandragiri	Gallery	1	685.678	0.5	Moderate
Chandragiri	Gallery	2	651.831	0.4	Good
Chandragiri	Gallery	3	866.476	0.6	Moderate
Chandragiri	Tarsing	4	527.426	0.5	Good
Chandragiri	Tarsing	5a	478.777	0.5	Good
Chandragiri	Tarsing	6a	383.732	0.6	Excellent
Chandragiri	Tarsing	7a	373.088	0.6	Moderate
Chandragiri	Tarsing	7b	99.207	0.5	Excellent
Chandragiri	Tarsing	8	320.238	0.5	Moderate
Chandragiri	Tarsing	9	379.46	0.5	Moderate
Chandragiri	Gallery	10	392.091	0.5	Good
Chandragiri	Gallery	11	780.803	0.6	Moderate
Chandragiri	Gallery	12	263.873	0.5	Moderate
Brahmanasahi	Tarsing	3	364.811	0.6	Moderate
Brahmanasahi	Tarsing	4	243.343	0.5	Excellent
Brahmanasahi	Tarsing	5a	518.7	0.6	Excellent
Brahmanasahi	Tarsing	6a	355.292	0.5	Moderate
Ambajhara	Tarsing	7a	611.979	0.5	Moderate
Ambajhara	Tarsing	8	684.257	0.6	Excellent
Ambajhara	Tarsing	9a	500.054	0.5	Good
Ambajhara	Tarsing	10a	591.817	0.4	Excellent
Ambajhara	Tarsing	11a	603.804	0.6	Good
Ambajhara	Tarsing	12	607.527	0.6	Excellent

Ambajhara	Tarsing	13a	653.618	0.6	Fair
Ambajhara	Tarsing	14	692.432	0.5	Moderate
Ambajhara	Tarsing	15	766.365	0.6	Excellent
Ambajhara	Tarsing	16	440.605	0.5	Moderate
Ambajhara	Tarsing	17	627.722	0.6	Excellent
Ambajhara	Tarsing	18	565.748	0.6	Excellent
Ambajhara	Tarsing	19	492	0.6	Excellent
Gunduribadi	Tarsing	1	661.788	0.6	Moderate
Gunduribadi	Tarsing	2a	460.957	0.5	Moderate
Gunduribadi	Tarsing	3	705.099	0.5	Excellent
Gunduribadi	Tarsing	4	641.417	0.4	Excellent
Ghogada	Tarsing	1	531.994	0.5	Moderate
Ghogada	Tarsing	2	521.64	0.6	Good
Ghogada	Tarsing	3a	634.213	0.4	Moderate
Ghogada	Tarsing	4a	72.116	0.4	Excellent
Ghogada	Tarsing	5a	666.302	0.5	Excellent
Ghogada	Tarsing	6	719.543	0.5	Moderate

Annexure-XXXVI

SWC Bio-diversity survey in Ghumsur North Division

Tarasingi

Compt. No.:		Ambazora		7			
GPS Gr.1-		N: 20.10.54.3		E: 84.40.49.8			
GPS Gr.2-		N:20.11.17.6		E: 84.40.21.8			
GPS Gr.3-		N:20.09.07.1		E: 84.41.16.3			
GPS Gr.4-		N:20.09.19.1		E: 84.41.32.8			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	109	93	47	21	67.5	0.0316779
2	Kusuma	6	16	76	16	28.5	0.00564727
3	S.Mohi	34	43	0	34	27.75	0.00535396
4	D.Mohi	2	47	19	43	27.75	0.00535396
5	Dhamana	10	21	75	0	26.5	0.00488248
6	Halanda	0	0	105	0	26.25	0.00479079
7	Dhou	15	41	39	6	25.25	0.00443273
8	Chara	5	34	35	17	22.75	0.00359842
9	Badhan	0	0	82	0	20.5	0.00292184
10	S.Gundi	19	31	0	21	17.75	0.00219051
11	Sahaja	0	0	51	10	15.25	0.00161692
12	Kendu	7	24	15	0	11.5	0.00091948
13	Bhalia	0	0	29	0	7.25	0.00036545
14	Bela	2	0	25	0	6.75	0.00031678
15	Mahula	0	0	26	0	6.5	0.00029375
16	Bela	0	0	25	0	6.25	0.00027159
17	T.Kerunha	0	0	23	0	5.75	0.00022987
18	Baila	0	0	19	0	4.75	0.00015687
19	Sunari	0	0	17	0	4.25	0.00012558
20	Simuli	0	0	12	0	3	6.2574E-05
21	S.Mohi	0	0	11	0	2.75	5.2579E-05
22	Sidha	2	4	1	3	2.5	4.3454E-05
23	Sirisa	0	0	8	0	2	2.7811E-05
24	Kasi	0	0	8	0	2	2.7811E-05
25	Amla	0	0	8	0	2	2.7811E-05
26	Kumbhi	0	0	0	8	2	2.7811E-05
27	P.Kauchia	6	0	0	0	1.5	1.5643E-05
28	Pania	0	0	5	0	1.25	1.0863E-05
29	Kathapanu	3	0	0	0	0.75	3.9109E-06
30	Sisoo	2	0	0	0	0.5	1.7382E-06
31	P.Sal	1	0	0	0	0.25	4.3454E-07
Compt. No.:		Ambazora		8			
GPS Gr.1-		N: 20.09.06.9		E: 84.41.29.8			
GPS Gr.2-		N:20.08.51.0		E: 84.40.55.0			
GPS Gr.3-		N:20.09.23.4		E: 84.41.12.5			
GPS Gr.4-		N:20.08.40.8		E: 84.41.00.8			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	0	188	236	130	138.5	0.03156947
2	Dhau	141	65	161	0	91.75	0.01385415
3	Chara	54	95	69	55	68.25	0.00766608
4	Mahula	34	69	58	69	57.5	0.00544131
5	Dhaman	70	24	80	0	43.5	0.0031142

6	D.Mohi	25	5	37	97	41	0.00276653
7	Sahaja	18	75	27	0	30	0.00148119
8	Balia	47	69	0	0	29	0.00138409
9	Gundi	27	46	42	0	28.75	0.00136033
10	kauchia	46	0	67	0	28.25	0.00131342
11	Dhobi	0	0	39	59	24.5	0.00098787
12	Kendu	12	45	23	14	23.5	0.00090887
13	S.Mohi	60	24	0	0	21	0.00072578
14	Badhana	0	46	0	37	20.75	0.0007086
15	Jamu	6	20	11	40	19.25	0.00060986
16	Halanda	18	7	41	0	16.5	0.00044806
17	Kusuma	35	20	0	0	13.75	0.00031115
18	Sidha	18	6	28	0	13	0.00027813
19	Rai	0	5	0	44	12.25	0.00024697
20	Sunari	8	7	28	0	10.75	0.00019019
21	Genduli	13	0	17	0	7.5	9.2574E-05
22	Kasi	8	7	14	0	7.25	8.6506E-05
23	Kataka	3	2	16	0	5.25	4.5361E-05
24	Amla	0	13	0	5	4.5	3.3327E-05
25	Karanja	4	0	13	0	4.25	2.9727E-05
26	Mundi	0	16	0	0	4	2.6332E-05
27	K.Kerunha	8	4	0	0	3	1.4812E-05
28	Bhalia	11	0	0	0	2.75	1.2446E-05
29	Bela	3	0	7	0	2.5	1.0286E-05
30	Sisoo	5	4	0	0	2.25	8.3317E-06
31	Sam	0	5	0	1	1.5	3.703E-06
32	kumbhi	0	4	0	0	1	1.6458E-06
33	Nuni	0	3	0	0	0.75	9.2574E-07
34	Kusuma	0	3	0	0	0.75	9.2574E-07
35	Mango	0	1	0	0	0.25	1.0286E-07
	P.Sal	0	1	0	0	0.25	1.0286E-07
Compt. No.:		Ambazora		9			
GPS Gr.1-		N: 20.08.41.9		E: 84.41.33.0			
GPS Gr.2-		N:20.09.03.2		E: 84.41.25.8			
GPS Gr.3-		N:20.08.23.2		E: 84.41.35.3			
GPS Gr.4-		N:20.08.50.4		E: 84.40.39.0			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	460	593	546	224	455.75	0.1984733
2	Char	0	90	160	12	65.5	0.0040995
3	Sahaja	80	106	61	0	61.75	0.00364353
4	Kendu	98	4	68	6	44	0.00184992
5	Chana	131	0	0	0	32.75	0.00102488
6	Karada	25	67	21	0	28.25	0.00076258
7	Mahula	41	18	43	8	27.5	0.00072263
8	S.Gundi	0	67	0	42	27.25	0.00070955
9	Kusuma	36	22	8	36	25.5	0.00062134
10	S.Mohi	0	0	27	65	23	0.00050548
11	Dhau	15	0	72	0	21.75	0.00045203
12	Mai	75	11	0	0	21.5	0.0004417
13	Bahlia	40	0	40	0	20	0.00038222
14	Kasi	55	9	0	15	19.75	0.00037272

15	Amla	11	0	68	0	19.75	0.00037272
16	Rai	23	0	24	20	16.75	0.00026809
17	Som	2	0	64	0	16.5	0.00026015
18	D.Mohi	0	0	43	0	10.75	0.00011042
19	Dhau	10	16	0	14	10	9.5554E-05
20	Jamu	23	9	8	0	10	9.5554E-05
21	T.Kerunha	0	0	32	0	8	6.1155E-05
22	M.Mundi	0	3	0	27	7.5	5.3749E-05
23	Sunari	0	0	0	29	7.25	5.0226E-05
24	Badhana	0	16	2	10	7	4.6821E-05
25	M.Kendu	27	0	0	0	6.75	4.3537E-05
26	Halanda	15	2	0	4	5.25	2.6337E-05
27	Mango	15	0	0	0	3.75	1.3437E-05
28	Sisoo	0	10	0	5	3.75	1.3437E-05
29	Sirisa	0	4	9	0	3.25	1.0093E-05
30	Harida	12	0	0	0	3	8.5999E-06
31	Mundi	10	0	0	0	2.5	5.9721E-06
32	Khakeda	0	6	0	0	1.5	2.15E-06
33	Patuli	5	0	0	0	1.25	1.493E-06
34	Halanda	0	0	5	0	1.25	1.493E-06
35	Dhamana	0	4	0	0	1	9.5554E-07
36	Baila	0	4	0	0	1	9.5554E-07
37	kadamba	3	0	0	0	0.75	5.3749E-07
38	Bara	0	1	0	0	0.25	5.9721E-08
Compt. No.:		Ambazora		10			
GPS Gr.1-		N: 20.08.37.4		E: 84.43.08.0			
GPS Gr.2-		N:20.08.47.9		E: 84.43.01.5			
GPS Gr.3-		N:20.08.44.8		E:84.41.33.9			
GPS Gr.4-							
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	684	738	684	0	702	0.15855122
2	Chara	247	149	247	0	214.333	0.01478001
3	Sahaja	142	234	129	0	168.333	0.00911666
4	Bandhan	139	91	139	0	123	0.0048675
5	Kendu	87	104	104	0	98.3333	0.00311098
6	Dhau	60	108	62	0	76.6667	0.00189107
7	D.Mohi	79	45	63	0	62.3333	0.00125008
8	Som	79	43	54	0	58.6667	0.00110733
9	Karada	61	37	70	0	56	0.00100895
10	Sirisa	54	6	35	0	31.6667	0.00032263
11	Kusuma	26	37	27	0	30	0.00028956
12	Bhalia	20	22	12	0	18	0.00010424
13	Dhobi	15	20	15	0	16.6667	8.937E-05
14	Guharia	24	0	18	0	14	6.306E-05
15	S.Gundi	14	0	19	0	11	3.893E-05
16	Mahula	3	21	5	0	9.66667	3.0064E-05
17	Simuli	7	14	7	0	9.33333	2.8027E-05
18	Kasi	9	9	6	0	8	2.0591E-05
19	S.Moi	9	14	0	0	7.66667	1.8911E-05
20	P.Sal	13	2	7	0	7.33333	1.7302E-05
21	Jamu	3	16	3	0	7.33333	1.7302E-05

22	Achu	9	0	9	0	6	1.1582E-05
23	Kumbhi	6	7	3	0	5.33333	9.1515E-06
24	Dhaman	0	13	0	0	4.33333	6.0414E-06
25	Halanda	0	10	0	0	3.33333	3.5748E-06
26	Sidha	4	0	4	0	2.66667	2.2879E-06
27	Mundumundi	0	7	0	0	2.33333	1.7517E-06
28	Bahada	3	0	3	0	2	1.2869E-06
29	Dimiri	3	0	3	0	2	1.2869E-06
30	Neem	3	0	3	0	2	1.2869E-06
31	Amla	0	4	0	0	1.33333	5.7197E-07
32	Pania	0	3	0	0	1	3.2173E-07
33	Mango	0	1	0	0	0.33333	3.5748E-08
Compt. No.:		Ambazora		11			
GPS Gr.1-		N:20.10.43.8		E: 84.42.11.1			
GPS Gr.2-		N:20.10.31.6		E: 84.41.43.5			
GPS Gr.3-		N:20.10.33.0		E: 84.41.27.7			
GPS Gr.4-		N:20.09.43.6		E: 84.43.00.3			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	S.Moi	151	0	0	170	80.25	0.01753658
2	Kusuma	129	10	17	149	76.25	0.01583195
3	Dhau	57	17	75	74	55.75	0.00846339
4	D.Mohi	92	0	18	98	52	0.00736311
5	S.Gundi	65	25	36	67	48.25	0.00633942
6	Baila	78	0	0	74	38	0.00393208
7	Chara	22	2	68	25	29.25	0.00232973
8	Sal	0	36	64	0	25	0.0017019
9	Kauchia	40	5	0	54	24.75	0.00166803
10	Kendu	19	8	29	38	23.5	0.0015038
11	Genduli	38	0	0	40	19.5	0.00103544
12	Dhaman	24	0	23	21	17	0.00078696
13	Kara	27	0	0	39	16.5	0.00074135
14	Bhalia	24	0	0	25	12.25	0.00040863
15	Sunari	4	3	24	17	12	0.00039212
16	Ankula	22	0	0	25	11.75	0.00037595
17	Kumbhi	4	3	33	5	11.25	0.00034464
18	Achu	13	0	0	28	10.25	0.00028609
19	Sisoo	0	9	22	0	7.75	0.00016355
20	Sirisa	15	1	0	5	5.25	7.5054E-05
21	Sidha	12	1	0	8	5.25	7.5054E-05
22	Bela	5	0	8	7	5	6.8076E-05
23	Kasi	7	1	0	8	4	4.3569E-05
24	Mohi	0	15	0	0	3.75	3.8293E-05
25	Benta	10	0	0	0	2.5	1.7019E-05
26	sahaja	0	8	0	0	2	1.0892E-05
27	Dhaman	0	7	0	0	1.75	8.3393E-06
28	Jamu	2	2	0	2	1.5	6.1269E-06
29	Bandhna	0	5	0	0	1.25	4.2548E-06
30	Halanda	0	4	0	0	1	2.723E-06
31	Amla	2	0	0	0	0.5	6.8076E-07
32	M.Mundi	0	2	0	0	0.5	6.8076E-07
33	Harida	0	1	0	0	0.25	1.7019E-07

34	Sidha	0	1	0	0	0.25	1.7019E-07
Compt. No.:		Ambazora		12			
GPS Gr.1-		N: 20.09.11.8		E: 84.44.04.7			
GPS Gr.2-		N:20.09.23.0		E: 84.44.08.3			
GPS Gr.3-		N: 20 09.21.3		E: 84.42.56.8			
GPS Gr.4-		N:20.10.33.4		E:84.39.01.7			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	356	444	539	248	396.75	0.11769082
2	Sahaj	32	140	120	182	118.5	0.01049894
3	Chara	26	125	92	170	103.25	0.00797056
4	Kendu	47	170	72	39	82	0.00502732
5	Dhau	3	21	118	98	60	0.0026916
6	Sam	56	82	19	70	56.75	0.00240791
7	Achu	22	80	22	8	33	0.00081421
8	Karada	21	62	22	14	29.75	0.00066173
9	Mohi	50	46	0	0	24	0.00043066
10	Kusuma	38	9	29	15	22.75	0.00038696
11	Teak	0	0	0	87	21.75	0.00035369
12	D.Mohi	0	0	48	34	20.5	0.00031421
13	Guharia	10	44	2	14	17.5	0.00022897
14	Bhalia	0	32	3	19	13.5	0.00013626
15	S.Mohi	51	0	1	0	13	0.00012636
16	Amla	1	0	30	21	13	0.00012636
17	Dhobi	3	18	14	9	11	9.0468E-05
18	Pisal	27	3	2	9	10.25	7.8552E-05
19	Tentala	0	0	0	41	10.25	7.8552E-05
20	Jamu	8	0	1	30	9.75	7.1075E-05
21	Bela	3	2	0	27	8	4.7851E-05
22	Neem	0	0	0	27	6.75	3.4066E-05
23	Kumbhi	10	0	0	15	6.25	2.9206E-05
24	Kasi	16	5	1	0	5.5	2.2617E-05
25	Mahula	6	0	15	0	5.25	2.0608E-05
26	Sisoo	0	0	1	19	5	1.8692E-05
27	Sidha	3	0	1	15	4.75	1.6869E-05
28	Sirisa	7	12	0	0	4.75	1.6869E-05
29	Mahula	6	13	0	0	4.75	1.6869E-05
30	Rai	0	0	5	12	4.25	1.3505E-05
31	Khakeda	16	0	0	0	4	1.1963E-05
32	Genduli	16	0	0	0	4	1.1963E-05
33	Badhana	0	0	15	0	3.75	1.0514E-05
34	B.Bhalia	11	0	3	0	3.5	9.1589E-06
35	Pania	11	0	0	0	2.75	5.6542E-06
36	Patuli	9	0	0	0	2.25	3.7851E-06
37	Sunari	0	8	0	0	2	2.9907E-06
38	M.Mundi	5	0	1	0	1.5	1.6823E-06
39	M.Kendu	0	6	0	0	1.5	1.6823E-06
40	Luni	5	0	0	0	1.25	1.1682E-06
41	Kalakanchan	5	0	0	0	1.25	1.1682E-06
42	S.Gundi	5	0	0	0	1.25	1.1682E-06
43	Halanda	4	1	0	0	1.25	1.1682E-06
44	Kataka	3	0	0	0	0.75	4.2056E-07

45	Mango	3	0	0	0	0.75	4.2056E-07
46	Giringa	3	0	0	0	0.75	4.2056E-07
47	Harida	3	0	0	0	0.75	4.2056E-07
48	Sunari	2	0	0	0	0.5	1.8692E-07
49	Bahada	0	0	1	0	0.25	4.6729E-08
Compt. No.:		Ambazora		13			
GPS Gr.1-		N: 20.11 51.5		E: 84.42.25.5			
GPS Gr.2-		N:20.10.52.7		E: 84.45.15.1			
GPS Gr.3-		N:20.10.42.7		E: 84.44.48.4			
GPS Gr.4-		N:20.10.44.7		E: 84.44.35.6			
G4	Start		End				
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	89	265	236	299	222.25	0.04986768
2	Sum	0	181	185	108	118.5	0.01417661
3	Dhau	20	129	130	37	79	0.00630071
4	Sahaja	37	91	94	86	77	0.00598573
5	Chara	8	95	98	77	69.5	0.00487647
6	Kendu	0	84	110	40	58.5	0.00345499
7	Mahula	4	60	79	56	49.75	0.00249874
8	Sirisa	1	80	84	0	41.25	0.00171784
9	Teak	1	65	71	0	34.25	0.00118429
10	Jama	8	37	40	51	34	0.00116706
11	Dhobi	1	50	53	9	28.25	0.0008057
12	Amla	0	0	46	66	28	0.0007915
13	Karada	23	5	10	50	22	0.00048863
14	Khaira	0	0	67	0	16.75	0.00028325
15	Bandhan	5	25	27	3	15	0.00022715
16	Rai	0	0	0	55	13.75	0.00019087
17	S.Gundi	47	0	0	0	11.75	0.00013938
18	S.Mohi	43	0	0	1	11	0.00012216
19	P.Sal	1	17	20	0	9.5	9.1114E-05
20	Halanda	26	0	0	0	6.5	4.2654E-05
21	Achu	0	10	16	0	6.5	4.2654E-05
22	Kusuma	19	0	2	0	5.25	2.7826E-05
23	Tentala	0	0	16	0	4	1.6153E-05
24	Guharia	0	6	9	0	3.75	1.4197E-05
25	kumbhi	5	0	0	8	3.25	1.0664E-05
26	P.Kauchia	11	0	0	0	2.75	7.6349E-06
27	Acacia	0	0	11	0	2.75	7.6349E-06
28	Arjuna	0	5	5	0	2.5	6.3098E-06
29	Mohi	0	3	6	0	2.25	5.1109E-06
30	Misc.	0	0	4	5	2.25	5.1109E-06
31	M.Mundi	8	0	0	0	2	4.0383E-06
32	Sunari	8	0	0	0	2	4.0383E-06
33	Bhalia	0	0	8	0	2	4.0383E-06
34	Kasi	6	0	0	0	1.5	2.2715E-06
35	Dhaman	5	0	0	0	1.25	1.5775E-06
36	Sidha	5	0	0	0	1.25	1.5775E-06
37	Baila	4	0	0	0	1	1.0096E-06
38	Sisoo	1	1	2	0	1	1.0096E-06
39	Harida	3	0	0	0	0.75	5.6788E-07

40	Bara	1	0	0	0	0.25	6.3098E-08
41	D.Mohi	1	0	0	0	0.25	6.3098E-08
42	Dimiri	1	0	0	0	0.25	6.3098E-08
Compt. No.:		Ambazora		14			
GPS Gr.1-		N: 20.10 52.1		E: 84.40 59.5			
GPS Gr.2-		N:20.10.32.2		E: 84.40.28.7			
GPS Gr.3-		N: 20 11.18.1		E: 84.39.07.9			
GPS Gr.4-		N:20.10.52.8		E:84 39 28.5			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	185	60	0	499	186	0.04594483
2	S.Gundi	136	0	135	0	67.75	0.00609578
3	Baila	123	0	129	0	63	0.00527099
4	Mohi	123	0	123	0	61.5	0.00502297
5	Sahaj	71	9	72	43	48.75	0.00315617
6	Kendu	0	6	140	32	44.5	0.00262985
7	Kusuma	71	13	68	0	38	0.00191769
8	Karada	129	0	0	21	37.5	0.00186755
9	Halanda	73	3	71	0	36.75	0.0017936
10	Veru	70	0	72	0	35.5	0.00167366
11	Kasi	50	5	47	7	27.25	0.00098615
12	Amla	25	4	28	36	23.25	0.00071789
13	Sidha	42	0	42	0	21	0.00058567
14	Chara	13	13	18	37	20.25	0.00054458
15	Sirisa	38	1	38	0	19.25	0.00049212
16	Dhau	26	14	30	3	18.25	0.00044232
17	Bela	35	0	36	0	17.75	0.00041842
18	Mahula	28	0	28	9	16.25	0.00035069
19	Mundi	24	1	31	0	14	0.0002603
20	Sisoo	22	0	25	6	13.25	0.00023315
21	Jamu	17	1	12	18	12	0.00019124
22	Dhaman	23	9	3	0	8.75	0.00010168
23	Dhobi	16	6	11	0	8.25	9.039E-05
24	Rai	0	0	0	32	8	8.4994E-05
25	K.Kerunha	0	0	0	28	7	6.5074E-05
26	S.mohi	0	25	0	0	6.25	5.1877E-05
27	Patuli	5	0	5	0	2.5	8.3002E-06
28	Pania	3	0	3	0	1.5	2.9881E-06
29	Mango	0	0	0	5	1.25	2.0751E-06
30	D.mohi	0	3	0	0	0.75	7.4702E-07
31	Kumbhi	0	0	0	3	0.75	7.4702E-07
32	P.Sal	0	2	0	0	0.5	3.3201E-07
33	Kauchia	0	2	0	0	0.5	3.3201E-07
Compt. No.:		Ambazora		15			
GPS Gr.1-		N: 20.10 30.8		E: 84.41 42.6			
GPS Gr.2-		N:20.13.00.9		E: 84.41.50.0			
GPS Gr.3-		N:20.12.03.1		E: 84.41.42.8			
GPS Gr.4-		N: 20 12.32.8		E: 84.39.54.4			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Karada	207	350			278.5	0.0258556
2	S.Gundi	248	88			168	0.00940855
3	Halanda	295	31			163	0.00885685

4	S.Mohi	207	101			154	0.0079058
5	Dhau	185	88			136.5	0.00621111
6	Kasi	176	42			109	0.00396057
7	Sahaja	148	23			85.5	0.00243689
8	Kusuma	119	37			78	0.00202812
9	Dhaman	0	147			73.5	0.00180086
10	Baila	113	10			61.5	0.00126082
11	Sidha	86	24			55	0.00100839
12	Sal	95	14			54.5	0.00099014
13	Badhan	10	99			54.5	0.00099014
14	Chatina	88	0			44	0.00064537
15	Sunari	16	63			39.5	0.00052011
16	Kumbhi	60	0			30	0.00030002
17	Jari	46	0			23	0.00017634
18	Kataka	42	0			21	0.00014701
19	Chara	0	37			18.5	0.00011409
20	Sirisa	1	35			18	0.00010801
21	Mahula	30	0			15	7.5004E-05
22	Sisoo	11	12			11.5	4.4086E-05
23	Genduli	19	0			9.5	3.0085E-05
24	M.mundi	0	16			8	2.1335E-05
25	Patuli	0	16			8	2.1335E-05
26	Jama	12	0			6	1.2001E-05
27	kendu	0	12			6	1.2001E-05
28	Bela	5	0			2.5	2.0835E-06
Compt. No.:		Ambazora		16			
GPS Gr.1-		N: 20.13.10.6		E: 84.14.31.3			
GPS Gr.2-		N:20.13.07.1		E: 84.42.10.5			
GPS Gr.3-		N:20.13.12.3		E: 84.41.28.1			
GPS Gr.4-							
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	172	680	221		357.667	0.01848056
2	Chara	47	335	145		175.667	0.00445797
3	Mohi	0	33	491		174.667	0.00440736
4	Karada	199	114	144		152.333	0.00335234
5	Bajhana	0	54	403		152.333	0.00335234
6	Halanda	54	16	363		144.333	0.00300948
7	Kendu	167	123	85		125	0.00225724
8	Sisoo	0	32	341		124.333	0.00223323
9	Dhaman	166	6	134		102	0.001503
10	Kusuma	30	12	254		98.6667	0.00140637
11	Kasi	7	0	286		97.6667	0.00137801
12	Mahula	27	26	229		94	0.00127648
13	Rai	0	0	240		80	0.00092457
14	Amla	3	66	137		68.6667	0.00068116
15	Jayasanda	0	0	200		66.6667	0.00064206
16	Sidha	15	4	166		61.6667	0.00054936
17	Sahaja	50	122	0		57.3333	0.00047487
18	Dhou	31	86	48		55	0.000437
19	Badhana	131	0	0		43.6667	0.00027546
20	Pisal	0	18	101		39.6667	0.00022731

21	Kumbhi	0	12	107		39.6667	0.00022731
22	Genduli	12	11	82		35	0.00017697
23	Sunari	0	10	66		25.3333	9.2714E-05
24	Patuli	13	0	57		23.3333	7.8652E-05
25	S.Gundi	68	0	0		22.6667	7.4222E-05
26	Paniri	0	0	68		22.6667	7.4222E-05
27	Bela	2	9	51		20.6667	6.1702E-05
28	Bahada	0	0	59		19.6667	5.5875E-05
29	Jama	0	58	0		19.3333	5.3997E-05
30	Sama	0	54	0		18	4.6806E-05
31	Sirisa	12	40	0		17.3333	4.3403E-05
32	Bhalia	0	0	37		12.3333	2.1975E-05
33	s.Mohi	35	0	0		11.6667	1.9663E-05
34	Dhobi	12	23	0		11.6667	1.9663E-05
35	D.Mohi	34	0	0		11.3333	1.8556E-05
36	Mundi	33	0	0		11	1.748E-05
37	Bhalia	16	16	0		10.6667	1.6437E-05
38	Achu	3	19	0		7.33333	7.7689E-06
39	Kataka	0	0	18		6	5.2007E-06
40	Pania	17	0	0		5.66667	4.6389E-06
41	S.Gundi	8	6	0		4.66667	3.1461E-06
42	Baila	5	0	0		1.66667	4.0129E-07
43	Simili	4	0	0		1.33333	2.5682E-07
44	Kauchia	2	0	0		0.66667	6.4206E-08
Compt. No.:		Ambazora		17			
GPS Gr.1-		N: 20.14.17.1		E: 84.41.21.1			
GPS Gr.2-		N:20.14.32.3		E: 84.41.19.8			
GPS Gr.3-		N:20.13.57.4		E: 84.40.51.7			
GPS Gr.4-							
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	1008	453	0		487	0.1601315
2	Karada	194	141	82		139	0.01304513
3	Sahaja	147	43	0		63.3333	0.00270822
4	Dhou	111	10	54		58.3333	0.00229748
5	Mohi	0	162	0		54	0.00196882
6	Jamu	96	65	0		53.6667	0.00194459
7	Chara	109	44	0		51	0.00175614
8	Mahula	101	0	43		48	0.00155561
9	Kendu	47	0	57		34.6667	0.00081141
10	S.Gundi	0	102	0		34	0.00078051
11	Kusuma	11	0	74		28.3333	0.00054202
12	Sidha	0	25	43		22.6667	0.00034689
13	Halanda	11	33	19		21	0.00029775
14	S.Mohi	56	0	0		18.6667	0.00023526
15	Kumbhi	22	29	0		17	0.00019513
16	Sisoo	0	5	45		16.6667	0.00018755
17	Kasi	0	28	0		9.33333	5.8816E-05
18	Patuli	18	8	0		8.66667	5.0713E-05
19	Genduli	20	0	0		6.66667	3.0008E-05
20	Sunari	0	20	0		6.66667	3.0008E-05
21	Sirisa	7	11	0		6	2.4306E-05

22	Bhalia	16	0	0		5.33333	1.9205E-05
23	Rai	7	5	0		4	1.0803E-05
24	D.Mohi	12	0	0		4	1.0803E-05
25	Bhanjana	0	10	0		3.33333	7.502E-06
26	Mahi	0	0	10		3.33333	7.502E-06
27	Mundi	9	0	0		3	6.0766E-06
28	Amla	7	2	0		3	6.0766E-06
29	Dhamana	0	6	0		2	2.7007E-06
30	Barada	0	5	0		1.66667	1.8755E-06
31	Bahada	0	5	0		1.66667	1.8755E-06
32	Harida	3	0	0		1	6.7518E-07
Compt. No.:		Ambazora		18			
GPS Gr.1-		N: 20.14.36.9		E: 84.41.20.9			
GPS Gr.2-		N:20.14.27.1		E: 84.40.59.3			
GPS Gr.3-		N:20.14.30.7		E: 84.41.13.3			
GPS Gr.4-		N:20.15.46.0		E: 84.41.28.7			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	520	560	625	733	609.5	0.15309179
2	Sahaja	117	117	322	167	180.75	0.0134636
3	Karada	131	280	83	22	129	0.00685779
4	Jamu	34	102	172	74	95.5	0.00375847
5	Chara	53	73	176	10	78	0.00250723
6	Dhou	100	148	50	10	77	0.00244335
7	Mahula	51	17	115	55	59.5	0.00145894
8	Kendu	16	49	56	20	35.25	0.00051206
9	Kusuma	15	54	32	28	32.25	0.00042861
10	Sunari	0	14	106	3	30.75	0.00038967
11	Bhalia	7	38	59	0	26	0.00027858
12	Amla	4	39	49	0	23	0.000218
13	Bela	0	22	60	0	20.5	0.00017319
14	Sirisa	7	25	0	28	15	9.2723E-05
15	Halanda	14	0	0	43	14.25	8.3682E-05
16	Mohi	0	34	14	0	12	5.9343E-05
17	Achu	0	9	33	5	11.75	5.6896E-05
18	Gundi	0	0	0	44	11	4.9864E-05
19	Pania	0	10	9	21	10	4.121E-05
20	S.Gundi	38	0	0	0	9.5	3.7192E-05
21	Sidha	2	33	0	0	8.75	3.1552E-05
22	Kumbhi	19	15	0	0	8.5	2.9774E-05
23	Simuli	34	0	0	0	8.5	2.9774E-05
24	Genduli	31	0	0	0	7.75	2.4752E-05
25	Harida	2	11	3	11	6.75	1.8776E-05
26	Rai	0	14	8	0	5.5	1.2466E-05
27	Patuli	0	0	15	6	5.25	1.1359E-05
29	P.Sal	0	10	4	4	4.5	8.3451E-06
30	Bandhan	0	17	0	0	4.25	7.4436E-06
31	Kasi	0	15	0	0	3.75	5.7952E-06
32	Dhobi	2	0	10	0	3	3.7089E-06
33	Kataka	0	5	0	3	2	1.6484E-06
34	Dhaman	6	0	0	0	1.5	9.2723E-07
35	M.mundi	0	0	0	6	1.5	9.2723E-07

36	Sisoo	0	0	0	6	1.5	9.2723E-07
37	D.Mohi	5	0	0	0	1.25	6.4391E-07
38	Mundi	4	0	0	0	1	4.121E-07
39	Kauchia	3	0	0	0	0.75	2.3181E-07
40	Bahada	0	0	3	0	0.75	2.3181E-07
41	S.Mohi	0	0	0	2	0.5	1.0303E-07
Compt. No.:		Ambazora		19			
GPS Gr.1-		N: 20.15.57.8		E: 84.41.26.0			
GPS Gr.2-		N:20.15.53.8		E: 84.41.16.0			
GPS Gr.3-		N:20.16.03.9		E: 84.41.43.7			
GPS Gr.4-		N:20.15.48.1		E: 84.40.58.8			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	402	435	455	1240	633	0.16055754
2	Sahaja	104	82	29	331	136.5	0.00746601
3	Karada	88	90	145	154	119.25	0.00569823
4	Jama	33	23	9	317	95.5	0.00365452
5	Chara	43	87	7	224	90.25	0.00326376
6	Amla	53	6	6	172	59.25	0.0014067
7	kendu	49	0	70	109	57	0.00130189
8	Kusuma	97	15	18	65	48.75	0.0009523
9	Dhou	113	31	39	0	45.75	0.0008387
10	Mahula	34	47	28	53	40.5	0.00065725
11	Rai	0	8	98	6	28	0.00031415
12	Sirisa	0	8	0	72	20	0.00016028
13	Mohi	51	0	18	0	17.25	0.00011923
14	Kumbhi	6	4	0	51	15.25	9.3189E-05
15	S.Gundi	11	49	0	0	15	9.0158E-05
16	Harida	0	0	0	60	15	9.0158E-05
17	Bhalia	0	0	0	59	14.75	8.7178E-05
18	P.Sal	0	0	51	0	12.75	6.5139E-05
19	sunari	0	0	0	50	12.5	6.261E-05
20	S.Mohi	0	42	0	0	10.5	4.4178E-05
21	Suam	27	10	0	0	9.25	3.4285E-05
22	Kasi	1	7	8	20	9	3.2457E-05
23	Bara	0	0	36	0	9	3.2457E-05
24	Dhobi	14	0	19	0	8.25	2.7273E-05
25	Badhana	1	8	22	0	7.75	2.4067E-05
26	Halanda	12	0	0	13	6.25	1.5652E-05
27	Bhalia	0	0	25	0	6.25	1.5652E-05
28	Kauchia	14	1	1	0	4	6.4113E-06
29	Genduli	1	13	2	0	4	6.4113E-06
30	Bela	2	0	14	0	4	6.4113E-06
31	Achu	8	3	4	0	3.75	5.6349E-06
32	Sidha	8	0	7	0	3.75	5.6349E-06
33	Bheru	0	0	11	0	2.75	3.0303E-06
34	Mundi	2	8	0	0	2.5	2.5044E-06
35	Tentala	0	0	9	0	2.25	2.0286E-06
36	Mango	0	8	0	0	2	1.6028E-06
37	Jirija	7	0	0	0	1.75	1.2272E-06
38	Dhaman	1	0	5	0	1.5	9.0158E-07
39	Aajuna	0	3	2	0	1.25	6.261E-07

40	Mundi	0	0	5	0	1.25	6.261E-07
41	Kataka	3	0	0	0	0.75	2.254E-07
42	Sisoo	3	0	0	0	0.75	2.254E-07
43	M.Kendu	0	0	3	0	0.75	2.254E-07
44	D.Mohi	0	0	1	0	0.25	2.5044E-08
Compt. No.:		Ghogoda		1			
GPS Gr.1-		N:20 13 17.9		E:84 46 34.2			
GPS Gr.2-		N:20 12 50.8		E:84 46 35.1			
GPS Gr.3-		N:20 13 17.4		E:84 46 13.1			
GPS Gr.4-		N:20 13 20.9		E:84 46 07.6			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	384	1253	543	300	620	0.15109914
2	Karada	249	375	0	0	156	0.00956594
3	Sahaja	113	227	145	87	143	0.00803805
4	Chara	43	141	42	188	103.5	0.00421075
5	Mahula	51	116	68	101	84	0.00277356
6	Dhau	63	196	0	73	83	0.00270791
7	Kusuma	44	68	78	47	59.25	0.00137992
8	Kendu	72	65	0	70	51.75	0.00105269
9	Moi	29	100	69	4	50.5	0.00100245
10	Misc.	0	154	0	0	38.5	0.00058264
11	Jamu	7	16	87	5	28.75	0.0003249
12	Dhamana	15	16	65	2	24.5	0.00023595
13	Sugandhi	0	33	62	0	23.75	0.00022172
14	Baila	21	0	0	38	14.75	8.5519E-05
15	Dhobi	15	2	36	0	13.25	6.901E-05
16	Halanda	8	27	16	2	13.25	6.901E-05
17	Amla	7	4	39	0	12.5	6.1418E-05
18	S.gundi	0	18	6	25	12.25	5.8986E-05
19	Kasi	6	2	30	2	10	3.9308E-05
20	Bhalia	10	29	0	0	9.75	3.7367E-05
21	Rai	6	0	18	0	6	1.4151E-05
22	Banjana	0	0	0	21	5.25	1.0834E-05
23	Som	18	2	0	0	5	9.8269E-06
24	Genduli	6	2	9	0	4.25	7.1E-06
25	Sidha	1	12	0	0	3.25	4.1519E-06
26	Bela	0	10	0	0	2.5	2.4567E-06
27	M.Mundi	0	0	0	10	2.5	2.4567E-06
28	Marua	0	0	0	8	2	1.5723E-06
29	Harada	4	0	0	3	1.75	1.2038E-06
30	Kumbhi	2	1	0	3	1.5	8.8443E-07
31	Achu	3	0	3	0	1.5	8.8443E-07
32	Goruhada	0	5	0	0	1.25	6.1418E-07
33	Veru	2	2	0	0	1	3.9308E-07
34	Pania	3	0	0	0	0.75	2.2111E-07
35	Sirisha	3	0	0	0	0.75	2.2111E-07
36	Simuli	2	0	0	0	0.5	9.8269E-08
37	Kauchia	2	0	0	0	0.5	9.8269E-08
38	Sunari	0	0	0	2	0.5	9.8269E-08
39	Kataka	0	0	0	2	0.5	9.8269E-08
40	S.Moi	0	0	0	2	0.5	9.8269E-08

41	Sunari	0	1	0	0	0.25	2.4567E-08
42	Sisoo	0	1	0	0	0.25	2.4567E-08
43	Sidha	0	0	0	1	0.25	2.4567E-08
44	Benta	0	0	0	1	0.25	2.4567E-08
Compt. No.:		Ghogoda		2			
GPS Gr.1-		N: 20 13 14.9		E: 84 46 34.2			
GPS Gr.2-		N:20 12 50.8		E:84 46 35.1			
GPS Gr.3-		N:20 13 06.8		E:84 46 27.5			
GPS Gr.4-		N:20 13 27.5		E: 84 45 49.4			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	870	1274	443	923	877.5	0.2444668
2	Sahaja	106	267	79	126	144.5	0.0066292
3	Chara	97	197	107	116	129.25	0.0053038
4	Karada	131	193	32	68	106	0.00356728
5	Mahula	91	182	29	30	83	0.00218717
6	Dhau	14	73	15	76	44.5	0.0006287
7	Kendu	33	46	30	69	44.5	0.0006287
8	Moi	37	116	15	0	42	0.00056005
9	Misc.	0	155	0	0	38.75	0.00047673
10	Halanda	36	21	36	21	28.5	0.00025788
11	Kusuma	14	25	19	21	19.75	0.00012384
12	Bhalia	27	5	12	30	18.5	0.00010866
13	S.gundi	0	11	62	0	18.25	0.00010574
14	Gundi	0	0	0	70	17.5	9.723E-05
15	D.kendu	48	17	0	0	16.25	8.3836E-05
16	Jamu	24	28	11	0	15.75	7.8757E-05
17	Kasi	15	18	16	8	14.25	6.447E-05
18	Bela	0	1	0	46	11.75	4.3833E-05
19	Sirisha	4	0	13	26	10.75	3.669E-05
20	Som	30	1	0	9	10	3.1749E-05
21	Dhobi	12	4	0	22	9.5	2.8653E-05
22	Rai	0	0	21	15	9	2.5716E-05
23	Sidha	19	11	5	0	8.75	2.4308E-05
24	Dhamana	5	5	7	7	6	1.143E-05
25	S.Mohi	0	0	10	12	5.5	9.604E-06
26	Harada	0	3	0	17	5	7.9372E-06
27	Kalakauchia	18	0	0	0	4.5	6.4291E-06
28	Genduli	0	1	0	15	4	5.0798E-06
29	Sunari	0	3	9	3	3.75	4.4647E-06
30	D.Mohi	0	0	0	15	3.75	4.4647E-06
31	Amla	0	2	1	9	3	2.8574E-06
32	Mundumundi	11	0	0	0	2.75	2.401E-06
33	Achu	8	0	0	2	2.5	1.9843E-06
34	Bara	0	0	0	10	2.5	1.9843E-06
35	M.Mundi	0	0	6	3	2.25	1.6073E-06
36	Patuli	6	0	0	2	2	1.2699E-06
37	Sisoo	0	4	0	2	1.5	7.1435E-07
38	P.Sal	0	0	6	0	1.5	7.1435E-07
39	Veru	0	5	0	0	1.25	4.9607E-07
40	Kapasia	2	0	0	0	0.5	7.9372E-08
41	Bandhana	0	1	0	1	0.5	7.9372E-08

42	Kumbhi	0	0	1	1	0.5	7.9372E-08
43	Mundi	0	0	0	2	0.5	7.9372E-08
44	Kerua	0	0	0	2	0.5	7.9372E-08
45	Bherua	0	0	2	0	0.5	7.9372E-08
46	Harida	0	0	0	1	0.25	1.9843E-08
47	Bahada	0	0	0	1	0.25	1.9843E-08
48	G.Hada	0	0	0	1	0.25	1.9843E-08
49	Kadamba	0	0	0	1	0.25	1.9843E-08
50	Mango	0	0	0	1	0.25	1.9843E-08
51	Tentala	0	0	0	1	0.25	1.9843E-08
Compt. No.:		Ghogoda		3			
GPS Gr.1-		N: 20 12 40.5		E:84 47 31.6			
GPS Gr.2-		N:20 11 31.1		E:84 46 24.3			
GPS Gr.3-		N:20 11 00.1		E:84 45 45.2			
GPS Gr.4-		N:20.11.45.3		E: 84.45.14.2			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	379	215	346	260	300	0.0418769
2	Karada	465	360	179	0	251	0.0293143
3	Teak	0	0	0	527	131.75	0.00807669
4	Dhau	179	65	152	64	115	0.00615358
5	Sahaja	43	55	73	98	67.25	0.00210434
6	Chara	0	23	127	92	60.5	0.00170311
7	Som	0	25	127	90	60.5	0.00170311
8	Moi	68	93	0	11	43	0.00086034
10	Kendu	8	8	63	85	41	0.00078217
11	Dhamana	59	0	54	0	28.25	0.00037134
14	Halanda	28	8	71	1	27	0.0003392
15	Khaira	0	0	50	58	27	0.0003392
16	Kusuma	28	10	61	0	24.75	0.00028502
17	Mahula	4	21	46	19	22.5	0.00023556
18	Dhobi	1	8	65	13	21.75	0.00022012
19	S.gundi	35	50	0	0	21.25	0.00021011
20	Bela	16	6	54	1	19.25	0.00017242
21	Guharia	0	0	66	7	18.25	0.00015497
22	Amla	0	5	36	31	18	0.00015076
23	Bhalia	0	0	66	0	16.5	0.00012668
24	Banjhana	0	0	65	0	16.25	0.00012287
25	Sirisha	3	2	35	19	14.75	0.00010123
26	Harada	0	1	53	0	13.5	8.4801E-05
27	Jamu	4	7	41	0	13	7.8636E-05
28	Karada	0	0	0	44	11	5.6301E-05
29	Rai	4	1	35	1	10.25	4.8885E-05
30	Kasi	26	12	0	0	9.5	4.1993E-05
31	Goruhada	36	0	0	0	9	3.7689E-05
32	Sidha	19	8	0	0	6.75	2.12E-05
33	Sisoo	11	1	0	7	4.75	1.0498E-05
34	Veru	13	6	0	0	4.75	1.0498E-05
35	Mundimundi	0	17	0	0	4.25	8.4045E-06
36	Bhalia	5	10	0	1	4	7.4448E-06
37	Achu	0	3	0	13	4	7.4448E-06
38	S.Mohi	0	0	13	2	3.75	6.5433E-06

39	Sunari	11	0	0	1	3	4.1877E-06
40	Hinjala	0	0	11	0	2.75	3.5188E-06
41	Kauchia	0	10	0	0	2.5	2.9081E-06
42	Arjuna	0	0	0	10	2.5	2.9081E-06
43	p.Sal	0	0	8	0	2	1.8612E-06
44	Kataka	2	4	0	0	1.5	1.0469E-06
45	Banjana	0	0	0	6	1.5	1.0469E-06
46	Kathia	0	0	0	6	1.5	1.0469E-06
47	Kasi	0	0	0	6	1.5	1.0469E-06
48	Bahada	1	0	0	1	0.5	1.1632E-07
49	Pania	0	2	0	0	0.5	1.1632E-07
50	Genduli	0	2	0	0	0.5	1.1632E-07
51	Tentala	0	0	0	2	0.5	1.1632E-07
52	K.Keruha	0	0	0	2	0.5	1.1632E-07
53	Simili	0	1	0	0	0.25	2.9081E-08
54	Patuli	0	1	0	0	0.25	2.9081E-08
55	Kadamba	0	0	0	1	0.25	2.9081E-08
Compt. No.:		Ghogoda		4			
GPS Gr.1-		N: 20.11.59.7		E: 84.48.25.4			
GPS Gr.2-		N:20.11.50.6		E: 84.48.28.6			
GPS Gr.3-							
GPS Gr.4-							
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	70	54	0	0	62	0.05888458
2	Karada	59	16	0	0	37.5	0.02154174
3	S.Mohi	39	6	0	0	22.5	0.00775503
4	Rai	24	2	0	0	13	0.00258884
5	Chara	16	9	0	0	12.5	0.00239353
6	D.Mohi	16	3	0	0	9.5	0.0013825
7	Bela	17	0	0	0	8.5	0.00110677
8	Jama	15	0	0	0	7.5	0.00086167
9	Sahaja	0	14	0	0	7	0.00075061
10	Mahula	11	2	0	0	6.5	0.00064721
11	Dhou	12	0	0	0	6	0.00055147
12	Kusuma	12	0	0	0	6	0.00055147
13	Kusuma	10	1	0	0	5.5	0.00046339
14	Giringa	11	0	0	0	5.5	0.00046339
15	Sunari	11	0	0	0	5.5	0.00046339
16	Mahula	8	1	0	0	4.5	0.0003102
17	Halanda	8	0	0	0	4	0.0002451
18	Sirisa	6	2	0	0	4	0.0002451
19	Gundi	7	0	0	0	3.5	0.00018765
20	Kendu	7	0	0	0	3.5	0.00018765
21	Giridi	6	0	0	0	3	0.00013787
22	Genduli	6	0	0	0	3	0.00013787
23	Sahada	5	0	0	0	2.5	9.5741E-05
24	Kumbhi	5	0	0	0	2.5	9.5741E-05
25	Pania	4	0	0	0	2	6.1274E-05
26	Sisoo	4	0	0	0	2	6.1274E-05
27	Simuli	4	0	0	0	2	6.1274E-05
28	Dhobi	4	0	0	0	2	6.1274E-05

29	Dhaman	0	2	0	0	1	1.5319E-05
30	Mango	1	0	0	0	0.5	3.8296E-06
31	Bana Bhalia	0	1	0	0	0.5	3.8296E-06
Compt. No.:		Ghogoda		5			
GPS Gr.1-		N: 20 12 10.7		E:084 48 07.3			
GPS Gr.2-		N:20 11 36.7		E:084 47 45.2			
GPS Gr.3-		N:20.12.22.6		E: 84.47.50.1			
GPS Gr.4-		N:20.11.11.2		E: 84.46.22.9			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	534	726	305	13	394.5	0.12253106
2	Chara	130	231	0	0	90.25	0.00641278
3	Mahula	89	115	41	45	72.5	0.00413836
4	Sahaja	38	149	24	40	62.75	0.00310013
5	Dhau	17	151	47	35	62.5	0.00307548
6	Karada	34	103	43	48	57	0.00255801
7	Kendu	40	79	77	0	49	0.00189036
8	Misc.	4	154	0	0	39.5	0.00122842
9	Som	14	68	60	0	35.5	0.00099222
10	Jamu	12	12	50	56	32.5	0.00083161
11	Moi	16	73	0	0	22.25	0.00038977
12	Dhobi	14	11	56	0	20.25	0.00032285
13	Kendu	0	0	0	72	18	0.00025509
14	Gundi	0	0	65	0	16.25	0.0002079
15	Sirisha	11	3	45	0	14.75	0.00017129
16	Amla	0	0	55	0	13.75	0.00014885
17	Achu	8	3	42	0	13.25	0.00013822
18	D.Kendu	0	0	48	0	12	0.00011337
19	Kusuma	9	11	0	25	11.25	9.9645E-05
20	S.Mohi	0	0	0	40	10	7.8732E-05
21	Karanja	0	0	37	0	9.25	6.7365E-05
22	Kasi	6	3	24	0	8.25	5.3587E-05
23	Guharia	0	0	0	33	8.25	5.3587E-05
24	Bhalia	13	13	0	0	6.5	3.3264E-05
25	Kaitha	0	0	25	0	6.25	3.0755E-05
26	Bahada	0	0	20	0	5	1.9683E-05
27	M.Kendu	0	0	0	17	4.25	1.4221E-05
28	Baila	1	15	0	0	4	1.2597E-05
29	Dhamana	0	16	0	0	4	1.2597E-05
30	S.gundi	0	12	0	0	3	7.0859E-06
31	Sidha	5	6	0	0	2.75	5.9541E-06
32	Halanda	0	11	0	0	2.75	5.9541E-06
33	Kara	0	0	0	10	2.5	4.9208E-06
34	Rai	7	2	0	0	2.25	3.9858E-06
35	Bandhana	7	0	0	0	1.75	2.4112E-06
36	Mundmundi	3	3	0	0	1.5	1.7715E-06
37	Kumbhi	3	2	0	0	1.25	1.2302E-06
38	Sisoo	4	0	0	0	1	7.8732E-07
39	Amla	0	4	0	0	1	7.8732E-07
40	Harada	2	1	0	0	0.75	4.4287E-07
41	Sunari	2	1	0	0	0.75	4.4287E-07
42	Genduli	0	3	0	0	0.75	4.4287E-07

43	Kathapana	2	0	0	0	0.5	1.9683E-07
44	Bela	0	2	0	0	0.5	1.9683E-07
45	Patuli	1	0	0	0	0.25	4.9208E-08
46	Pania	0	1	0	0	0.25	4.9208E-08
Compt. No.:		Ghogoda		6			
GPS Gr.1-		N:20.10.36.7		E:84.49.24.1			
GPS Gr.2-		N:20.10.49.3		E:84.49.25.6			
GPS Gr.3-		N:20.10.26.3		E:84.49.36.9			
GPS Gr.4-		N:20.11.13.3		E:84.48.47.8			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	1075	0	810	426	577.75	0.11214395
2	Sahaja	101	129	263	174	166.75	0.00934174
3	Chara	262	14	109	124	127.25	0.00544016
4	Karada	33	324	37	71	116.25	0.00454027
5	Kendu	33	15	87	227	90.5	0.00275165
6	Mahula	97	40	38	184	89.75	0.00270623
7	Dhou	7	41	155	133	84	0.00237058
8	Kusuma	11	8	22	116	39.25	0.00051758
9	Jamu	2	15	32	92	35.25	0.00041746
10	Harida	5	16	95	0	29	0.00028255
11	Bhalia	30	7	15	58	27.5	0.00025407
12	Suma	0	0	39	68	26.75	0.00024041
13	Amla	0	4	37	63	26	0.00022711
14	Dhobi	21	13	10	59	25.75	0.00022277
15	P.Sal	6	8	17	68	24.75	0.0002058
16	S.Mohi	27	6	22	44	24.75	0.0002058
17	Achu	0	6	0	79	21.25	0.00015171
18	Rai	4	0	30	48	20.5	0.00014119
19	Mundi	0	0	0	81	20.25	0.00013777
21	Kumbhi	25	0	3	52	20	0.00013439
22	Dhamana	0	1	3	76	20	0.00013439
23	Sidha	2	4	0	70	19	0.00012128
24	D.Mohi	26	0	0	41	16.75	9.426E-05
25	Halanda	0	2	17	36	13.75	6.3519E-05
26	Kasi	25	2	27	0	13.5	6.123E-05
27	Sirisa	11	6	19	0	9	2.7213E-05
28	Sisoo	0	0	2	28	7.5	1.8898E-05
29	Patuli	26	0	0	0	6.5	1.4195E-05
30	Gundi	0	0	25	0	6.25	1.3124E-05
31	Mohi	0	20	0	0	5	8.3992E-06
32	Mango	0	12	0	0	3	3.0237E-06
33	Bahada	8	2	0	0	2.5	2.0998E-06
34	S.Mundi	0	8	0	0	2	1.3439E-06
35	M. Kendu	0	5	0	0	1.25	5.2495E-07
36	Banjana	0	0	5	0	1.25	5.2495E-07
37	Simuli	4	0	0	0	1	3.3597E-07
38	Ashok	1	2	0	0	0.75	1.8898E-07
39	Karanja	0	3	0	0	0.75	1.8898E-07
40	Kadamba	0	3	0	0	0.75	1.8898E-07
41	Mundi	0	3	0	0	0.75	1.8898E-07
42	Dimiri	0	1	0	0	0.25	2.0998E-08

43	Katak	0	1	0	0	0.25	2.0998E-08
44	Ambuli	0	1	0	0	0.25	2.0998E-08
Compt. No.:		Gunduribadi		1			
GPS Gr.1-		N: 20.15.11.2		E:84.42.14.1			
GPS Gr.2-		N:20.15.22.3		E:84.42.23.7			
GPS Gr.3-		N:20.15.06.3		E:84.42.04.4			
GPS Gr.4-		N:20.15.43.7		E:84.42.31.3			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	366	536	443	655	500	0.14085379
2	Halanda	60	22	11	278	92.75	0.00484681
3	Sahaja	53	102	74	115	86	0.00416702
4	Dhau	13	78	15	186	73	0.00300244
5	Chara	104	64	71	37	69	0.00268242
6	Kusuma	21	24	1	163	52.25	0.00153816
7	Amla	10	0	19	175	51	0.00146544
8	Karada	59	57	66	0	45.5	0.00116641
9	Kendu	38	8	11	98	38.75	0.000846
10	Banjahan	7	0	0	129	34	0.00065131
11	Jama	12	15	4	84	28.75	0.0004657
12	Sunari	8	0	0	107	28.75	0.0004657
13	Kumbhi	0	9	13	90	28	0.00044172
14	S.Gundi	33	40	35	0	27	0.00041073
15	Dhamana	0	0	0	97	24.25	0.00033132
16	Mahi	80	0	8	0	22	0.00027269
17	Bhalia	20	0	8	53	20.25	0.00023104
18	Mahula	20	23	16	19	19.5	0.00021424
19	Kasi	11	4	0	58	18.25	0.00018765
20	Rai	0	0	6	39	11.25	7.1307E-05
21	Bahada	2	0	0	32	8.5	4.0707E-05
22	D.Mohi	0	34	0	0	8.5	4.0707E-05
23	Sum	8	19	0	0	6.75	2.5671E-05
24	Genduli	11	13	0	0	6	2.0283E-05
25	Dhobi	9	0	1	13	5.75	1.8628E-05
26	S.Mohi	0	21	0	0	5.25	1.5529E-05
27	Baila	0	20	0	0	5	1.4085E-05
28	Mundumundi	12	6	0	0	4.5	1.1409E-05
29	Patuli	4	1	4	0	2.25	2.8523E-06
30	Panairi	8	0	0	0	2	2.2537E-06
31	Mundi	0	0	7	0	1.75	1.7255E-06
32	Sirisa	6	0	0	0	1.5	1.2677E-06
33	Sidha	5	0	0	0	1.25	8.8034E-07
34	Kauchia	0	4	0	0	1	5.6342E-07
35	Harida	3	0	0	0	0.75	3.1692E-07
36	Sirisa	0	3	0	0	0.75	3.1692E-07
37	Benta	1	0	0	0	0.25	3.5213E-08
38	Bara	0	1	0	0	0.25	3.5213E-08
Compt. No.:		Gunduribadi		2			
GPS Gr.1-		N: 20.13.54.4		E:84.43.03.3			
GPS Gr.2-		N:20.13.54.1		E:84.42.49.9			
GPS Gr.3-		N:20.13.54.1		E:84.42.49.9			
GPS Gr.4-							

Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	428	157	1111		565.333	0.14945706
2	Karada	144	205	236		195	0.01778183
3	Sahaja	81	107	136		108	0.0054545
4	Chara	112	14	167		97.6667	0.00446067
5	Dhou	74	82	0		52	0.00126449
6	Kendu	17	43	82		47.3333	0.00104771
7	Mahula	35	28	59		40.6667	0.00077336
8	Halanda	18	58	43		39.6667	0.0007358
9	Kusuma	34	41	34		36.3333	0.00061733
10	S.Gundi	74	14	0		29.3333	0.00040237
11	Mohi	0	84	0		28	0.00036663
12	S.Mohi	27	0	50		25.6667	0.00030807
13	Bajhana	0	7	44		17	0.00013515
14	Teak	42	0	0		14	9.1657E-05
15	Tentala	0	0	40		13.3333	8.3135E-05
16	Dhaman	23	16	0		13	7.903E-05
17	Mundumundi	17	21	0		12.6667	7.5029E-05
18	Jama	0	8	29		12.3333	7.1133E-05
19	Genduli	2	33	0		11.6667	6.365E-05
20	kasi	18	12	3		11	5.6584E-05
21	Sirisa	14	18	0		10.6667	5.3206E-05
22	Rai	22	7	0		9.66667	4.3698E-05
23	Bhalia	27	0	0		9	3.7878E-05
24	Amla	5	5	16		8.66667	3.5125E-05
25	Gundi	0	0	26		8.66667	3.5125E-05
26	D.Mohi	12	0	12		8	2.9929E-05
27	Dhobi	6	12	3		7	2.2914E-05
28	Sunari	10	6	3		6.33333	1.8757E-05
29	Sidha	14	4	0		6	1.6835E-05
30	Kauchia	14	0	0		4.66667	1.0184E-05
31	Sam	13	0	0		4.33333	8.7812E-06
32	Patuli	10	0	0		3.33333	5.1959E-06
33	Dimiri	5	0	0		1.66667	1.299E-06
34	Sisoo	0	5	0		1.66667	1.299E-06
35	Guharia	0	3	0		1	4.6764E-07
36	kataka	0	3	0		1	4.6764E-07
37	Bahada	0	0	1		0.33333	5.1959E-08
38	Harida	0	0	1		0.33333	5.1959E-08
Compt. No.:		Gunduribadi		3			
GPS Gr.1-		N: 20.13.27.5		E:84.44.48.4			
GPS Gr.2-		N:20.13.27.5		E:84.44.48.4			
GPS Gr.3-		N:20.13.24.0		E:84.44.24.3			
GPS Gr.4-		N:20.13.34.9		E:84.44.07.4			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	521	202	309	360	348	0.10068
2	Sahaja	270	56	18	135	119.75	0.01192163
3	Chara	168	29	76	37	77.5	0.00499331
4	Karada	140	110	20	31	75.25	0.00470758
5	Sama	193	0	45	0	59.5	0.00294319
6	S.mohi	136	0	0	45	45.25	0.00170224

7	Banjhana	172	0	1	0	43.25	0.0015551
8	S.Gundi	112	24	0	12	37	0.00113812
9	Kendu	82	3	28	17	32.5	0.00087812
10	Dhau	48	0	10	53	27.75	0.00064019
11	Sirisa	42	36	12	9	24.75	0.00050925
12	Halanda	40	15	0	39	23.5	0.00045911
13	Kusuma	39	14	11	16	20	0.00033254
14	Mahi	0	70	4	0	18.5	0.00028453
15	Mahula	34	8	4	20	16.5	0.00022634
16	Genduli	35	13	0	7	13.75	0.00015718
17	Jama	26	0	10	18	13.5	0.00015151
18	Baila	21	19	0	0	10	8.3135E-05
19	Dhaman	13	3	5	18	9.75	7.903E-05
20	Kasi	17	6	0	10	8.25	5.6584E-05
21	Amla	14	0	15	2	7.75	4.9933E-05
22	D.mohi	26	4	0	0	7.5	4.6764E-05
23	Rai	3	5	0	22	7.5	4.6764E-05
24	Bheru	20	8	0	0	7	4.0736E-05
25	Bhandan	0	9	0	15	6	2.9929E-05
26	Sidha	11	6	1	2	5	2.0784E-05
27	Guharia	17	0	0	0	4.25	1.5016E-05
28	Harida	1	3	0	13	4.25	1.5016E-05
29	Rai	13	0	1	0	3.5	1.0184E-05
30	Dhobi	0	0	7	7	3.5	1.0184E-05
31	Achu	0	1	3	4	2	3.3254E-06
32	Bela	0	0	0	8	2	3.3254E-06
33	Patuli	2	0	0	5	1.75	2.546E-06
34	Kumbhi	0	2	1	3	1.5	1.8705E-06
35	Mundi	0	5	1	0	1.5	1.8705E-06
36	Simuli	0	0	0	6	1.5	1.8705E-06
37	Sisoo	0	1	0	4	1.25	1.299E-06
38	Sunari	0	0	0	5	1.25	1.299E-06
39	Barada	4	0	0	0	1	8.3135E-07
40	Bela	0	3	0	0	0.75	4.6764E-07
41	S.Sunari	0	2	0	0	0.5	2.0784E-07
42	Mmundi	0	0	0	2	0.5	2.0784E-07
43	Pania	0	1	0	0	0.25	5.1959E-08
44	Kataka	0	1	0	0	0.25	5.1959E-08
45	Bhalia	0	0	0	1	0.25	5.1959E-08
Compt. No.:		Gunduribadi		4			
GPS Gr.1-		N:20.13.13.7		E:84.43.47.8			
GPS Gr.2-		N:20.12.07.5		E:84.43.35.9			
GPS Gr.3-		N:20.12.51.8		E:84.43.31.9			
GPS Gr.4-		N:20.12.14.9		E:84.44.53.8			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	521	202	309	360	348	0.10068
2	Sahaja	270	56	18	135	119.75	0.01192163
3	Chara	168	29	76	37	77.5	0.00499331
4	Karada	140	110	20	31	75.25	0.00470758
5	Sama	193	0	45	0	59.5	0.00294319
6	S.mohi	136	0	0	45	45.25	0.00170224

7	Banjhana	172	0	1	0	43.25	0.0015551
8	S.Gundi	112	24	0	12	37	0.00113812
9	Kendu	82	3	28	17	32.5	0.00087812
10	Dhau	48	0	10	53	27.75	0.00064019
11	Sirisa	42	36	12	9	24.75	0.00050925
12	Halanda	40	15	0	39	23.5	0.00045911
13	Kusuma	39	14	11	16	20	0.00033254
14	Mahi	0	70	4	0	18.5	0.00028453
15	Mahula	34	8	4	20	16.5	0.00022634
16	Genduli	35	13	0	7	13.75	0.00015718
17	Jama	26	0	10	18	13.5	0.00015151
18	Baila	21	19	0	0	10	8.3135E-05
19	Dhaman	13	3	5	18	9.75	7.903E-05
20	Kasi	17	6	0	10	8.25	5.6584E-05
21	Amla	14	0	15	2	7.75	4.9933E-05
22	D.mohi	26	4	0	0	7.5	4.6764E-05
23	Rai	3	5	0	22	7.5	4.6764E-05
24	Bheru	20	8	0	0	7	4.0736E-05
25	Bhandan	0	9	0	15	6	2.9929E-05
26	Sidha	11	6	1	2	5	2.0784E-05
27	Guharia	17	0	0	0	4.25	1.5016E-05
28	Harida	1	3	0	13	4.25	1.5016E-05
29	Rai	13	0	1	0	3.5	1.0184E-05
30	Dhobi	0	0	7	7	3.5	1.0184E-05
31	Achu	0	1	3	4	2	3.3254E-06
32	Bela	0	0	0	8	2	3.3254E-06
33	Patuli	2	0	0	5	1.75	2.546E-06
34	Kumbhi	0	2	1	3	1.5	1.8705E-06
35	Mundi	0	5	1	0	1.5	1.8705E-06
36	Simuli	0	0	0	6	1.5	1.8705E-06
37	Sisoo	0	1	0	4	1.25	1.299E-06
38	Sunari	0	0	0	5	1.25	1.299E-06
39	Barada	4	0	0	0	1	8.3135E-07
40	Bela	0	3	0	0	0.75	4.6764E-07
41	S.Sunari	0	2	0	0	0.5	2.0784E-07
42	Mmundi	0	0	0	2	0.5	2.0784E-07
43	Pania	0	1	0	0	0.25	5.1959E-08
44	Kataka	0	1	0	0	0.25	5.1959E-08
45	Bhalia	0	0	0	1	0.25	5.1959E-08
Compt. No.:		Chandragiri		4			
GPS Gr.1-		N:20 06 34.1		E:84 41 23.7			
GPS Gr.2-		N:20 06 38.4		E:84 41 32.3			
GPS Gr.3-		N:20 06 03.6		E:84 41 14.6			
GPS Gr.4-		N:20 06 29.2		E:84 40 47.1			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	444	521	876	316	539.25	0.16809844
2	Chara	165	304	59	78	151.5	0.0132681
3	Sahaja	117	202	57	43	104.75	0.00634295
4	Som	61	249	14	54	94.5	0.00516234
5	Kendu	61	193	49	50	88.25	0.00450208
6	Karada	48	151	0	39	59.5	0.00204653

7	Dhau	79	100	2	29	52.5	0.00159332
8	Mahula	25	122	14	48	52.25	0.00157818
9	Misc.	0	103	0	0	25.75	0.0003833
10	Moi	21	52	0	7	20	0.00023123
11	Dhobi	26	13	30	3	18	0.0001873
12	Mohi	0	0	68	0	17	0.00016706
13	Jamu	6	26	21	2	13.75	0.00010929
14	Kusuma	4	27	4	6	10.25	6.0734E-05
15	Amla	11	7	0	12	7.5	3.2517E-05
16	Achu	6	15	0	5	6.5	2.4424E-05
17	Rai	6	0	0	16	5.5	1.7487E-05
18	Halanda	0	2	17	0	4.75	1.3043E-05
19	Tentala	0	0	4	15	4.75	1.3043E-05
20	Dhamana	6	8	0	0	3.5	7.0814E-06
21	Genduli	3	10	0	0	3.25	6.1059E-06
22	Kara	0	13	0	0	3.25	6.1059E-06
23	Kumbhi	1	7	0	4	3	5.2027E-06
24	M.Mundi	0	0	0	12	3	5.2027E-06
25	Kauchia	11	0	0	0	2.75	4.3717E-06
26	Kataka	9	0	0	0	2.25	2.9265E-06
27	S.Gundi	0	0	9	0	2.25	2.9265E-06
28	Baila	3	4	0	0	1.75	1.7704E-06
29	Sunari	1	3	0	2	1.5	1.3007E-06
30	Bela	1	5	0	0	1.5	1.3007E-06
31	Bhalia	1	0	0	4	1.25	9.0324E-07
32	Sirisha	2	2	0	0	1	5.7807E-07
33	S.Mohi	0	0	0	4	1	5.7807E-07
34	Sidha	0	0	0	4	1	5.7807E-07
35	Piasal	3	0	0	0	0.75	3.2517E-07
36	Guharia	0	1	0	2	0.75	3.2517E-07
37	Neem	0	0	1	2	0.75	3.2517E-07
38	Pania	1	1	0	0	0.5	1.4452E-07
39	Gambhari	0	2	0	0	0.5	1.4452E-07
40	Bahada	0	2	0	0	0.5	1.4452E-07
41	Mundumundi	0	2	0	0	0.5	1.4452E-07
42	Kasi	0	1	0	1	0.5	1.4452E-07
43	Chhatian	0	0	2	0	0.5	1.4452E-07
44	Harada	1	0	0	0	0.25	3.613E-08
45	Bandhana	1	0	0	0	0.25	3.613E-08
46	Goruhada	0	1	0	0	0.25	3.613E-08
47	Bahada	0	0	0	1	0.25	3.613E-08
48	K.kerunha	0	0	0	1	0.25	3.613E-08
49	Sisooo	0	0	0	1	0.25	3.613E-08
Compt. No.:		Chandragiri		5			
GPS Gr.1-		N:20 06 11.7		E:84 40 39.3			
GPS Gr.2-		N:20 06 08.8		E:84 40 50.7			
GPS Gr.3-		N:20 06 29.2		E:84 40 47.1			
GPS Gr.4-							
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	444	521	876	316	539.25	0.17153721
2	Chara	165	304	59	78	151.5	0.01353952

3	Sahaja	117	202	57	43	104.75	0.00647271
4	Som	61	249	14	54	94.5	0.00526795
5	Kendu	61	193	49	50	88.25	0.00459417
6	Karada	48	151	0	39	59.5	0.00208839
7	Dhau	79	100	2	29	52.5	0.00162591
8	Mahula	25	122	14	48	52.25	0.00161046
9	Misc.	0	103	0	0	25.75	0.00039114
10	Moi	21	52	0	7	20	0.00023596
11	Dhobi	26	13	30	3	18	0.00019113
12	Mohi	0	0	68	0	17	0.00017048
13	Jamu	6	26	21	2	13.75	0.00011153
14	Kusuma	4	27	4	6	10.25	6.1976E-05
15	Amla	11	7	0	12	7.5	3.3182E-05
16	Achu	6	15	0	5	6.5	2.4923E-05
17	Rai	6	0	0	16	5.5	1.7844E-05
18	Halanda	0	2	17	0	4.75	1.331E-05
19	Dhamana	6	8	0	0	3.5	7.2263E-06
20	Genduli	3	10	0	0	3.25	6.2308E-06
21	Kara	0	13	0	0	3.25	6.2308E-06
22	Kumbhi	1	7	0	4	3	5.3091E-06
23	Kauchia	11	0	0	0	2.75	4.4611E-06
24	Kataka	9	0	0	0	2.25	2.9864E-06
25	Baila	3	4	0	0	1.75	1.8066E-06
26	Sunari	1	3	0	2	1.5	1.3273E-06
27	Bela	1	5	0	0	1.5	1.3273E-06
28	Bhalia	1	0	0	4	1.25	9.2172E-07
29	Sirisha	2	2	0	0	1	5.899E-07
30	Piasal	3	0	0	0	0.75	3.3182E-07
31	Guharia	0	1	0	2	0.75	3.3182E-07
32	Neem	0	0	1	2	0.75	3.3182E-07
33	Pania	1	1	0	0	0.5	1.4747E-07
34	Gambhari	0	2	0	0	0.5	1.4747E-07
35	Bahada	0	2	0	0	0.5	1.4747E-07
36	Mundumundi	0	2	0	0	0.5	1.4747E-07
37	Kasi	0	1	0	1	0.5	1.4747E-07
38	Harada	1	0	0	0	0.25	3.6869E-08
39	Bandhana	1	0	0	0	0.25	3.6869E-08
40	Goruhada	0	1	0	0	0.25	3.6869E-08
Compt. No.:		Chandragiri		6			
GPS Gr.1-		N:20 06 11.7		E:84 40 39.3			
GPS Gr.2-		N:20 06 08.8		E:84 40 50.7			
GPS Gr.3-		N:20 06 29.2		E:84 40 47.1			
GPS Gr.4-							
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	0	189	283	0	157.333	0.01339644
2	Karada	2	72	314	0	129.333	0.00905251
3	Sahaja	0	120	258	0	126	0.0085919
4	Moi	15	17	324	0	118.667	0.00762089
5	Sidha	1	0	247	0	82.6667	0.00369836
6	Rai	0	8	228	0	78.6667	0.00334911
7	Jamu	3	13	214	0	76.6667	0.00318098

8	Halanda	7	26	166	0	66.3333	0.00238129
9	Dhamana	16	5	175	0	65.3333	0.00231003
10	Dhau	18	0	154	0	57.3333	0.00177894
11	Sunari	0	4	166	0	56.6667	0.00173781
12	Chara	1	33	121	0	51.6667	0.00144467
13	Amla	0	0	139	0	46.3333	0.00116181
14	Kasi	2	16	111	0	43	0.00100066
15	Genduli	0	0	85	0	28.3333	0.00043445
16	Mahula	0	8	56	0	21.3333	0.0002463
17	Patuli	5	0	56	0	20.3333	0.00022375
18	Kusuma	20	26	11	0	19	0.00019537
19	Mundamundi	32	10	0	0	14	0.00010607
20	M.Mundi	0	0	42	0	14	0.00010607
21	Sisoo	1	1	39	0	13.6667	0.00010108
22	Misc.	22	15	0	0	12.3333	8.2321E-05
23	Karanja	0	0	37	0	12.3333	8.2321E-05
24	Kumbhi	15	10	0	0	8.33333	3.7582E-05
25	Baila	17	4	0	0	7	2.6518E-05
26	Sugandhi	0	0	21	0	7	2.6518E-05
27	Bela	17	0	0	0	5.66667	1.7378E-05
28	Dhobi	17	0	0	0	5.66667	1.7378E-05
29	Kendu	6	5	0	0	3.66667	7.276E-06
30	Hinjala	0	0	10	0	3.33333	6.0132E-06
31	Bhalia	7	0	0	0	2.33333	2.9465E-06
32	Som	0	5	0	0	1.66667	1.5033E-06
33	Pania	4	0	0	0	1.33333	9.6211E-07
34	S.gundi	0	4	0	0	1.33333	9.6211E-07
35	Harada	0	1	0	0	0.33333	6.0132E-08
36	Kataka	0	1	0	0	0.33333	6.0132E-08
Compt. No.:		Chandragiri		7			
GPS Gr.1-		N:20 05 52.9		E:84 38 59.4			
GPS Gr.2-		N:20 06 12.8		E:84 38 54.7			
GPS Gr.3-		N:20 04 42.0		E:84 39 02.2			
GPS Gr.4-		N:20 05.02.5		E:84 39 03.6			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	698	109	684	558	512.25	0.1400605
2	Karada	314	223	18	23	144.5	0.01114519
3	Chara	280	26	91	85	120.5	0.00775043
4	Dhau	274	76	2	56	102	0.00555331
5	Moi	266	36	0	0	75.5	0.00304261
6	Sahaja	98	80	22	59	64.75	0.00223785
7	Mahula	27	3	142	50	55.5	0.00164414
8	Rai	0	65	23	43	32.75	0.0005725
9	Kendu	66	15	3	27	27.75	0.00041103
10	Kusuma	26	46	1	33	26.5	0.00037484
11	Halanda	37	1	27	28	23.25	0.00028853
12	Jamu	43	0	29	5	19.25	0.00019779
13	Mundumundi	0	59	0	0	14.75	0.00011613
14	Dhamana	29	1	12	15	14.25	0.00010839
15	S.Mohi	0	0	28	21	12.25	8.0098E-05
16	Kasi	5	37	0	2	11	6.4586E-05

17	Som	44	0	0	0	11	6.4586E-05
18	Amla	1	13	17	12	10.75	6.1683E-05
19	Gundi	0	0	6	35	10.25	5.6079E-05
20	Baila	11	0	0	28	9.75	5.0741E-05
21	Misc.	33	0	0	0	8.25	3.633E-05
22	Dhobi	2	18	12	0	8	3.4161E-05
23	Sunari	30	0	0	0	7.5	3.0024E-05
24	Pania	4	25	0	0	7.25	2.8056E-05
25	S.gundi	4	22	0	0	6.5	2.2552E-05
26	Harada	0	18	8	0	6.5	2.2552E-05
27	Kumbhi	0	20	0	0	5	1.3344E-05
28	Sidha	4	6	2	6	4.5	1.0809E-05
29	M.Mundi	0	0	9	6	3.75	7.5061E-06
30	Bandhana	0	11	0	0	2.75	4.0366E-06
31	Bhalia	0	3	7	0	2.5	3.336E-06
32	Kara	8	0	0	0	2	2.1351E-06
33	D.Mohi	0	0	5	1	1.5	1.201E-06
34	Patili	0	0	1	3	1	5.3377E-07
35	Tentala	0	0	4	0	1	5.3377E-07
36	Karanja	0	3	0	0	0.75	3.0024E-07
37	Sirisha	0	2	0	0	0.5	1.3344E-07
38	D.Kendu	0	0	1	1	0.5	1.3344E-07
39	Marua	0	0	1	0	0.25	3.336E-08
40	K.Kerua	0	0	0	1	0.25	3.336E-08
Compt. No.:		Chandragiri		8			
GPS Gr.1-		N: 20 05 21.5		E:84 40 45.9			
GPS Gr.2-		N:20 05 37.1		E:84 40 46.7			
GPS Gr.3-		N:20 05 11.9		E:84 40 42.2			
GPS Gr.4-		N:20 05 28.9		E:84 40 45.5			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	394	198	190	206	247	0.1080279
2	Chara	442	81	84	0	151.75	0.04077551
3	Mahula	112	30	46	44	58	0.00595659
4	Karada	46	52	56	22	44	0.00342805
5	Dhau	33	65	74	0	43	0.003274
6	Kendu	35	17	78	36	41.5	0.00304957
7	Som	20	15	42	29	26.5	0.00124347
8	Amla	1	6	7	74	22	0.00085701
9	Misc.	69	0	0	0	17.25	0.00052689
10	Sahaja	40	2	15	11	17	0.00051173
11	Moi	20	22	2	13	14.25	0.00035956
12	Bhalia	13	13	4	19	12.25	0.00026571
13	Rai	23	8	14	0	11.25	0.0002241
14	Kusuma	11	5	12	2	7.5	9.9601E-05
15	Jamu	14	0	1	3	4.5	3.5856E-05
16	Achu	2	0	11	4	4.25	3.1983E-05
17	Kumbhi	13	1	2	0	4	2.8331E-05
18	Dhamana	12	0	0	0	3	1.5936E-05
19	Genduli	0	12	0	0	3	1.5936E-05
20	Dhobi	3	0	3	5	2.75	1.3391E-05
21	Sidha	1	3	3	0	1.75	5.4227E-06

22	Kasi	1	6	0	0	1.75	5.4227E-06
23	Bandhana	7	0	0	0	1.75	5.4227E-06
24	Mundi	2	4	0	0	1.5	3.984E-06
25	Halanda	1	2	0	3	1.5	3.984E-06
26	Patuli	0	4	2	0	1.5	3.984E-06
27	M.Mundi	0	0	2	3	1.25	2.7667E-06
28	Sunari	3	1	0	0	1	1.7707E-06
29	Sirisha	2	0	1	1	1	1.7707E-06
30	Baicha	0	0	4	0	1	1.7707E-06
31	Harada	3	0	0	0	0.75	9.9601E-07
32	D.Mohi	0	0	0	3	0.75	9.9601E-07
33	Pania	1	0	0	0	0.25	1.1067E-07
34	Karada	1	0	0	0	0.25	1.1067E-07
35	Bahada	1	0	0	0	0.25	1.1067E-07
36	Bela	0	0	1	0	0.25	1.1067E-07
37	Barada	0	0	1	0	0.25	1.1067E-07
Compt. No.:		Chandragiri		9			
GPS Gr.1-		N:20 04 05.2		E:84 40 43.4			
GPS Gr.2-		N:20 03 54.1		E:84 40 32.3			
GPS Gr.3-		N:20 02 56.7		E:84 40 18.9			
GPS Gr.4-							
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	380	655	486	0	507	0.3192334
2	Chara	49	247	63	0	119.667	0.01778438
3	Kendu	5	147	4	0	52	0.00335814
4	Sahaja	17	64	25	0	35.3333	0.00155046
5	Mahula	25	39	14	0	26	0.00083954
6	Jamu	2	47	19	0	22.6667	0.00063807
7	Moi	15	31	0	0	15.3333	0.00029199
8	Dhau	0	45	0	0	15	0.00027943
9	Misc.	0	38	0	0	12.6667	0.00019926
10	Karada	0	35	0	0	11.6667	0.00016904
11	Bhalia	15	13	5	0	11	0.00015027
12	Sunari	0	32	1	0	11	0.00015027
13	Som	0	33	0	0	11	0.00015027
14	S.gundi	0	27	0	0	9	0.0001006
15	Kusuma	7	10	1	0	6	4.4709E-05
16	Achu	0	17	0	0	5.66667	3.9879E-05
17	Dhobi	3	12	0	0	5	3.1048E-05
18	Amla	0	14	0	0	4.66667	2.7046E-05
19	Rai	0	12	0	0	4	1.9871E-05
20	Harada	7	4	0	0	3.66667	1.6697E-05
21	Kumbhi	4	5	0	0	3	1.1177E-05
22	Halnda	3	3	0	0	2	4.9677E-06
23	Halanda	0	0	3	0	1	1.2419E-06
24	Sirisha	0	2	0	0	0.66667	5.5196E-07
25	Luni	1	0	0	0	0.33333	1.3799E-07
26	Bela	0	1	0	0	0.33333	1.3799E-07
27	Dhamana	0	1	0	0	0.33333	1.3799E-07
28	Kasi	0	1	0	0	0.33333	1.3799E-07
29	Mundumundi	0	1	0	0	0.33333	1.3799E-07

30	Bahada	0	0	1	0	0.33333	1.3799E-07
31	P.Sal	0	0	1	0	0.33333	1.3799E-07
Compt. No.:		Bramhansahi		3			
GPS Gr.1-		N:20 06 34.1		E:84 41 23.7			
GPS Gr.2-		N:20 06 38.4		E:84 41 32.3			
GPS Gr.3-		N:20 06 27.9		E:84 42 35.5			
GPS Gr.4-		N:20 06 36.7		E:84 45 46.2			
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	675	349	806	1105	733.75	0.66173355
2	Chara	40	8	39	67	38.5	0.00182183
3	mahula	48	10	39	6	25.75	0.00081497
4	Sahaja	8	8	16	39	17.75	0.00038724
5	Jamu	2	0	19	23	11	0.00014872
6	Moi	6	11	15	0	8	7.8662E-05
7	Kendu	11	6	14	0	7.75	7.3823E-05
8	Kendu	0	0	1	30	7.75	7.3823E-05
9	Kusuma	4	6	11	5	6.5	5.1929E-05
10	Tentala	0	0	0	23	5.75	4.0637E-05
11	Gundi	0	0	16	0	4	1.9666E-05
12	S.Mohi	0	0	6	10	4	1.9666E-05
13	Bhalia	7	5	2	1	3.75	1.7284E-05
14	Rai	6	1	3	4	3.5	1.5056E-05
15	Kasi	1	1	1	10	3.25	1.2982E-05
16	Sirisha	1	0	1	11	3.25	1.2982E-05
17	Dhobi	3	2	1	5	2.75	9.2951E-06
19	Karada	0	0	4	6	2.5	7.6819E-06
20	Harada	2	0	4	3	2.25	6.2223E-06
21	Bahada	1	2	1	4	2	4.9164E-06
22	Halanda	2	0	0	4	1.5	2.7655E-06
23	Amla	4	0	0	0	1	1.2291E-06
24	Dhau	1	2	0	0	0.75	6.9137E-07
25	Kumbhi	0	1	0	2	0.75	6.9137E-07
26	Mango	0	0	3	0	0.75	6.9137E-07
27	M.Mundi	0	0	2	0	0.5	3.0727E-07
28	Neem	0	0	2	0	0.5	3.0727E-07
29	Sidha	0	0	2	0	0.5	3.0727E-07
30	Sidha	0	0	2	0	0.5	3.0727E-07
31	Som	1	0	0	0	0.25	7.6819E-08
32	Misc.	0	1	0	0	0.25	7.6819E-08
33	Kumbhi	1	0	0	0	0.25	7.6819E-08
34	Achu	1	0	0	0	0.25	7.6819E-08
35	Kataka	0	0	1	0	0.25	7.6819E-08
36	Dhaman	0	0	1	0	0.25	7.6819E-08
Compt. No.:		Bramhansahi		4			
GPS Gr.1-		N:20 04 49.1		E:84 41 23.2			
GPS Gr.2-		N:20 04 29.2		E:84 41 24.1			
GPS Gr.3-		N:20 13 17.4		E:84 46 13.1			
GPS Gr.4-							
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	297	387	366	0	350	0.282361
2	Som	8	15	153	0	58.6667	0.00793326

3	Char	44	25	99	0	56	0.00722844
4	Mahula	32	58	45	0	45	0.0046676
5	Kendu	14	33	74	0	40.3333	0.0037497
6	Sunari	0	0	115	0	38.3333	0.00338705
7	Dhobi	0	20	16	0	12	0.00033192
8	Achu	1	0	34	0	11.6667	0.00031373
9	Dhau	0	0	20	0	6.66667	0.00010244
10	Bhalia	6	6	5	0	5.66667	7.4016E-05
11	Moi	5	7	5	0	5.66667	7.4016E-05
12	Sahaja	2	12	0	0	4.66667	5.0198E-05
13	Sirisa	0	0	14	0	4.66667	5.0198E-05
14	Jamu	4	1	7	0	4	3.688E-05
15	Kusuma	4	2	3	0	3	2.0745E-05
16	Bahada	4	1	1	0	2	9.22E-06
17	P.Sal	0	0	5	0	1.66667	6.4027E-06
18	Bachhana	0	0	5	0	1.66667	6.4027E-06
19	S.gundi	4	0	0	0	1.33333	4.0978E-06
20	Harada	0	0	4	0	1.33333	4.0978E-06
21	Misc.	3	0	0	0	1	2.305E-06
22	Halanda	3	0	0	0	1	2.305E-06
23	Patuli	0	3	0	0	1	2.305E-06
24	Kumbhi	0	0	2	0	0.66667	1.0244E-06
25	Kasi	1	0	0	0	0.33333	2.5611E-07
26	Kasi	0	0	1	0	0.33333	2.5611E-07
Compt. No.:		Bramhansahi		5			
GPS Gr.1-		N:20 03 33.8		E:84 42 53.0			
GPS Gr.2-		N:20 03 44.5		E:84 42 03.5			
GPS Gr.3-		N:20 04 18.9		E:84 41 31.5			
GPS Gr.4-							
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	812	652	2077	0	1180.33	0.32947488
2	Sahaja	97	102	276	0	158.333	0.00592868
3	Char	93	141	166	0	133.333	0.00420427
4	Karada	186	27	45	0	86	0.00174908
5	Mahula	93	32	65	0	63.3333	0.00094859
6	Moi	115	19	30	0	54.6667	0.00070674
7	Kusuma	65	73	24	0	54	0.00068961
8	Dhau	65	57	19	0	47	0.00052241
9	Halanda	36	10	69	0	38.3333	0.00034751
10	Misc.	99	0	0	0	33	0.00025754
11	Sirisha	10	47	29	0	28.6667	0.00019434
12	Som	21	40	18	0	26.3333	0.00016399
13	Kendu	28	24	9	0	20.3333	9.7776E-05
14	Bhalia	18	12	24	0	18	7.6623E-05
15	Dhobi	16	22	9	0	15.6667	5.8045E-05
16	Bela	16	10	9	0	11.6667	3.2189E-05
17	Jamu	9	15	10	0	11.3333	3.0376E-05
18	Sahada	0	0	30	0	10	2.3649E-05
19	Harada	3	11	11	0	8.33333	1.6423E-05
20	Achu	7	17	0	0	8	1.5135E-05
21	Kumbhi	8	0	14	0	7.33333	1.2718E-05

22	Kasi	11	1	9	0	7	1.1588E-05
23	Patuli	4	12	0	0	5.33333	6.7268E-06
24	Mundi	1	0	14	0	5	5.9123E-06
25	Bahada	8	4	0	0	4	3.7838E-06
26	Sidha	4	6	2	0	4	3.7838E-06
27	Pania	12	0	0	0	4	3.7838E-06
28	Amla	3	7	1	0	3.66667	3.1795E-06
29	S.gundi	7	0	0	0	2.33333	1.2876E-06
30	Bandhana	4	0	0	0	1.33333	4.2043E-07
31	Sunari	1	0	3	0	1.33333	4.2043E-07
32	Simili	0	0	4	0	1.33333	4.2043E-07
33	Luni	0	3	0	0	1	2.3649E-07
34	Banjhana	0	0	3	0	1	2.3649E-07
35	P.Sal	0	0	3	0	1	2.3649E-07
Compt. No.:		Bramhansahi		6			
GPS Gr.1-		N:20 03 32.2		E:84 42 00.6			
GPS Gr.2-		N:20 02 32.1		E:84 42 06.5			
GPS Gr.3-		N:20 02 28.9		E:84 41 44.1			
GPS Gr.4-							
Sl. No.	Name of species	G1	G2	G3	G4	Avg.	(ni/N)2
1	Sal	623	489	316	0	476	0.15973143
2	Chara	338	144	94	0	192	0.02598836
3	Sahaja	165	42	107	0	104.667	0.00772313
4	Kendu	130	50	113	0	97.6667	0.00672464
5	Mahula	123	54	35	0	70.6667	0.00352051
6	Dhau	18	56	34	0	36	0.00091365
7	Karada	22	14	67	0	34.3333	0.00083101
8	Som	10	45	44	0	33	0.00076772
9	Kusuma	45	12	27	0	28	0.0005527
10	Achu	37	11	1	0	16.3333	0.00018807
11	Bhalia	25	21	2	0	16	0.00018047
12	Dhobi	8	19	13	0	13.3333	0.00012533
13	Misc.	40	0	0	0	13.3333	0.00012533
14	Moi	26	11	1	0	12.6667	0.00011311
15	Halnda	26	5	1	0	10.6667	8.0211E-05
16	Jamu	19	7	0	0	8.66667	5.2952E-05
17	Sirisha	1	15	1	0	5.66667	2.2638E-05
18	Kumbhi	7	7	2	0	5.33333	2.0053E-05
19	Bela	3	2	11	0	5.33333	2.0053E-05
20	Guharia	5	1	0	0	2	2.8199E-06
21	Kauchia	0	6	0	0	2	2.8199E-06
22	Amla	2	1	0	0	1	7.0498E-07
23	Bandhan	0	3	0	0	1	7.0498E-07
24	Patuli	0	3	0	0	1	7.0498E-07
25	Genduli	0	0	3	0	1	7.0498E-07
26	Harada	2	0	0	0	0.66667	3.1332E-07
27	Bahada	2	0	0	0	0.66667	3.1332E-07
28	Dhaman	2	0	0	0	0.66667	3.1332E-07
29	S.gundi	1	0	0	0	0.33333	7.8331E-08
30	Pania	1	0	0	0	0.33333	7.8331E-08
31	Piasal	0	1	0	0	0.33333	7.8331E-08

32	Sidha	0	1	0	0	0.33333	7.8331E-08
Gallery							
Compt. No.:		Gallery	16				
GPS Gr.1-		N 20 04 27.9		E 084 33 14.4			
GPS Gr.2-		N 20 04 20.4		E 084 33 31.8			
GPS Gr.3-		N 20 04 39.5		E 084 34 07.3			
GPS Gr.4-		N 20 04 31.2		E 084 33 02.6			
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg	(ni/N)2
1	Achu	0	17	0	0	4.25	0.00014133
2	Amla	2	6	0	0	2	3.1297E-05
3	Ankula	0	0	0	8	2	3.1297E-05
4	Arguna	0	1	2	0	0.75	4.4012E-06
5	Asana	0	0	0	11	2.75	5.9172E-05
6	Baincha	0	2	0	0	0.5	1.9561E-06
7	Banapiaja	0	0	3	0	0.75	4.4012E-06
8	Bara	3	0	0	0	0.75	4.4012E-06
9	Bela	0	0	0	5	1.25	1.2226E-05
10	Bhalia	0	3	15	12	7.5	0.00044012
11	Bhuin neem	22	0	0	0	5.5	0.00023669
12	Chara	11	43	0	0	13.5	0.00142599
13	Dantari	0	0	10	0	2.5	4.8902E-05
14	Dhaman	0	0	5	0	1.25	1.2226E-05
15	Dhatiki	13	0	0	0	3.25	8.2645E-05
16	Dhau	5	0	0	0	1.25	1.2226E-05
17	Dhobi	14	9	0	0	5.75	0.00025869
18	Ekala	0	0	0	13	3.25	8.2645E-05
19	Gopakanha	0	0	3	0	0.75	4.4012E-06
20	Gundi	0	0	10	5	3.75	0.00011003
21	Halanda	0	0	0	6	1.5	1.7605E-05
22	Harida	0	2	0	0	0.5	1.9561E-06
23	Indrajal	0	0	10	0	2.5	4.8902E-05
24	Jamu	4	9	0	16	7.25	0.00041127
25	Kaicha	0	0	1	0	0.25	4.8902E-07
26	Kantaikoli	0	0	0	10	2.5	4.8902E-05
27	Kara	0	0	4	0	1	7.8243E-06
28	Karada	16	19	18	0	13.25	0.00137366
29	Kelikerun	33	5	0	0	9.5	0.00070615
30	Kendu	9	14	15	19	14.25	0.00158883
31	Khakada	57	30	10	18	28.75	0.00646731
32	Khalua lai	13	8	12	0	8.25	0.00053254
33	Khukundi Lai	27	0	6	0	8.25	0.00053254
34	Kulalai	0	0	12	4	4	0.00012519
35	Kusuma	0	0	4	0	1	7.8243E-06
36	Mahula	5	7	0	0	3	7.0419E-05
37	Mankadasiali	0	7	10	0	4.25	0.00014133
38	Masania	2	0	0	0	0.5	1.9561E-06
39	Moi	4	1	10	16	7.75	0.00046995
40	Mudumudia	0	0	7	6	3.25	8.2645E-05
41	Muturi	0	0	5	6	2.75	5.9172E-05
42	Nunununi	0	6	0	0	1.5	1.7605E-05

43	Palasa	14	16	17	7	13.5	0.00142599
44	Patasa	0	0	0	14	3.5	9.5848E-05
45	Piasal	0	0	0	8	2	3.1297E-05
46	Pithala	5	0	4	10	4.75	0.00017654
47	Pokasunga	0	31	10	40	20.25	0.00320847
48	Rai	0	0	2	0	0.5	1.9561E-06
49	Ranabila	0	0	12	0	3	7.0419E-05
50	S.Gundi	0	6	0	5	2.75	5.9172E-05
51	S.moi	0	0	6	0	1.5	1.7605E-05
52	Sahada	0	0	3	0	0.75	4.4012E-06
53	Sahaja	1	28	0	0	7.25	0.00041127
54	Sal	183	110	0	26	79.75	0.04976331
55	Sarupatari	0	0	0	6	1.5	1.7605E-05
56	Satabari	2	0	6	0	2	3.1297E-05
57	Sialilai	5	0	0	8	3.25	8.2645E-05
58	Sidha	0	1	10	0	2.75	5.9172E-05
59	Sugandhi	35	0	6	0	10.25	0.00082205
60	Sunari	3	0	18	0	5.25	0.00021566
61	Talamuli	0	0	4	0	1	7.8243E-06
62	Telakeruan	0	0	0	12	3	7.0419E-05
Compt. No.:		Gallery	18				
GPS Gr.1-		N 20 03 48.0		E 084 34 33.0			
GPS Gr.2-		N 20 04 10.0		E 084 35 55.0			
GPS Gr.3-		N 20 04 02.2		E 084 34 51.2			
GPS Gr.4-		N 20 04 17.2		E 084 35 54.7			
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Achu	3	0	0	30	8.25	0.00019113
2	Amla	5	0	0	0	1.25	4.3877E-06
3	Araguna	13	14	0	0	6.75	0.00012794
4	Badi Amla	0	0	10	11	5.25	7.7399E-05
5	Bana haladi	0	0	15	0	3.75	3.9489E-05
6	Bana Kandula	0	0	10	0	2.5	1.7551E-05
7	Banakolatha	10	0	0	0	2.5	1.7551E-05
8	Banapiaja	6	0	0	20	6.5	0.00011864
9	Bandhan	0	0	5	0	1.25	4.3877E-06
10	Bela	9	0	0	0	2.25	1.4216E-05
11	Bhui Kamada	0	0	25	113	34.5	0.00334236
12	Bhuinneem	10	0	20	0	7.5	0.00015796
13	Bhuinneem	8	0	0	0	2	1.1232E-05
14	Bhurudukoli	0	0	20	0	5	7.0203E-05
15	Chara	23	20	5	0	12	0.00040437
16	Chhana grass	0	0	0	15	3.75	3.9489E-05
17	Dalasinga	45	0	0	0	11.25	0.0003554
18	Dantari	0	0	5	0	1.25	4.3877E-06
19	Dhariki	5	0	8	0	3.25	2.9661E-05
20	Dhau	5	1	0	0	1.5	6.3183E-06
21	Dhobi	8	12	6	0	6.5	0.00011864
22	Gothakanta	20	0	0	0	5	7.0203E-05
23	Jamu	14	8	0	0	5.5	8.4946E-05
24	Jari	2	5	0	0	1.75	8.5999E-06

25	Jatajati	0	0	0	85	21.25	0.00126804
26	Jatangi	0	0	0	22	5.5	8.4946E-05
27	Kaincha	5	0	0	0	1.25	4.3877E-06
28	Kalchua	5	0	0	33	9.5	0.00025343
29	Kanteikoli	7	0	0	23	7.5	0.00015796
30	Karada	24	14	10	47	23.75	0.00158395
31	Kasi	1	0	0	0	0.25	1.7551E-07
32	Kathia Dahu	0	0	15	0	3.75	3.9489E-05
33	Kendu	16	10	34	47	26.75	0.00200938
34	Khajuri	6	2	30	37	18.75	0.00098723
35	Khakada	2	46	0	80	32	0.00287551
36	Khelualai	18	0	0	0	4.5	5.6864E-05
37	Khukundialai	41	0	0	47	22	0.00135913
38	Kilakerua	38	9	7	89	35.75	0.00358895
39	Kurei	3	77	5	0	21.25	0.00126804
40	Kusuma	5	17	0	25	11.75	0.0003877
41	Lunulunia	0	0	5	0	1.25	4.3877E-06
42	Mahula	9	1	2	0	3	2.5273E-05
43	Mankadasiali	10	0	0	0	2.5	1.7551E-05
44	Masa Kanda	0	0	0	10	2.5	1.7551E-05
45	Moi	2	0	0	26	7	0.0001376
46	Palashalai	33	0	10	25	17	0.00081155
47	Patua	0	0	15	0	3.75	3.9489E-05
48	Patualai	3	0	0	0	0.75	1.5796E-06
49	Piasal	0	0	10	0	2.5	1.7551E-05
50	Pinchuli	0	0	0	37	9.25	0.00024027
51	Pitakauchia	1	0	0	0	0.25	1.7551E-07
52	Pithalalai	3	0	0	0	0.75	1.5796E-06
53	Pokasungha	60	0	20	85	41.25	0.00477819
54	Rai	2	0	0	0	0.5	7.0203E-07
55	Sahaja	20	4	0	23	11.75	0.0003877
56	Sal	54	42	10	29	33.75	0.00319862
57	Sirisa	0	0	0	31	7.75	0.00016866
58	Sissoo	0	0	0	15	3.75	3.9489E-05
59	Sugandhi	28	32	12	0	18	0.00090983
60	Talamuli	0	0	20	80	25	0.00175507
61	Tanda Grass	0	0	0	52	13	0.00047457
62	Tentela	0	0	20	0	5	7.0203E-05
Compt. No.:		Gallery	19				
GPS Gr.1-		N 20 02 34.4		E 084 34 50.4			
GPS Gr.2-		N 20 02 21.0		E 084 35 16.5			
GPS Gr.3-		N: 20 02 44.8		E: 084 34 50.1			
GPS Gr.4-							
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Achu	2	0	0	0	0.5	2.0584E-06
2	Amla	90	6	6	0	25.5	0.00535396
3	Arguna	3	0	0	0	0.75	4.6314E-06
4	Atundilai	0	0	0	0	0	0
5	Badi-amla	0	0	0	0	0	0
6	Banapiaja	2	0	0	0	0.5	2.0584E-06

7	Baradasaga	0	0	0	0	0	0
8	Bela	2	0	0	0	0.5	2.0584E-06
9	Bhalia	1	0	0	0	0.25	5.1461E-07
10	Chana grass	15	0	0	0	3.75	0.00011579
11	Chara	96	8	8	0	28	0.00645521
12	Dhamana	2	0	0	0	0.5	2.0584E-06
13	Dhatiki	8	4	4	0	4	0.00013174
14	Dhau	6	6	6	0	4.5	0.00016673
15	Dhobi	33	5	5	0	10.75	0.00095151
16	Dudhi lai	1	0	0	0	0.25	5.1461E-07
17	Gotha	14	0	0	0	3.5	0.00010086
18	Halanda	2	0	0	0	0.5	2.0584E-06
19	harida	7	0	0	0	1.75	2.5216E-05
20	Indrajala	0	0	0	0	0	0
21	Jamu	13	10	10	0	8.25	0.00056041
22	Jatajati	3	0	0	0	0.75	4.6314E-06
23	Karada	3	4	4	0	2.75	6.2267E-05
24	Kelikerun	56	17	17	0	22.5	0.0041683
25	Kendu	31	6	6	0	10.75	0.00095151
26	Kentikoli	4	0	0	0	1	8.2337E-06
27	Khajuri	21	7	7	0	8.75	0.00063039
28	Khakada	3	5	5	0	3.25	8.6968E-05
29	Khelua lai	14	23	23	0	15	0.00185258
30	Khukundi	19	0	0	0	4.75	0.00018577
31	Kurei	3	13	13	0	7.25	0.00043278
32	Kurei	13	0	0	0	3.25	8.6968E-05
33	Kusuma	1	0	0	0	0.25	5.1461E-07
34	Mahula	0	0	0	0	0	0
35	Mankada siali	1	0	0	0	0.25	5.1461E-07
36	Moi	2	0	0	0	0.5	2.0584E-06
37	Mundi	0	0	0	0	0	0
38	Muturi	4	0	0	0	1	8.2337E-06
39	Nunununi	6	13	13	0	8	0.00052696
40	Palasha	27	7	7	0	10.25	0.00086505
41	Piasal	4	0	0	0	1	8.2337E-06
42	Pinchuli	2	0	0	0	0.5	2.0584E-06
43	Rai	5	0	0	0	1.25	1.2865E-05
44	S.Gundi	1	0	0	0	0.25	5.1461E-07
45	Sahada	4	0	0	0	1	8.2337E-06
46	Sahaja	33	15	15	0	15.75	0.00204247
47	Sakuta	0	0	0	0	0	0
48	Sal	172	138	138	0	112	0.10328339
49	Satabari	0	0	0	0	0	0
50	Siali lai	8	0	0	0	2	3.2935E-05
51	Sirish	2	2	2	0	1.5	1.8526E-05
52	Sisoo	0	0	0	0	0	0
53	Sugandhi	33	17	17	0	16.75	0.00231006
54	Sum	6	2	2	0	2.5	5.1461E-05
55	Talamuli	0	0	0	0	0	0
56	Tanaghasa	0	0	0	0	0	0
Compt. No.:		Gallery	20				

GPS Gr.1-		N:20 02 28.8		E:084 35 40.1			
GPS Gr.2-		N:20 02 34.8		E:084 35 48.4			
GPS Gr.3-		N:20 02 54'6		E:084 35 37.7			
GPS Gr.4-		N:20 03 03.8		E:084 35 38.4			
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Achu	4	9	0	0	3.25	3.1699E-05
2	Amla	1	1	26	0	7	0.00014705
3	Arguna	0	7	8	0	3.75	4.2202E-05
4	Baincha	0	6	0	8	3.5	3.6763E-05
5	Baincha	0	0	0	0	0	0
6	Bela	0	2	32	15	12.25	0.00045034
7	Bhalia	0	30	18	7	13.75	0.00056738
8	Bichuati	0	0	0	4	1	3.001E-06
9	Bodika	0	0	0	3	0.75	1.6881E-06
10	Chara	50	5	25	45	31.25	0.00293071
11	Cherenga	0	0	35	18	13.25	0.00052687
12	Dantari	0	0	51	0	12.75	0.00048786
13	Dhamana	0	1	0	5	1.5	6.7523E-06
14	Dhatiki	17	5	0	0	5.5	9.0782E-05
15	Dhau	0	0	27	59	21.5	0.00138723
16	Dhobi	0	3	0	10	3.25	3.1699E-05
17	Goruhada	0	0	25	0	6.25	0.00011723
18	Halanda	0	3	0	0	0.75	1.6881E-06
19	Harida	1	0	0	5	1.5	6.7523E-06
20	Jamu	19	9	0	0	7	0.00014705
21	Jatajati	0	3	0	0	0.75	1.6881E-06
22	Kaniari	0	0	0	11	2.75	2.2695E-05
23	Kantaikoli	0	1	0	0	0.25	1.8757E-07
24	Kara	0	0	18	0	4.5	6.0771E-05
25	Karada	0	4	50	59	28.25	0.00239502
26	Kasi	0	9	0	11	5	7.5026E-05
27	Kataka	0	6	0	0	1.5	6.7523E-06
28	Kauchia	0	0	9	0	2.25	1.5193E-05
29	Kendu	19	5	22	14	15	0.00067523
30	Kerikerua	21	0	0	0	5.25	8.2716E-05
31	Keruna	0	0	49	0	12.25	0.00045034
32	Khakada	19	13	26	2	15	0.00067523
33	Khelualai	0	10	0	0	2.5	1.8757E-05
34	Khjuri	19	3	0	0	5.5	9.0782E-05
35	Khkundi	16	5	0	12	8.25	0.00020426
36	Kukurajhuntia	0	0	0	2	0.5	7.5026E-07
37	Kulalai	0	0	41	0	10.25	0.0003153
38	Kumbhi	5	0	0	0	1.25	4.6891E-06
39	Kurei	77	0	0	0	19.25	0.00111207
40	Kusum	24	15	26	7	18	0.00097234
41	Mankada	0	5	0	0	1.25	4.6891E-06
42	Masina	0	0	0	8	2	1.2004E-05
43	Modamodia	0	0	63	30	23.25	0.00162225
44	Moi	23	5	33	48	27.25	0.00222846
45	Muturi	0	2	0	0	0.5	7.5026E-07

46	Palasha	16	11	0	24	12.75	0.00048786
47	Patuli	19	15	0	3	9.25	0.00025678
48	Pinchuli	0	0	39	0	9.75	0.00028529
49	Pithal lai	1	22	33	0	14	0.0005882
50	Pokosungha	0	4	0	0	1	3.001E-06
51	S,gundi	0	2	0	0	0.5	7.5026E-07
52	Sahaja	59	9	0	0	17	0.0008673
53	Sal	212	111	0	13	84	0.02117535
54	Salapani	0	0	0	3	0.75	1.6881E-06
55	Salualai	55	10	0	0	16.25	0.00079246
56	Satabari	0	8	0	6	3.5	3.6763E-05
57	Sirisha	3	0	0	0	0.75	1.6881E-06
58	Sugandhi	94	17	21	16	37	0.00410843
59	Sunari	0	0	11	0	2.75	2.2695E-05
60	Talamuli	0	0	23	0	5.75	9.9222E-05
Compt. No.:		Gallery	21				
GPS Gr.1-		N: 20 02 22.7		E: 084 35 29.5			
GPS Gr.2-		N:20 01 10.2		E:084 34 33.3			
GPS Gr.3-		N:20 01 53.0		E:084 35 32.6			
GPS Gr.4-							
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Amla	0	0	21	0	5.25	0.00029292
2	Arguna	7	7	0	0	3.5	0.00013019
3	Baincha	6	6	0	0	3	9.5647E-05
4	Bela	0	0	0	0	0	0
5	Bhalia	0	0	20	0	5	0.00026569
6	Bhuinneem	18	18	0	0	9	0.00086083
7	Biskapuri	0	0	15	0	3.75	0.00014945
8	Chara	50	50	0	0	25	0.00664218
9	Cheranga	1	1	0	0	0.5	2.6569E-06
10	Dhamana	0	0	17	0	4.25	0.00019196
11	Dhatiki	25	25	0	0	12.5	0.00166055
12	Dhau	7	7	0	0	3.5	0.00013019
13	Dhobi	3	3	0	0	1.5	2.3912E-05
14	Genduli	0	0	16	0	4	0.00017004
15	Goruhada	0	0	10	0	2.5	6.6422E-05
16	Gotha	0	0	13	0	3.25	0.00011225
17	Gothakanta	2	2	0	0	1	1.0627E-05
18	Hatikana	0	0	9	0	2.25	5.3802E-05
19	Indrajal	0	0	11	0	2.75	8.037E-05
20	Jamu	11	11	0	0	5.5	0.00032148
21	Jhatika	0	0	15	0	3.75	0.00014945
22	Kalchaua	3	3	0	0	1.5	2.3912E-05
23	Kaniari	4	4	0	0	2	4.251E-05
24	Kaniari	0	0	15	0	3.75	0.00014945
25	Karada	6	6	21	0	8.25	0.00072333
26	Kasi	1	1	0	0	0.5	2.6569E-06
27	Kauchia	0	0	0	0	0	0
28	Kelikerua	30	30	19	0	19.75	0.00414539
29	Kendu	34	34	22	0	22.5	0.00538017

30	Kendu	0	0	0	0	0	0
31	Khajuri	10	10	0	0	5	0.00026569
32	Khakada	0	0	0	0	0	0
33	Khelualai	3	3	0	0	1.5	2.3912E-05
34	Khukundilai	5	5	0	0	2.5	6.6422E-05
35	Kulalai	0	0	17	0	4.25	0.00019196
36	Kurei	0	0	0	0	0	0
37	Kusuma	8	8	0	0	4	0.00017004
38	Mahula	5	5	0	0	2.5	6.6422E-05
39	Maturi	1	1	0	0	0.5	2.6569E-06
40	Moi	9	9	0	0	4.5	0.00021521
41	Mundi	0	0	0	0	0	0
42	Nunununi	6	6	0	0	3	9.5647E-05
43	Palasa	0	0	17	0	4.25	0.00019196
44	Palu	0	0	0	0	0	0
45	Pichuli	0	0	10	0	2.5	6.6422E-05
46	Pithallai	3	3	0	0	1.5	2.3912E-05
47	Pokosungha	0	0	20	0	5	0.00026569
48	S.Gundi	0	0	11	0	2.75	8.037E-05
49	Sahaja	11	11	0	0	5.5	0.00032148
50	Sakata	0	0	20	0	5	0.00026569
51	Sal	102	102	0	0	51	0.02764211
52	Satabari	0	0	0	0	0	0
53	Sialilai	1	1	19	0	5.25	0.00029292
54	Sisoo	3	3	0	0	1.5	2.3912E-05
55	Sugandhi	49	49	17	0	28.75	0.00878429
56	Sunari	0	0	0	0	0	0
57	Talamuli	0	0	24	0	6	0.00038259
Compt. No.:		Gallery	22				
GPS Gr.1-		N 20 01 04.8		E 084 36 01.8			
GPS Gr.2-		N 20 01 15.4		E 084 35 38.1			
GPS Gr.3-		N 20 01 24.9		E 084 35 44.5			
GPS Gr.4-							
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Achu	13	5	0	0	4.5	8.6892E-05
2	Amla	20	0	14	0	8.5	0.00031002
3	Ankula	5	0	0	0	1.25	6.7046E-06
4	Arguna	2	21	57	0	20	0.00171639
5	Baila	0	0	15	0	3.75	6.0342E-05
6	Banabhalia	0	0	10	0	2.5	2.6819E-05
7	Banakoli	4	0	0	0	1	4.291E-06
8	Banakolotha	7	0	0	0	1.75	1.3141E-05
9	Banakolotha	0	0	8	0	2	1.7164E-05
10	Banamali	5	0	0	0	1.25	6.7046E-06
11	Bela	0	3	8	0	2.75	3.245E-05
12	Bhalia	4	6	0	0	2.5	2.6819E-05
13	Chara	62	35	60	0	39.25	0.00661051
14	Dathiki	12	0	0	0	3	3.8619E-05
15	Dhamana	0	5	17	0	5.5	0.0001298
16	Dhau	0	10	0	0	2.5	2.6819E-05

17	Dhobi	6	15	17	0	9.5	0.00038726
18	Gila	8	0	0	0	2	1.7164E-05
19	Gotha	0	0	28	0	7	0.00021026
20	Halanda	0	2	0	0	0.5	1.0727E-06
21	Harida	1	0	0	0	0.25	2.6819E-07
22	Indrajala	0	0	15	0	3.75	6.0342E-05
23	Jamu	5	3	0	0	2	1.7164E-05
24	Jatajati	0	71	0	0	17.75	0.00135192
25	Jhatikakusuma	0	0	17	0	4.25	7.7506E-05
26	Kaniari	0	0	11	0	2.75	3.245E-05
27	Karada	0	5	65	0	17.5	0.00131411
28	Kasi	4	0	0	0	1	4.291E-06
29	Kauchia	10	0	0	0	2.5	2.6819E-05
30	Kelikerua	67	32	0	0	24.75	0.00262849
31	Kendu	5	13	16	0	8.5	0.00031002
32	Kentikoli	0	7	40	0	11.75	0.00059242
33	Khajuri	0	1	0	0	0.25	2.6819E-07
34	Khakada	14	10	15	0	9.75	0.00040791
35	Khalualai	0	30	0	0	7.5	0.00024137
36	Khirakanchan	0	0	12	0	3	3.8619E-05
37	Khukundilai	62	16	15	0	23.25	0.00231954
38	Koli	0	2	0	0	0.5	1.0727E-06
39	Kumbhi	0	0	13	0	3.25	4.5323E-05
40	Kurei	2	64	0	0	16.5	0.00116822
41	Kusuma	6	27	17	0	12.5	0.00067046
42	Mahula	8	6	20	0	8.5	0.00031002
43	Mankadasiali	0	1	0	0	0.25	2.6819E-07
44	Moi	9	4	17	0	7.5	0.00024137
45	Muturi	5	0	9	0	3.5	5.2564E-05
46	Nunununi	0	6	0	0	1.5	9.6547E-06
47	Palasa	0	8	19	0	6.75	0.00019551
48	Piasal	6	0	0	0	1.5	9.6547E-06
49	Pithala	0	0	11	0	2.75	3.245E-05
50	Pokosungha	0	0	9	0	2.25	2.1723E-05
51	Rai	0	3	20	0	5.75	0.00014187
52	Ranabili	0	0	33	0	8.25	0.00029205
53	S.Gundi	0	5	0	0	1.25	6.7046E-06
54	Sahaja	3	7	0	0	2.5	2.6819E-05
55	Sal	185	126	44	0	88.75	0.03379809
56	Satabari	10	3	0	0	3.25	4.5323E-05
57	Sidha	0	0	16	0	4	6.8656E-05
58	Sisoo	0	0	18	0	4.5	8.6892E-05
59	Sugandhi	12	92	16	0	30	0.00386187
60	Sunari	0	2	0	0	0.5	1.0727E-06
61	Talamuli	0	0	16	0	4	6.8656E-05
62	Tanda grass	5	0	0	0	1.25	6.7046E-06
Compt. No.:		Gallery	23				
GPS Gr.1-		N 20 00 49.0		E 084 34 49.0			
GPS Gr.2-		N 20 00 39.0		E 084 35 17.0			
GPS Gr.3-		N 20 00 40.8		E 084 35 07.2			
GPS Gr.4-		N 20 00 40.3		E 084 35 33.7			

Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Achu	1	3	30	19	13.25	0.00035906
3	Akulamula	0	0	0	17	4.25	3.6941E-05
4	Amla	1	0	15	15	7.75	0.00012284
5	Araguna	0	0	15	17	8	0.00013089
6	Baincha	8	0	17	0	6.25	7.989E-05
7	Banabhalia	0	0	15	0	3.75	2.8761E-05
8	Banakolatha	0	0	18	0	4.5	4.1415E-05
9	Banapiaja	0	0	15	0	3.75	2.8761E-05
10	Banta	0	0	0	11	2.75	1.5467E-05
11	Baradasaga	0	0	14	0	3.5	2.5054E-05
12	Bela	0	0	19	0	4.75	4.6145E-05
13	Bhalia	3	0	0	25	7	0.00010021
14	Bhuinneem	9	5	15	0	7.25	0.0001075
15	Bhurudukoli	0	0	50	27	19.25	0.00075787
16	Channa	0	0	17	0	4.25	3.6941E-05
17	Chara	52	68	28	0	37	0.00279987
18	Dadhilai	0	0	0	14	3.5	2.5054E-05
19	Dalasing	0	22	0	0	5.5	6.1867E-05
20	Dankari	0	0	13	0	3.25	2.1602E-05
21	Dhamana	0	0	0	24	6	7.3627E-05
22	Dhatiki	31	10	0	0	10.25	0.00021487
23	Dhau	21	19	20	0	15	0.00046017
24	Dhobi	4	5	11	19	9.75	0.00019442
25	Gandhana	0	0	0	21	5.25	5.6371E-05
26	Gila	0	0	0	21	5.25	5.6371E-05
27	Gotha	0	0	0	13	3.25	2.1602E-05
28	Halanda	1	0	0	16	4.25	3.6941E-05
29	Harida	0	0	18	0	4.5	4.1415E-05
30	Indrajala	0	0	0	21	5.25	5.6371E-05
31	Jamu	10	20	19	27	19	0.00073832
32	Kaniari	0	0	15	0	3.75	2.8761E-05
33	Kantaikoli	0	0	13	15	7	0.00010021
34	Kapasia	3	0	0	0	0.75	1.1504E-06
35	Karada	14	5	0	19	9.5	0.00018458
36	Kasi	7	0	0	0	1.75	6.2634E-06
37	Kauchia	0	4	11	0	3.75	2.8761E-05
38	Kelikerua	36	73	39	19	41.75	0.00356491
39	Kendu	22	12	25	0	14.75	0.00044496
40	Keruan	0	0	21	25	11.5	0.00027048
41	Khajuri	52	87	17	0	39	0.00311074
42	Khakada	10	0	0	0	2.5	1.2782E-05
43	Khelualai	11	17	22	0	12.5	0.00031956
44	Khirakoli	0	42	21	0	15.75	0.00050734
45	Khukundia	0	0	13	17	7.5	0.00011504
46	Kolathia	52	0	0	0	13	0.00034564
47	Kurei	20	0	0	0	5	5.113E-05
48	Kusuma	1	0	0	0	0.25	1.2782E-07
49	Mahula	3	7	25	20	13.75	0.00038667
50	Masania	0	0	0	21	5.25	5.6371E-05

51	Modamudia	2	0	0	0	0.5	5.113E-07
52	Moi	3	3	27	14	11.75	0.00028236
53	Muturi	26	0	31	14	17.75	0.00064436
54	Nirmuli	0	0	19	0	4.75	4.6145E-05
55	Nunununi	25	0	18	0	10.75	0.00023635
56	Palasha	5	0	25	0	7.5	0.00011504
57	Palu	4	0	0	0	1	2.0452E-06
58	Panaire	0	0	21	0	5.25	5.6371E-05
59	Paniare	0	0	0	21	5.25	5.6371E-05
60	Patalagoruda	0	0	0	13	3.25	2.1602E-05
61	Patua	0	0	0	20	5	5.113E-05
62	Patuli	0	0	0	14	3.5	2.5054E-05
63	Piasal	2	0	0	10	3	1.8407E-05
64	Pitakauchia	0	0	14	0	3.5	2.5054E-05
65	Pithala	1	0	18	0	4.75	4.6145E-05
66	Pokasungha	0	0	13	0	3.25	2.1602E-05
67	Rai	0	7	16	0	5.75	6.7619E-05
68	Ranabili	0	0	0	16	4	3.2723E-05
69	Rohini	9	8	0	0	4.25	3.6941E-05
70	S.Gundi	0	0	0	17	4.25	3.6941E-05
71	Sahaja	39	10	18	18	21.25	0.00092353
72	Sakata	0	0	0	20	5	5.113E-05
73	Sal	135	32	34	45	61.5	0.00773544
74	Salapani	0	0	0	20	5	5.113E-05
75	Salpani	0	0	33	0	8.25	0.0001392
76	Sama	0	0	30	0	7.5	0.00011504
77	Satabari	0	2	0	15	4.25	3.6941E-05
78	Sisoo	0	0	0	20	5	5.113E-05
79	Sugandhi	5	0	28	22	13.75	0.00038667
80	Talamuli	0	0	0	19	4.75	4.6145E-05
81	Tentala	0	0	0	16	4	3.2723E-05
82	Thadeng	0	15	0	0	3.75	2.8761E-05
Compt. No.:		Dimirijholi		1			
GPS Gr.1-		N:20 07 41.7		E:084 32 16.4			
GPS Gr.2-		N:20 07 37.4		E:084 31 57.7			
GPS Gr.3-		N:20 07 09.5		E:084 37 47.4			
GPS Gr.4-		N:20 07 41.7		E:084 32 16.5			
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Achu	2	9	0	0	2.75	3.9241E-05
2	Akula	30	0	0	0	7.5	0.00029187
3	Amla	4	16	5	0	6.25	0.00020269
4	Arguna	0	2	3	2	1.75	1.5891E-05
5	B.neem	0	11	0	0	2.75	3.9241E-05
6	Bainchakanta	0	8	0	0	2	2.0755E-05
7	Bana piaja	0	0	3	0	0.75	2.9187E-06
8	Baula	7	0	0	0	1.75	1.5891E-05
9	Bhalia	2	4	0	0	1.5	1.1675E-05
10	Chara	78	53	0	0	32.75	0.00556536
11	Dhatiki	12	47	12	0	17.75	0.00163481
12	Dhau	5	0	0	0	1.25	8.1076E-06

13	Dhobi	6	0	4	0	2.5	3.243E-05
14	Halanda	4	0	0	0	1	5.1888E-06
15	Harada	4	0	0	0	1	5.1888E-06
16	Jamu	34	17	0	0	12.75	0.00084351
17	Jatajati	0	16	0	0	4	8.3022E-05
18	Kanteikoli	0	16	0	0	4	8.3022E-05
19	Karada	0	22	9	10	10.25	0.00054515
20	Kelikerua	45	51	0	15	27.75	0.00399574
21	Kendu	13	29	9	0	12.75	0.00084351
22	Khajuri	7	13	0	0	5	0.00012972
23	Khakada	17	27	0	20	16	0.00132835
24	Khelualai	0	17	0	11	7	0.00025425
25	Khukundi	22	14	0	25	15.25	0.00120673
26	Kulalai	0	3	0	0	0.75	2.9187E-06
27	Kumbhi	0	2	0	29	7.75	0.00031166
28	Kurei	5	13	20	0	9.5	0.00046829
29	Kusuma	1	4	7	6	4.5	0.00010507
30	Machakanda	0	0	0	6	1.5	1.1675E-05
31	Mahula	6	3	0	0	2.25	2.6269E-05
32	Mankadasiali	0	38	0	3	10.25	0.00054515
33	Masania	1	0	0	0	0.25	3.243E-07
34	Mohi	2	0	0	12	3.5	6.3563E-05
35	Muturi	0	5	0	3	2	2.0755E-05
36	Palasa	0	0	24	0	6	0.0001868
37	Panairi	0	0	10	0	2.5	3.243E-05
38	Pania	2	0	0	0	0.5	1.2972E-06
39	Piasal	0	0	8	0	2	2.0755E-05
40	Pokasunga	0	18	25	24	16.75	0.0014558
41	Rai	0	6	0	0	1.5	1.1675E-05
42	S.Gundi	0	0	17	10	6.75	0.00023642
43	Sahaja	7	7	15	0	7.25	0.00027274
44	Sal	115	181	7	0	75.75	0.02977393
45	Sama	0	0	12	0	3	4.67E-05
46	Satabari	22	15	0	0	9.25	0.00044397
47	Sialilai	2	11	0	0	3.25	5.4807E-05
48	Sirisha	0	6	0	11	4.25	9.3724E-05
49	Sissoo	0	0	26	0	6.5	0.00021923
50	Sugandhi	28	104	19	15	41.5	0.00893649
51	Sunari	0	0	13	0	3.25	5.4807E-05
52	Talamuli	0	0	20	15	8.75	0.00039727
Compt. No.:		Dimirijholi		2			
GPS Gr.1-		N:20 07 41.7		E:084 32 16.4			
GPS Gr.2-		N:20 07 37.4		E:084 31 57.7			
GPS Gr.3-		N:20 08 26.8		E:084 34 07.4			
GPS Gr.4-		N:20 08 25.9		E:084 32 55.8			
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Achu	4	6	0	0	2.5	2.582E-05
2	Amla	0	4	0	9	3.25	4.3635E-05
3	Araguna	2	6	0	2	2.5	2.582E-05
4	B.neem	15	3	0	0	4.5	8.3656E-05

5	Baincha	0	4	0	0	1	4.1311E-06
6	Banakolathia	0	0	17	0	4.25	7.4619E-05
7	Banapiaja	0	0	0	3	0.75	2.3238E-06
8	Bhalia	4	0	0	0	1	4.1311E-06
9	Bhelimbia	0	0	32	0	8	0.00026439
10	Bhuin Karada	0	0	20	0	5	0.00010328
11	Chara	15	47	0	0	15.5	0.00099251
12	D.moi	3	0	0	0	0.75	2.3238E-06
13	Dalasingada	3	0	0	0	0.75	2.3238E-06
14	Dhatiki	2	14	20	15	12.75	0.00067157
15	Dhau	0	13	0	0	3.25	4.3635E-05
16	Dhobi	56	1	8	8	18.25	0.00137593
17	Harada	10	0	0	0	2.5	2.582E-05
18	Jamu	24	3	0	0	6.75	0.00018823
19	Kanteikoli	1	6	0	0	1.75	1.2652E-05
20	Karada	0	21	20	15	14	0.0008097
21	Kasi	4	0	0	0	1	4.1311E-06
22	Kauchia	0	1	0	0	0.25	2.582E-07
23	Kelikerua	32	120	35	40	56.75	0.01330459
24	Kendu	8	44	29	11	23	0.00218537
25	Khajuri	28	31	0	12	17.75	0.00130157
26	Khakada	3	3	0	0	1.5	9.2951E-06
27	Khelualai	13	31	21	0	16.25	0.00109088
28	Khukundilai	5	0	0	25	7.5	0.00023238
29	Kumbhi	0	1	0	0	0.25	2.582E-07
30	Kurei	6	18	0	30	13.5	0.0007529
31	Kusuma	3	0	7	0	2.5	2.582E-05
32	Luni	0	1	0	0	0.25	2.582E-07
33	Machakanda	0	0	6	0	1.5	9.2951E-06
34	Mahula	45	1	0	0	11.5	0.00054634
35	Masania	13	5	0	0	4.5	8.3656E-05
36	Moi	0	3	0	0	0.75	2.3238E-06
37	Muturi	1	0	0	0	0.25	2.582E-07
38	Pachilali	0	0	19	0	4.75	9.3209E-05
39	Palasha	1	3	13	8	6.25	0.00016137
40	Panairi	0	0	11	0	2.75	3.1242E-05
41	Pania	4	1	0	0	1.25	6.4549E-06
42	Patukanta	2	0	0	0	0.5	1.0328E-06
43	Piasal	5	0	35	7	11.75	0.00057036
44	Pokasunga	0	27	11	32	17.5	0.00126516
45	S.Gundi	0	0	0	5	1.25	6.4549E-06
46	S.moi	1	0	0	0	0.25	2.582E-07
47	Sahaja	3	48	13	11	18.75	0.00145235
48	Sal	201	144	10	8	90.75	0.03402225
49	Sama	0	0	15	0	3.75	5.8094E-05
50	Satabari	2	0	0	0	0.5	1.0328E-06
51	Siali lai	0	0	0	7	1.75	1.2652E-05
52	Sidha	1	0	0	0	0.25	2.582E-07
53	Sirisha	0	10	0	0	2.5	2.582E-05
54	Sissoo	0	0	7	7	3.5	5.0606E-05
55	Som	0	2	0	12	3.5	5.0606E-05

56	Sugandhi	15	50	35	10	27.5	0.00312417
57	Sunari	0	0	11	7	4.5	8.3656E-05
58	Talamuli	0	0	50	30	20	0.00165246
59	Tiliki	2	0	0	0	0.5	1.0328E-06
Compt. No.:		Chandragiri		1			
GPS Gr.1-		N 20 04 35.9		E 084 38 08.9			
GPS Gr.2-		N 20 05 01.9		E 084 37 31.6			
GPS Gr.3-		N 20 05 36.8		E 084 38 12.5			
GPS Gr.4-		N 20 05 51.1		E 084 37 32.0			
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Achu	1	15	0	6	5.5	0.00015822
2	Araguna	8	0	3	10	5.25	0.00014416
3	B.kolatha	4	0	0	0	1	5.2305E-06
4	B.neem	13	0	0	0	3.25	5.5247E-05
5	B.Piaja	5	0	0	0	1.25	8.1726E-06
6	Baila	0	0	9	22	7.75	0.00031415
7	Baincha	0	19	0	0	4.75	0.00011801
8	Banahaladi	0	0	0	15	3.75	7.3553E-05
9	Bandhana	0	22	0	10	8	0.00033475
10	Bela	0	0	12	25	9.25	0.00044753
11	Bhalia	1	5	0	0	1.5	1.1769E-05
12	Bichhuati	5	0	0	0	1.25	8.1726E-06
13	Chara	65	35	17	0	29.25	0.00447499
14	Cheranga	0	0	13	8	5.25	0.00014416
15	D.moi	1	0	0	0	0.25	3.269E-07
16	Dantari	0	0	5	14	4.75	0.00011801
17	Dhamana	0	5	19	12	9	0.00042367
18	Dhatiki	0	0	0	10	2.5	3.269E-05
19	Dhau	4	25	4	12	11.25	0.00066198
20	Dhobi	0	0	0	10	2.5	3.269E-05
21	Dhusurakendu	9	0	0	0	2.25	2.6479E-05
22	Dubagrass	0	2	0	0	0.5	1.3076E-06
23	Ekalalai	0	0	0	10	2.5	3.269E-05
24	Genduli	0	0	25	0	6.25	0.00020432
25	Goruhada	0	0	7	0	1.75	1.6018E-05
26	Gothakanta	6	0	0	0	1.5	1.1769E-05
27	Gundi	0	0	0	25	6.25	0.00020432
28	Halanda	0	0	5	0	1.25	8.1726E-06
29	Jamu	1	0	0	0	0.25	3.269E-07
30	Kaincha	0	0	16	0	4	8.3687E-05
31	Kalakauchia	18	0	0	0	4.5	0.00010592
32	Kandula	0	7	0	0	1.75	1.6018E-05
33	Kanteikoli	2	0	10	0	3	4.7074E-05
34	Kapasia	0	0	0	10	2.5	3.269E-05
35	Karada	9	44	9	20	20.5	0.0021981
36	Kasaalu	0	0	10	8	4.5	0.00010592
37	Kasi	0	5	4	0	2.25	2.6479E-05
38	Kelikerua	42	41	0	0	20.75	0.00225204
39	Kendu	17	53	5	9	21	0.00230664
40	Keruan	0	0	0	10	2.5	3.269E-05

41	Khajuri	16	14	0	0	7.5	0.00029421
42	Khakada	11	21	10	7	12.25	0.0007849
43	Khelualai	5	4	10	0	4.75	0.00011801
44	Khukundi	0	0	0	10	2.5	3.269E-05
45	Khukundilai	3	0	17	0	5	0.00013076
46	Kolatha	0	0	0	14	3.5	6.4073E-05
47	Kolathalai	2	0	0	0	0.5	1.3076E-06
48	Kulalai	0	4	0	0	1	5.2305E-06
49	Kurei	0	6	0	0	1.5	1.1769E-05
50	Kusuma	0	59	3	0	15.5	0.00125662
51	Laibahada	2	0	0	0	0.5	1.3076E-06
52	Mahula	33	16	0	0	12.25	0.0007849
53	Mankadasiali	10	7	0	0	4.25	9.4475E-05
54	Marua	0	12	0	0	3	4.7074E-05
55	Masania	2	0	0	18	5	0.00013076
56	Mathagodi	43	0	0	0	10.75	0.00060445
57	Moi	0	17	0	0	4.25	9.4475E-05
58	Mudamudia	0	37	0	0	9.25	0.00044753
59	Mudmudia	0	6	0	0	1.5	1.1769E-05
60	Mundumundi	0	3	0	0	0.75	2.9421E-06
61	Palasa	0	0	10	15	6.25	0.00020432
63	Patuli	0	6	0	0	1.5	1.1769E-05
64	Pichulilai	0	0	5	10	3.75	7.3553E-05
65	Pithala	0	0	0	9	2.25	2.6479E-05
66	Pokasunga	11	50	0	0	15.25	0.00121641
67	Rai	0	14	19	18	12.75	0.00085028
68	Sahaja	3	15	0	0	4.5	0.00010592
69	Sal	28	14	0	0	10.5	0.00057666
70	Satabari	0	13	8	8	7.25	0.00027493
71	Siali	0	0	8	13	5.25	0.00014416
72	Sialilai	0	6	0	0	1.5	1.1769E-05
73	Sidha	0	0	7	8	3.75	7.3553E-05
74	Sisoo	0	0	0	4	1	5.2305E-06
75	Som	7	0	0	0	1.75	1.6018E-05
76	Sugandhi	12	0	0	0	3	4.7074E-05
77	Sunari	2	4	14	14	8.5	0.0003779
78	Tandagrass	8	0	26	28	15.5	0.00125662
79	Veru	2	0	0	0	0.5	1.3076E-06
Compt. No.:		Chandragiri		2			
GPS Gr.1-		N:20 06 21.8		E:084 37 23.4			
GPS Gr.2-		N:20 06 18.7		E:084 37 32.8			
GPS Gr.3-		N:20 06 32.5		E:084 37 40.9			
GPS Gr.4-		N:20 06 15.9		E:084 37 00.5			
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Amla	6	3	0	0	2.25	1.4204E-05
2	Ankula	0	0	33	0	8.25	0.00019097
3	Araguna	9	1	26	0	9	0.00022727
4	B.neem	9	0	19	0	7	0.00013748
5	Baila	0	17	0	0	4.25	5.0679E-05
6	Bainchakoli	0	4	0	0	1	2.8058E-06

7	Banachakundi	0	0	0	10	2.5	1.7536E-05
8	Banapiaja	0	0	0	11	2.75	2.1219E-05
9	Bandhana	4	5	0	11	5	7.0144E-05
10	Bela	0	7	32	20	14.75	0.00061043
11	Benia	2	0	0	0	0.5	7.0144E-07
12	Bhalia	2	0	0	0	0.5	7.0144E-07
13	Chadheigodi	0	6	0	0	1.5	6.313E-06
14	Chara	24	29	53	13	29.75	0.00248328
15	Cheranga	0	0	38	0	9.5	0.00025322
16	Dantari	0	0	53	15	17	0.00081087
17	Dhamana	0	0	24	0	6	0.00010101
18	Dhatiki	10	1	0	0	2.75	2.1219E-05
19	Dhau	10	8	0	15	8.25	0.00019097
20	Dhobi	15	0	0	18	8.25	0.00019097
21	Gaigendalia	0	0	12	0	3	2.5252E-05
22	Gaigobara	0	0	0	8	2	1.1223E-05
23	Gandhana	9	0	0	0	2.25	1.4204E-05
24	Genduli	0	0	0	10	2.5	1.7536E-05
25	Gila	0	4	0	0	1	2.8058E-06
26	Harada	13	0	17	0	7.5	0.00015782
27	Indrajala	0	0	0	8	2	1.1223E-05
28	Jamu	4	3	0	6	3.25	2.9636E-05
29	Kalakauchia	0	10	0	0	2.5	1.7536E-05
30	Kanteikoli	8	0	0	0	2	1.1223E-05
31	Karada	21	19	20	0	15	0.0006313
32	Kasaalu	0	0	43	0	10.75	0.00032424
33	Kasi	0	0	16	0	4	4.4892E-05
34	Kelikerua	28	8	26	0	15.5	0.00067409
35	Kendu	28	8	0	0	9	0.00022727
36	Keruan	0	0	28	0	7	0.00013748
37	Khakada	13	16	32	24	21.25	0.00126698
38	Khukundia	0	0	0	9	2.25	1.4204E-05
39	Khukundilai	0	11	53	0	16	0.00071828
40	Kulalai	7	0	0	33	10	0.00028058
41	kumbi	0	0	0	8	2	1.1223E-05
42	Kurei	0	0	0	20	5	7.0144E-05
43	Kusuma	0	9	0	0	2.25	1.4204E-05
44	Lajakulilata	2	0	0	0	0.5	7.0144E-07
45	Mahula	1	2	0	8	2.75	2.1219E-05
46	Mankadasiali	12	0	0	20	8	0.00017957
47	Moda	0	79	0	0	19.75	0.00109442
48	Moi	0	12	0	11	5.75	9.2766E-05
49	Mudimudia	21	0	0	25	11.5	0.00037106
50	Muturi	0	0	23	0	5.75	9.2766E-05
51	Palasha	10	0	37	11	14.5	0.00058991
52	Pani alu	0	0	21	0	5.25	7.7334E-05
53	Paraghasa	0	0	0	20	5	7.0144E-05
54	Patilai	0	11	0	0	2.75	2.1219E-05
55	Patua kanta	0	0	29	0	7.25	0.00014748
56	Pengu	0	12	23	0	8.75	0.00021482
57	Piasal	0	0	0	52	13	0.00047417

58	Pinchhulilai	0	1	0	0	0.25	1.7536E-07
59	Pinchuli	0	0	29	0	7.25	0.00014748
60	Pita kauchia	0	0	25	0	6.25	0.0001096
61	Pithala	0	0	28	0	7	0.00013748
62	Pithalai	0	0	0	10	2.5	1.7536E-05
63	Pokasunga	10	10	60	60	35	0.00343706
64	Rai	0	1	39	0	10	0.00028058
65	Ranidantkathi	0	0	0	20	5	7.0144E-05
66	S.gundi	0	14	0	0	3.5	3.4371E-05
67	Sahaja	14	0	0	11	6.25	0.0001096
68	Sal	65	0	0	16	20.25	0.00115054
69	Satabari	0	2	31	0	8.25	0.00019097
70	Sialilai	42	57	41	8	37	0.00384109
71	Sidha	0	3	0	9	3	2.5252E-05
72	Sisoo	0	0	10	10	5	7.0144E-05
73	Sugandhi	39	0	23	26	22	0.00135799
74	Sunari	0	0	0	10	2.5	1.7536E-05
75	Talamuli	0	0	0	42	10.5	0.00030934
76	Veru	17	8	0	0	6.25	0.0001096
Compt. No.:		Chandragiri		3			
GPS Gr.1-		N:20 08 10.4		E:084 36 42.6			
GPS Gr.2-		N:20 08 09.9		E:084 37 09.6			
GPS Gr.3-		N:20 08 02.0		E:084 36 38.5			
GPS Gr.4-		N:20 08 14.7		E:084 37 49.6			
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Amla	1	1	33	18	13.25	0.00058945
2	Ankula	0	1	42	33	19	0.00121205
3	Arguna	0	2	21	18	10.25	0.00035274
4	Achu	0	3	0	11	3.5	4.1129E-05
5	B.neem	4	0	19	0	5.75	0.00011101
6	Bhalia	4	0	0	0	1	3.3575E-06
7	B.kolatha	0	2	0	0	0.5	8.3937E-07
8	Banahaladi	0	0	33	6	9.75	0.00031917
9	Baila	0	0	39	0	9.75	0.00031917
10	Bandhana	0	0	24	0	6	0.00012087
11	B.piaja	0	3	0	0	0.75	1.8886E-06
12	Bainchakoli	0	5	0	0	1.25	5.2461E-06
13	Baunsapatrigrass	0	7	0	0	1.75	1.0282E-05
14	Benia	0	1	0	0	0.25	2.0984E-07
15	Chara	37	27	35	34	33.25	0.0037119
16	Dhatiki	3	0	0	0	0.75	1.8886E-06
17	Dhamana	0	0	0	38	9.5	0.00030301
18	Dantari	0	0	0	10	2.5	2.0984E-05
19	Dhobi	6	7	0	0	3.25	3.5463E-05
20	Gothakanta	6	9	0	0	3.75	4.7214E-05
21	Gotha	0	0	0	28	7	0.00016452
22	Goruhada	0	0	0	5	1.25	5.2461E-06
23	Genduli	0	0	0	5	1.25	5.2461E-06
24	Iswarjata	0	0	0	10	2.5	2.0984E-05
25	Jamu	11	12	0	0	5.75	0.00011101

26	Jatijati	6	2	0	0	2	1.343E-05
27	Kelikerua	36	82	0	21	34.75	0.00405436
28	Kendu	26	7	36	22	22.75	0.0017377
29	Khajuri	46	5	0	0	12.75	0.0005458
30	Khakada	7	32	0	29	17	0.00097031
31	Kadaba	0	0	0	14	3.5	4.1129E-05
32	Khelualai	1	10	0	12	5.75	0.00011101
33	Khukundialai	0	0	0	9	2.25	1.6997E-05
34	Karada	0	3	0	44	11.75	0.00046354
35	Kauchia	0	0	0	21	5.25	9.254E-05
36	Kumbhi	0	1	0	11	3	3.0217E-05
37	Kusuma	2	11	24	0	9.25	0.00028727
38	Luni	1	0	0	0	0.25	2.0984E-07
39	Mahula	3	16	13	0	8	0.00021488
40	Masania	5	0	0	0	1.25	5.2461E-06
41	Mathagrass	2	0	0	0	0.5	8.3937E-07
42	Muturi	0	0	0	8	2	1.343E-05
43	Moi	2	9	24	0	8.75	0.00025706
44	Pokasunga	0	10	55	18	20.75	0.0014456
45	Ranidantakathi	9	0	0	0	2.25	1.6997E-05
46	Pani pendu	0	0	0	15	3.75	4.7214E-05
47	Pithala	0	0	0	12	3	3.0217E-05
48	Sal	134	155	50	21	90	0.02719553
49	Sirisha	10	0	0	0	2.5	2.0984E-05
50	Sugandhi	18	45	0	0	15.75	0.00083286
51	Sunari	1	0	0	21	5.5	0.00010156
52	S.Mohi	0	0	0	59	14.75	0.00073046
53	Sialilai	0	0	0	12	3	3.0217E-05
54	Chhanagrass	0	100	0	0	25	0.00209842
55	Daiasinga	0	13	0	0	3.25	3.5463E-05
56	Halanda	0	8	0	0	2	1.343E-05
57	Harada	0	2	0	0	0.5	8.3937E-07
58	Kaincha	0	1	0	0	0.25	2.0984E-07
59	Kaniari	0	1	0	0	0.25	2.0984E-07
60	Khukundia	0	0	33	0	8.25	0.00022852
61	Kurei	0	7	0	0	1.75	1.0282E-05
62	Mankadasiali	0	5	0	0	1.25	5.2461E-06
63	Moda	0	1	0	0	0.25	2.0984E-07
64	Nunununia	0	12	0	0	3	3.0217E-05
65	Pania	0	2	0	0	0.5	8.3937E-07
66	Pengu	0	2	0	0	0.5	8.3937E-07
67	Pinchhuli	0	6	0	0	1.5	7.5543E-06
68	Palasa	0	0	35	0	8.75	0.00025706
69	Rai	0	1	24	0	6.25	0.00013115
70	S.gundi	0	4	23	0	6.75	0.00015297
71	Sahaja	0	9	0	0	2.25	1.6997E-05
72	Sidha	0	2	0	0	0.5	8.3937E-07
73	Tentala	0	0	30	0	7.5	0.00018886
Compt. No.:		Chandragiri		10			
GPS Gr.1-		N: 20 03 40.9		E: 084 38 44.0			
GPS Gr.2-		N:20 04 03.9		E:084 39 09.5			

GPS Gr.3-		N:20 03 57.1		E:084 38 45.1			
GPS Gr.4-							
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Achhu	0	0	2	0	0.5	3.8826E-06
2	Amla	0	2	0	0	0.5	3.8826E-06
3	Arguna	0	2	4	0	1.5	3.4944E-05
4	Babula Kanta	0	0	5	0	1.25	2.4267E-05
5	Baila	4	3	4	0	2.75	0.00011745
6	Bamboo	4	0	0	0	1	1.5531E-05
7	Bandhana	0	0	1	0	0.25	9.7066E-07
8	Baunsa patiri	0	0	17	0	4.25	0.00028052
9	Bela	0	0	4	0	1	1.5531E-05
10	Benia	0	3	0	0	0.75	8.736E-06
11	Bhalia	0	0	2	0	0.5	3.8826E-06
12	Chara	30	40	0	0	17.5	0.00475624
13	Dantari	0	0	9	0	2.25	7.8624E-05
14	Dhamana	4	3	0	0	1.75	4.7562E-05
15	Dhatiki	9	0	0	0	2.25	7.8624E-05
16	Dhau	0	5	1	0	1.5	3.4944E-05
17	Dhobi	2	0	0	0	0.5	3.8826E-06
18	Dubagrass	0	7	0	0	1.75	4.7562E-05
19	Gila	12	0	0	0	3	0.00013978
20	Gotha	2	0	0	0	0.5	3.8826E-06
21	Halanda	0	7	1	0	2	6.2122E-05
22	Jamu	0	41	9	0	12.5	0.00242665
23	Khakada	0	20	0	0	5	0.00038826
24	Kaincha	0	4	0	0	1	1.5531E-05
25	Kantei Koli	0	0	4	0	1	1.5531E-05
26	Karada	12	2	0	0	3.5	0.00019025
27	Kasi	0	2	0	0	0.5	3.8826E-06
28	Katha Pania	0	0	1	0	0.25	9.7066E-07
29	Kathachampa	0	4	0	0	1	1.5531E-05
30	Kelikerua	2	51	0	0	13.25	0.00272659
31	Kendu	25	11	0	0	9	0.00125798
32	Khajuri	0	2	0	0	0.5	3.8826E-06
33	Khakada	21	0	0	0	5.25	0.00042806
34	Khelualai	3	7	8	0	4.5	0.00031449
35	Khukundi	19	19	0	0	9.5	0.00140164
36	Kulalai	0	2	0	0	0.5	3.8826E-06
37	Kurei	9	20	0	0	7.25	0.00081633
38	Kusuma	2	4	4	0	2.5	9.7066E-05
39	Mahula	0	34	0	0	8.5	0.00112208
40	Mankadasiali	35	31	0	0	16.5	0.0042282
41	Masania	1	0	0	0	0.25	9.7066E-07
42	Mataka	0	2	0	0	0.5	3.8826E-06
43	Mathagrass	0	6	0	0	1.5	3.4944E-05
44	Moda	17	0	16	0	8.25	0.00105705
45	Moi	0	11	0	0	2.75	0.00011745
46	Moibadia	0	5	0	0	1.25	2.4267E-05
47	Mundumundi	0	0	2	0	0.5	3.8826E-06

48	Muturi	0	1	0	0	0.25	9.7066E-07
49	Nuninuni	1	0	0	0	0.25	9.7066E-07
50	Patuli	8	3	0	0	2.75	0.00011745
51	Pinchhuli	0	2	5	0	1.75	4.7562E-05
52	Pokasunga	0	14	0	0	3.5	0.00019025
53	Rai	0	0	2	0	0.5	3.8826E-06
54	S.Gundi	0	7	3	0	2.5	9.7066E-05
55	Sahaja	2	6	0	0	2	6.2122E-05
56	Sakuta	0	0	2	0	0.5	3.8826E-06
57	Sal	52	125	0	0	44.25	0.03040986
58	Satabari	0	2	0	0	0.5	3.8826E-06
59	Sialilai	45	17	0	0	15.5	0.00373122
60	Sidha	3	0	0	0	0.75	8.736E-06
61	Som	0	2	0	0	0.5	3.8826E-06
62	Sugandhi	3	42	0	0	11.25	0.00196559
63	Sunari	3	4	2	0	2.25	7.8624E-05
64	Tandagrass	0	2	0	0	0.5	3.8826E-06
Compt. No.:		Chandragiri		11			
GPS Gr.1-		N: 20 03 50.7		E: 084 37 23.0			
GPS Gr.2-		N:20 03 53.3		E:084 37 45.8			
GPS Gr.3-		N:20 03 33.7		E:084 37 41.6			
GPS Gr.4-		N:20 03 53.3		E:084 37 45.8			
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Achu	1	1	6	4	3	3.5047E-05
2	Amla	5	5	8	8	6.5	0.00016453
3	Araguna	0	0	0	4	1	3.8941E-06
4	B.neem	19	19	14	0	13	0.00065811
5	Bahada	0	0	0	3	0.75	2.1905E-06
6	Baincha	1	1	0	0	0.5	9.7354E-07
7	Bamboo	0	0	0	0	0	0
8	Bana Kolathia	0	0	7	0	1.75	1.1926E-05
9	Bana piaja	0	0	7	0	1.75	1.1926E-05
10	Barakoli	0	0	0	11	2.75	2.9449E-05
11	Bela	2	2	0	0	1	3.8941E-06
12	Benia	0	0	0	0	0	0
13	Bhalia	1	1	11	6	4.75	8.7862E-05
14	Bodeka	0	0	1	0	0.25	2.4338E-07
15	Brahmuniani	0	0	5	0	1.25	6.0846E-06
16	Chara	22	22	46	24	28.5	0.00316302
17	Chuna koli	0	0	0	8	2	1.5577E-05
18	Dhamana	0	0	0	3	0.75	2.1905E-06
19	Dhau	23	23	0	0	11.5	0.000515
20	Dhobi	0	0	0	2	0.5	9.7354E-07
21	Duba	15	15	0	0	7.5	0.00021905
22	Dudhi lai	0	0	16	0	4	6.2306E-05
23	Ekela lai	0	0	0	28	7	0.00019081
24	Gaja pipuli	0	0	3	0	0.75	2.1905E-06
25	Gandhana	0	0	0	0	0	0
26	Gila	0	0	0	0	0	0
27	Gothakanta	0	0	0	0	0	0

28	Halanda	0	0	4	0	1	3.8941E-06
29	Harada	0	0	0	0	0	0
30	Indra jala	0	0	0	16	4	6.2306E-05
31	Jamu	2	2	0	14	4.5	7.8857E-05
32	Kalakauchia	0	0	0	4	1	3.8941E-06
33	Kara	8	8	0	3	4.75	8.7862E-05
34	Karada	2	2	0	0	1	3.8941E-06
35	Kauchia	8	8	21	0	9.25	0.00033319
36	Kelikerua	65	65	25	15	42.5	0.00703381
37	Kendu	46	46	25	22	34.75	0.00470243
38	Keruan	0	0	14	28	10.5	0.00042933
39	Khajuri	52	52	32	0	34	0.00450164
40	Khakada	7	7	8	4	6.5	0.00016453
41	Khelualai	2	2	34	14	13	0.00065811
42	Khukundilai	7	7	22	12	12	0.00056076
43	Kurei	14	14	0	0	7	0.00019081
44	Kusuma	0	0	14	5	4.75	8.7862E-05
45	Luni	11	11	0	0	5.5	0.0001178
46	Luniari	0	0	0	2	0.5	9.7354E-07
47	Mahula	32	32	25	12	25.25	0.00248276
48	Mankadiasiali	0	0	0	0	0	0
49	Marua	0	0	0	4	1	3.8941E-06
50	Mohi	8	8	0	8	6	0.00014019
51	Mundumundi	0	0	0	7	1.75	1.1926E-05
52	Muturi	0	0	0	0	0	0
53	Neem	0	0	3	0	0.75	2.1905E-06
54	Palasha	3	3	0	26	8	0.00024923
55	Panara	0	0	0	3	0.75	2.1905E-06
56	Pania	2	2	0	0	1	3.8941E-06
57	Patua	0	0	14	0	3.5	4.7703E-05
58	Patuli	0	0	0	6	1.5	8.7618E-06
59	Pinchhuli	0	0	0	0	0	0
60	Pithala	0	0	9	0	2.25	1.9714E-05
61	Pokasunga	9	9	64	42	31	0.00374228
62	S.gundi	0	0	0	0	0	0
63	Sahaja	8	8	23	39	19.5	0.00148075
64	Saketa	0	0	2	0	0.5	9.7354E-07
65	Sal	53	53	99	67	68	0.01800654
66	Salera	0	0	3	0	0.75	2.1905E-06
67	Satabari	0	0	4	0	1	3.8941E-06
68	Siali lai	0	0	0	25	6.25	0.00015212
69	Sidha	0	0	0	3	0.75	2.1905E-06
70	Som	15	15	2	0	8	0.00024923
71	Sugandhi	16	16	14	0	11.5	0.000515
72	Sunari	2	2	0	0	1	3.8941E-06
73	Talamuli	0	0	24	0	6	0.00014019
74	Tandagrass	7	7	0	0	3.5	4.7703E-05
Compt. No.:		Chandragiri		12			
GPS Gr.1-		N:20 06 22.3		E: 084 36 49.5			
GPS Gr.2-		N:20 06 38.3		E:084 37 02.9			
GPS Gr.3-		N:20 06 30.6		E:084 36 36.3			

GPS Gr.4-							
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Amla	6	0	13	0	4.75	0.00013739
2	Ankula	0	0	20	0	5	0.00015223
3	Aruguna	0	2	0	0	0.5	1.5223E-06
4	Bahada	3	0	0	0	0.75	3.4251E-06
5	Baila	0	14	20	0	8.5	0.00043994
6	Bana Haladi	0	0	22	0	5.5	0.0001842
7	Bana Olua	0	0	5	0	1.25	9.5142E-06
8	Benia	11	40	0	0	12.75	0.00098986
9	Bhalia	0	0	21	0	5.25	0.00016783
10	Bhuin kambeda	0	0	47	0	11.75	0.00084068
11	Bramania	0	6	0	0	1.5	1.3701E-05
12	Char	32	0	23	0	13.75	0.00115122
13	Dantari	0	0	5	0	1.25	9.5142E-06
14	Dhamana	3	0	20	0	5.75	0.00020132
15	Gaigobora	0	0	40	0	10	0.00060891
16	Gila	2	23	0	0	6.25	0.00023786
17	Gothakanta	14	0	0	0	3.5	7.4592E-05
18	Halanda	2	0	0	0	0.5	1.5223E-06
19	Harada	5	0	0	0	1.25	9.5142E-06
20	Indra jala	0	0	5	0	1.25	9.5142E-06
21	Jamu	14	4	0	0	4.5	0.0001233
22	Jatajati	22	0	0	0	5.5	0.0001842
23	Kantekoli	4	0	0	0	1	6.0891E-06
24	Kara	0	6	26	0	8	0.0003897
25	Karada	0	0	59	0	14.75	0.00132476
26	kauchia	0	4	0	0	1	6.0891E-06
27	Kelikerua	22	10	0	0	8	0.0003897
28	Kendu	2	0	31	0	8.25	0.00041444
29	Khajuri	2	0	27	0	7.25	0.00032006
30	Khakada	6	13	0	0	4.75	0.00013739
31	Khelualai	0	21	0	0	5.25	0.00016783
32	Khukundi	5	15	15	0	8.75	0.0004662
33	Kulalai	6	0	0	0	1.5	1.3701E-05
34	Kumbhi	4	0	0	0	1	6.0891E-06
35	Kusuma	0	3	0	0	0.75	3.4251E-06
36	Langala kanta	0	0	8	0	2	2.4356E-05
37	Mahula	2	0	0	0	0.5	1.5223E-06
38	Mankadasiali	5	15	37	0	14.25	0.00123647
39	Modamodi	6	0	0	0	1.5	1.3701E-05
40	Moi	2	0	0	0	0.5	1.5223E-06
41	Muturi	0	3	0	0	0.75	3.4251E-06
42	Neem	0	8	0	0	2	2.4356E-05
43	Palasa	4	1	23	0	7	0.00029837
44	Pinchhuli	1	15	25	0	10.25	0.00063974
45	Pokasunga	0	10	110	0	30	0.0054802
46	S.Gundi	17	64	22	0	25.75	0.00403746
47	Sahaja	10	0	0	0	2.5	3.8057E-05
48	Sal	80	72	98	0	62.5	0.02378559

49	Satabari	0	0	15	0	3.75	8.5628E-05
50	Siali lai	0	56	5	0	15.25	0.0014161
51	Sirisa	2	7	0	0	2.25	3.0826E-05
52	Sugandhi	32	0	75	0	26.75	0.00435714
53	Talamuli	0	0	40	0	10	0.00060891
54	Tentela	0	0	26	0	6.5	0.00025726
Compt. No.:		Ambazora		1			
GPS Gr.1-		N:20 13 07.1		E: 084 39 09.4			
GPS Gr.2-		N:20 12 58.6		E:084 39 09.2			
GPS Gr.3-		N:20 12 40.8		E:084 39 58.2			
GPS Gr.4-							
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Avg.	(ni/N)2
1	Achu	0	0	0	17	4.25	0.0001511
2	Arjuna	9	0	19	0	7	0.00040989
3	Bausapatrigrass	0	0	23	25	12	0.00120459
4	Bheru	0	0	0	20	5	0.00020913
5	Bhuin nima	0	0	29	0	7.25	0.0004397
6	Chara	39	43	60	42	46	0.01770073
7	Chara grass	64	0	0	0	16	0.00214149
8	Dhaman	26	0	0	0	6.5	0.00035343
9	Dhamana	0	0	0	12	3	7.5287E-05
10	Dhau	0	12	0	0	3	7.5287E-05
11	Dhobi	23	0	0	0	5.75	0.00027657
12	Harida	0	0	0	7	1.75	2.5618E-05
13	Jamu	19	0	0	0	4.75	0.00018874
14	Jamu	0	0	0	10	2.5	5.2282E-05
15	Kasi	0	12	0	0	3	7.5287E-05
16	Kauchia	0	0	28	0	7	0.00040989
17	Kendu	19	0	0	0	4.75	0.00018874
18	Khakada	0	0	37	44	20.25	0.00343025
19	Khelualai	11	11	0	0	5.5	0.00025305
20	Krushnapani	0	24	0	0	6	0.00030115
21	Kumbhi	6	0	0	0	1.5	1.8822E-05
22	Kurei	0	0	46	0	11.5	0.0011063
23	Kusuma	0	11	15	0	6.5	0.00035343
24	Mahtagudigrass	0	0	15	0	3.75	0.00011764
25	Mankadasiali	14	12	15	17	14.5	0.00175878
26	Moi	11	0	0	0	2.75	6.3262E-05
27	Mudumudia	0	0	15	34	12.25	0.0012553
28	P.Sal	5	8	0	4	4.25	0.0001511
29	Patuli	20	8	0	0	7	0.00040989
30	Pokasunga	0	0	74	64	34.5	0.00995666
31	Sahaja	0	0	13	0	3.25	8.8357E-05
32	Sal	56	45	55	46	50.5	0.02133332
33	Satabari	0	0	7	0	1.75	2.5618E-05
34	Sialilai	0	12	0	0	3	7.5287E-05
35	Sugandhi	12	21	29	8	17.5	0.00256184
Compt. No.:		Ambazora		2			
GPS Gr.1-		N:20 11 06,7		E: 084 38 03.3			
GPS Gr.2-		N:20 12 58.6		E:084 39 09.2			

GPS Gr.3-		N:20 11 16.1		E:084 38 25.9			
GPS Gr.4-		N:20 11 33.0		E: 084 38 25.5			
GPS Gr.5-		N:20 11 27.7		E: 084 38 04.4			
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Grid-5	Avg.
1	Achu	13	0	12	60	14	19.8
2	Ankula	0	0	0	0	24	4.8
3	Arguna	0	3	0	0	4	1.4
4	Bhuin nima	0	0	0	0	30	6
5	Chara	0	49	36	29	0	22.8
6	Dantari	0	0	0	0	5	1
7	Dhamana	0	0	20	23	0	8.6
8	Dhau	19	0	0	0	27	9.2
9	Halanda	0	0	0	0	9	1.8
10	Jamu	0	0	0	11	0	2.2
11	Kantaikoli	0	0	0	0	11	2.2
12	Karada	0	0	0	0	24	4.8
13	Kasi	0	0	14	25	0	7.8
14	Kathapana	0	0	0	0	6	1.2
15	Kendu	0	23	24	19	22	17.6
16	Khakada	40	0	0	23	22	17
17	Khelualai	0	0	8	0	0	1.6
18	Khukundi lai	0	11	0	10	10	6.2
19	Kusuma	20	16	9	9	0	10.8
20	Mahtagudigrass	0	0	17	0	0	3.4
21	Mahula	0	0	0	0	4	0.8
22	Makada siali	0	0	0	9	20	5.8
23	Marda lai	0	0	0	0	5	1
24	Masania	14	0	0	0	0	2.8
25	Moi	0	0	17	19	0	7.2
26	Mudumudia	0	0	0	0	13	2.6
27	P.Sal	0	0	0	0	2	0.4
28	Patuli	0	13	0	0	0	2.6
29	Pinchuli	0	0	0	4	0	0.8
30	Pitakauchia	63	0	0	0	0	12.6
31	Pokasunga	58	74	0	0	58	38
32	Sahaja	0	17	17	0	0	6.8
33	Sal	52	50	44	0	0	29.2
34	Sal porni	50	0	0	0	0	10
35	Satabari	9	8	8	11	5	8.2
36	Sialilai	0	7	11	0	4	4.4
37	Sikula grass	11	0	0	0	0	2.2
38	Sirisa	0	0	0	0	2	0.4
39	Sisoo	4	0	0	0	0	0.8
40	Sugandhi	33	28	0	18	0	15.8
41	Sunari	18	0	21	13	5	11.4
Compt. No.:		Ambazora		3			
GPS Gr.1-		N:20 10 05.6		E: 084 36 03.3			
GPS Gr.2-		N:20 10 10.6		E: 084 36 14.5			
GPS Gr.3-		N:20 9 59.6		E: 084 36 20.7			
GPS Gr.4-		N:20 9 52.0		E: 084 36 34.2			

GPS Gr.5-							
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Grid-5	Avg.
1	Achu	8	0	12	19	0	7.8
2	Amla	0	0	4	0	0	0.8
3	Bandhana	12	0	15	0	0	5.4
4	Bhuin nima	38	28	0	0	0	13.2
5	Chara	41	0	52	0	0	18.6
6	Dhaman	0	0	0	16	0	3.2
7	Dhau	21	0	0	0	0	4.2
8	Dhobi	0	28	16	18	0	12.4
9	Jamu	10	11	0	0	0	4.2
10	Karada	29	0	0	0	0	5.8
11	Kasi	4	0	0	0	0	0.8
12	Kataka	0	0	0	16	0	3.2
13	Kendu	24	16	26	0	0	13.2
14	Khelualai	10	0	0	13	0	4.6
15	Kusuma	0	7	14	10	0	6.2
16	Masania	0	16	0	0	0	3.2
17	Moi	0	0	32	0	0	6.4
18	Mudumudia	9	0	0	0	0	1.8
19	P.Sal	0	7	0	0	0	1.4
20	Palu	0	0	0	17	0	3.4
21	Pania	9	0	0	9	0	3.6
22	Patuli	0	7	0	0	0	1.4
23	Pitakauchia	0	0	55	0	0	11
24	Pokasunga	40	52	0	0	0	18.4
25	Rai	8	0	0	0	0	1.6
26	S.Gundi	0	0	0	18	0	3.6
27	Sabaisgras	84	0	0	0	0	16.8
28	Sahaja	14	13	0	0	0	5.4
29	Sal	38	71	82	69	0	52
30	Sal porni	0	43	0	0	0	8.6
31	Satabari	5	5	14	10	0	6.8
32	Sirisa	0	18	0	0	0	3.6
33	Sisoo	0	0	5	0	0	1
34	Sugandhi	17	17	25	30	0	17.8
35	Sunari	0	0	0	13	0	2.6
Compt. No.:		Ambazora		4			
GPS Gr.1-		N:20 09 51.6		E: 084 37 38.7			
GPS Gr.2-		N:20 10 37.1		E: 084 38 20.4			
GPS Gr.3-							
GPS Gr.4-		N:20 9 37.7		E: 084 37 53.3			
GPS Gr.5-							
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Grid-5	Avg.
1	Achu	0	0	0	11	0	2.2
2	Araguna	0	7	0	0	0	1.4
3	Arjuna	0	0	0	4	0	0.8
4	B.neem	23	26	31	0	0	16
5	Bela	11	10	0	0	0	4.2

6	Bhalia	19	0	26	0	0	9
7	Chara	52	52	41	32	0	35.4
8	Dhau	0	0	27	18	0	9
9	Dhobi	0	19	0	0	0	3.8
10	Kendu	20	21	0	27	0	13.6
11	Khelualai	0	0	0	18	0	3.6
12	Kurei	0	0	20	0	0	4
13	Kusuma	15	0	16	14	0	9
14	Mahula	0	0	11	0	0	2.2
15	Moi	0	24	0	0	0	4.8
16	Pania	0	4	0	0	0	0.8
17	Pinchuli	22	0	15	0	0	7.4
18	Pokasunga	60	80	63	56	0	51.8
19	S.Gundi	23	27	0	16	0	13.2
20	S.moi	13	0	0	22	0	7
21	Satabari	7	0	8	9	0	4.8
22	Sirisa	0	0	12	0	0	2.4
23	Sugandhi	14	12	20	0	0	9.2
24	Sunari	0	11	0	11	0	4.4
Compt. No.:		Ambazora		5			
GPS Gr.1-		N:20 09 00.9		E: 084 38 15.3			
GPS Gr.2-		N:20 08 59.2		E: 084 38 30.2			
GPS Gr.3-		N:20 08 48.4		E: 084 38 27.2			
GPS Gr.4-		N:		E:			
GPS Gr.5-		N:		E:			
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Grid-5	Avg.
1	Aparajita	0	0	0	8	0	1.6
2	Araguna	7	0	0	0	0	1.4
3	Bhuin nima	0	0	21	0	0	4.2
4	Chara	46	21	34	58	0	31.8
5	Dhaman	0	0	17	0	0	3.4
6	Halanda	0	0	0	14	0	2.8
7	Karada	33	55	39	0	0	25.4
8	Kendu	14	25	0	23	0	12.4
9	Khajuri	25	0	0	0	0	5
10	Khelualai	0	0	0	20	0	4
11	Kusuma	18	26	18	0	0	12.4
12	Mahula	0	0	7	0	0	1.4
13	Masania	0	0	11	0	0	2.2
14	Patuli	0	7	0	0	0	1.4
15	Pinchuli	0	15	0	0	0	3
16	Pokasunga	0	46	40	42	0	25.6
17	S.Gundi	0	0	0	23	0	4.6
18	S.moi	0	38	0	0	0	7.6
19	Sahaja	0	0	14	0	0	2.8
20	Sal	61	0	0	46	0	21.4
21	Satabari	7	10	5	0	0	4.4
22	Sisoo	7	0	0	0	0	1.4
23	Sugandhi	11	30	14	0	0	11
24	Sunari	0	16	0	0	0	3.2

Compt. No.:		Ambazora		6			
GPS Gr.1-		N:20 10 22.9		E: 084 39 10.6			
GPS Gr.2-		N:20 10 17.2		E: 084 39 18.7			
GPS Gr.3-		N:		E:			
GPS Gr.4-		N:		E:			
GPS Gr.5-							
Sl.No	Species	Grid-1	Grid-2	Grid-3	Grid-4	Grid-5	Avg.
1	Araguna	0	0	0	4	0	0.8
2	Arjun	0	0	10	0	0	2
3	Baila	20	0	0	0	0	4
4	Bela	19	0	0	0	0	3.8
5	Bhalia	19	27	0	0	0	9.2
6	Bhuin nima	27	0	0	26	0	10.6
7	Dhau	41	0	0	0	0	8.2
8	Jamu	0	0	17	0	0	3.4
9	Kasi	0	0	16	0	0	3.2
10	Kendu	21	0	0	0	0	4.2
11	Kusuma	0	16	14	22	0	10.4
12	Mathagundi	0	0	20	0	0	4
13	Moi	31	0	0	14	0	9
14	Muturi	0	0	4	10	0	2.8
15	Pinchuli	13	15	0	0	0	5.6
16	Pokasunga	0	53	55	68	0	35.2
17	S.Gundi	0	0	28	36	0	12.8
18	Sahaja	0	16	16	0	0	6.4
19	Sal	57	53	78	60	0	49.6
20	Satabari	10	8	0	0	0	3.6
21	Sugandhi	22	14	0	19	0	11
Mujagada							
Compt. No.:		Gallery		1			
GPS Gr.1-		N:20.00.40.0		E: 084.31.57.8			
GPS Gr.2-		N:20.00.53.8		E:084.31.36.8			
GPS Gr.3-		N:20.00.40.0		E:084.29.47.0			
GPS Gr.4-		N:		E:084.29.25.1			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	12	29	9	13	15.75	0.0006245
2	Ahula lai	5	0	0	0	1.25	3.9336E-06
3	Amla	7	0	0	3	2.5	1.5735E-05
4	Bana malli	40	0	0	0	10	0.00025175
5	Bana piaja	5	0	0	0	1.25	3.9336E-06
6	Benia	0	34	0	56	22.5	0.0012745
7	Bhalia	16	0	9	11	9	0.00020392
8	Chara	78	54	34	0	41.5	0.00433581
9	D. Moi	0	0	28	0	7	0.00012336
10	Dhamana	0	1	0	0	0.25	1.5735E-07
11	Dhamana grass	0	11	0	0	2.75	1.9039E-05
12	Dhatiki	45	0	24	25	23.5	0.0013903
13	Dhobi	150	19	11	0	45	0.00509799
14	Gaigobara	10	18	0	0	7	0.00012336
15	Halanda	6	5	0	6	4.25	4.5473E-05

16	Harada	2	0	0	0	0.5	6.2938E-07
17	Isawar jata	0	2	0	0	0.5	6.2938E-07
18	Jamu	26	20	10	0	14	0.00049344
19	Jatia grass	0	5	0	0	1.25	3.9336E-06
20	Kantei koli	0	0	5	6	2.75	1.9039E-05
21	Karaba lai	0	1	0	0	0.25	1.5735E-07
22	karada	45	14	8	38	26.25	0.00173473
23	Kasi	5	11	0	0	4	4.028E-05
24	Katak	0	0	0	4	1	2.5175E-06
25	Kendu	7	17	23	16	15.75	0.0006245
26	Khajuri	6	6	19	0	7.75	0.00015121
27	Khakada	63	21	0	0	21	0.00111023
28	Khelua lai	0	4	0	0	1	2.5175E-06
29	Khelua lai	0	0	17	19	9	0.00020392
30	Khukundi	19	0	0	0	4.75	5.6802E-05
31	Kila keruan	0	0	13	15	7	0.00012336
32	Kolathia lai	0	22	0	0	5.5	7.6155E-05
33	Kurei	136	40	0	9	46.25	0.00538515
34	Lunuluni	0	0	8	0	2	1.007E-05
35	Mahula	107	35	0	0	35.5	0.00317271
36	Modimodica	0	0	0	19	4.75	5.6802E-05
37	Moi	5	0	0	0	1.25	3.9336E-06
38	Mundumundi	0	0	0	10	2.5	1.5735E-05
39	Muturi	0	7	0	0	1.75	7.7099E-06
40	Muturi	0	0	7	0	1.75	7.7099E-06
41	Muturi	0	0	0	10	2.5	1.5735E-05
42	Palasha	11	0	0	11	5.5	7.6155E-05
43	Palasha lai	0	1	0	0	0.25	1.5735E-07
44	Palu	0	2	0	0	0.5	6.2938E-07
45	Palu	0	0	36	0	9	0.00020392
46	Piasal	2	0	0	0	0.5	6.2938E-07
47	Pichhuli	0	0	0	34	8.5	0.00018189
48	S. gundi	0	3	0	0	0.75	1.4161E-06
49	Sahaj	0	5	0	0	1.25	3.9336E-06
50	Sahaj	0	0	23	0	5.75	8.3236E-05
51	Sal	220	141	161	103	156.25	0.06146308
52	Salparni	0	0	24	0	6	9.0631E-05
53	satabari	25	1	0	12	9.5	0.00022721
54	Siali lai	15	0	0	0	3.75	3.5403E-05
55	Sidha	10	0	0	0	2.5	1.5735E-05
56	Sugandhi	20	5	0	0	6.25	9.8341E-05
Compt. No.:		Gallery		2			
GPS Gr.1-		N: 20.00.33.5		E: 084.31.57.8			
GPS Gr.2-		N:20.00.40.0.		E:084.31.36.8			
GPS Gr.3-		N:19.59.35.4		E:084.29.57.3			
GPS Gr.4-		N:		E:			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Amla	2	13	0	0	3.75	6.873E-05
2	Araguna	2	0	0	0	0.5	1.2219E-06
3	Banamalli	0	25	12	0	9.25	0.00041818
4	Bel	0	0	25	0	6.25	0.00019092

5	Benia lai	7	0	25	0	8	0.0003128
6	Bhalia	4	0	0	0	1	4.8875E-06
7	Bhuin neem	0	5	0	0	1.25	7.6366E-06
8	Bhurudu koli	1	5	0	0	1.5	1.0997E-05
9	Chara	53	85	47	0	46.25	0.01045457
10	Dhatiki	25	0	27	0	13	0.00082598
11	Dhau	19	10	0	0	7.25	0.0002569
12	Dhobi	2	34	0	0	9	0.00039588
13	Halanda	6	0	0	0	1.5	1.0997E-05
14	Harida	5	12	0	0	4.25	8.828E-05
15	Jamu	0	28	0		9.33333	0.00042575
16	K.Grass	1	0	0	0	0.25	3.0547E-07
17	Kantei koli	0	3	11	0	3.5	5.9871E-05
18	Karada	32	33	22	0	21.75	0.00231207
19	Keli kerua	55	31	35	0	30.25	0.00447233
20	Kendu	27	50	0	0	19.25	0.00181111
21	Khajuri	2	10	26	0	9.5	0.00044109
22	Khakada	8	0	0	0	2	1.955E-05
23	khelua lai	9	22	0	0	7.75	0.00029355
24	Khukundi	0	21	0	0	5.25	0.00013471
25	Kolathia lai	2	0	0	0	0.5	1.2219E-06
26	Kurei	59	0	0	0	14.75	0.00106333
27	Kusuma	5	3	40	0	12	0.00070379
28	Lunuluni	0	5	17	0	5.5	0.00014785
29	Mahula	18	31	0	0	12.25	0.00073342
30	Moi	4	9	18	0	7.75	0.00029355
31	Mudumudia	0	12	0	0	3	4.3987E-05
32	Nunu nuni	3			0	1.5	1.0997E-05
33	Palu	0	5	0	0	1.25	7.6366E-06
34	Pania	0	0	28	0	7	0.00023949
35	Piasal	3	0	0	0	0.75	2.7492E-06
36	Pichhuli	0	0	26	0	6.5	0.00020649
37	Pithala	1	0	0	0	0.25	3.0547E-07
38	Pokasunga	0	0	24	0	6	0.00017595
39	Rai	0	7	0	0	1.75	1.4968E-05
40	Sahaj	33	12	35	0	20	0.00195498
41	Sal	72	292	64	0	107	0.05595648
42	Salparni	0	0	29	0	7.25	0.0002569
43	Satabari	0	6	0	0	1.5	1.0997E-05
44	Sugandhi	10	0	0	0	2.5	3.0547E-05
45	Sugandhi	0	45	0	0	11.25	0.00061857
46	Sundara gundi	1	0	0	0	0.25	3.0547E-07
47	Tilika	0	1	0	0	0.25	3.0547E-07
Compt. No.:		Gallery		3			
GPS Gr.1-		N: 20.00.33.5		E: 084.31.57.8			
GPS Gr.2-		N:20.00.40.0.		E:084.31.36.8			
GPS Gr.3-		N:20.00.38.6		E:084.31.02.3			
GPS Gr.4-		N:		E:			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	0	7	25	0	8	0.00039967
2	Araguna	1	1		0	0.66667	2.7755E-06

2	Bainch koli	2	0	0	0	0.5	1.5612E-06
3	Baincha	1	0	0	0	0.25	3.903E-07
4	Bana kolatha	3	0	0	0	0.75	3.5127E-06
5	Banapiaja	0	0	7	0	1.75	1.9125E-05
6	Baula	0	0	9	0	2.25	3.1614E-05
7	Bela	1	0	0	0	0.25	3.903E-07
8	Benia	0	0	7	0	1.75	1.9125E-05
9	Bhalia	0	4	7	0	2.75	4.7226E-05
10	Chana grass	20	0	0	0	5	0.00015612
11	Chara	43	43	52	0	34.5	0.00743287
12	Dhatiki	1	0	5	0	1.5	1.4051E-05
13	Dhau	0	1	20	0	5.25	0.00017212
14	Dhobi	0	1	0	0	0.25	3.903E-07
15	Harada	0	1	0	0	0.25	3.903E-07
16	Jamu	5	0	11	0	4	9.9917E-05
17	Kara	0	8	6	0	3.5	7.6499E-05
18	Karada	17	10	0	0	6.75	0.00028453
19	Kendu	6	1	0	0	1.75	1.9125E-05
20	Khajuri	2	2	7	0	2.75	4.7226E-05
21	Khakada	1	0	21	0	5.5	0.00018891
22	Khelua lai	0	0	19	0	4.75	0.0001409
23	Khukundi	0	0	40	0	10	0.00062448
24	Kila keruan	0	0	36	0	9	0.00050583
25	Kumbhi	0	1	0	0	0.25	3.903E-07
26	Kurei	0	0	16	0	4	9.9917E-05
27	Kurei	95	64	0	0	39.75	0.00986717
28	Kusuma	0	0	40	0	10	0.00062448
29	Kusuma	3	0	0	0	0.75	3.5127E-06
30	Lunuluni	0	0	18	0	4.5	0.00012646
31	Mahula	0	0	21	0	5.25	0.00017212
32	Mahula	0	4	0	0	1	6.2448E-06
33	Moi	2	0	0	0	0.5	1.5612E-06
34	Musuli	8	0	0	0	2	2.4979E-05
35	Palasa	13	0	0	0	3.25	6.5961E-05
36	Palasa lai	0	0	1	0	0.25	3.903E-07
37	Pokasunga	0	0	35	0	8.75	0.00047812
38	Sahaj	14	1	26	0	10.25	0.00065609
39	Sal	132	355	149	0	159	0.15787466
40	Satabari	0	17	0	0	4.25	0.0001128
41	satabari	0	17	0	0	4.25	0.0001128
42	Sirisha	0	0	20	0	5	0.00015612
43	Sugandhi	6	50	0	0	14	0.00122398
44	Sunari	0	0	37	0	9.25	0.00053432
45	Utruli	1	0	0	0	0.25	3.903E-07
Compt. No.:		Gallery		4			
GPS Gr.1-		N: 20.00.33.5		E: 084.31.57.8			
GPS Gr.2-		N:20.00.40.0.		E:084.31.36.8			
GPS Gr.4-							
GPS Gr.3-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	5	3	0	0	2	9.6117E-05

2	Amla	1	6	0	0	1.75	7.3589E-05
3	Araguna	16	0	0	0	4	0.00038447
4	Araguna	0	2	0	0	0.5	6.0073E-06
5	Baincha	6	0	0	0	1.5	5.4066E-05
6	Bamboo	2	0	0	0	0.5	6.0073E-06
7	Bhalia	8	5	0	0	3.25	0.00025381
8	Bheru	0	17	0	0	4.25	0.00043403
9	Bhurude koli	0	13	0	0	3.25	0.00025381
10	Chara	32	49	0	0	20.25	0.00985348
11	Chhana grass	0	10	0	0	2.5	0.00015018
12	Dalasingada	0	5	0	0	1.25	3.7546E-05
13	Dhatiki	4	12	0	0	4	0.00038447
14	Dhau	18	8	0	0	6.5	0.00101523
15	Harada	1	0	0	0	0.25	1.5018E-06
16	Jamu	0	5	0	0	1.25	3.7546E-05
17	Kaluchua	1	15	0	0	4	0.00038447
18	Kantei koli	6	0	0	0	1.5	5.4066E-05
19	Karada	8	21	0	0	7.25	0.00126304
20	Kataka	1	0	0	0	0.25	1.5018E-06
21	Keli kerua	23	0	0	0	5.75	0.00079447
22	Kendu	28	31	0	0	14.75	0.00522786
23	Khajuri	0	31	0	0	7.75	0.00144325
24	Khakada	3	11	0	0	3.5	0.00029436
25	Khira koli	0	10	0	0	2.5	0.00015018
26	Kurei	22	43	0	0	16.25	0.00634522
28	Kusuma	5	0	0	0	1.25	3.7546E-05
29	Mahula	0	20	0	0	5	0.00060073
30	Masia lai	0	5	0	0	1.25	3.7546E-05
31	Modimodia	5	0	0	0	1.25	3.7546E-05
32	Moi	1	0	0	0	0.25	1.5018E-06
33	Muturi	6	0	0	0	1.5	5.4066E-05
34	Nunu nuni	14	0	0	0	3.5	0.00029436
35	Pania	11	0	0	0	2.75	0.00018172
36	Patuli	1	0	0	0	0.25	1.5018E-06
37	Pithala	0	10	0	0	2.5	0.00015018
38	Rai	0	6	0	0	1.5	5.4066E-05
39	Sahaj	13	30	0	0	10.75	0.00277688
40	Sal	45	95	0	0	35	0.02943579
41	Satabari	1	15	0	0	4	0.00038447
42	Sidha	2	8	0	0	2.5	0.00015018
44	Sindur gundi	5	0	0	0	1.25	3.7546E-05
45	Sirisha	5	0	0	0	1.25	3.7546E-05
46	Sugandhi	0	15	0	0	3.75	0.00033791
47	Sum	0	16	0	0	4	0.00038447
Compt. No.:		Gallery		5			
GPS Gr.1-		N: 20.00.33.5		E: 084.31.57.8			
GPS Gr.2-		N:20.00.40.0.		E:084.31.36.8			
GPS Gr.3-		N:19.58.27.5		E:084.32.43.5			
GPS Gr.4-		N:		E:			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	0	0	39	0	9.75	0.00028283

2	Amla	0	10	0	0	2.5	1.8595E-05
3	Araguna	2	9	0	0	2.75	2.25E-05
4	Bahada	1	0	0	0	0.25	1.8595E-07
5	Baincha	0	0	38	0	9.5	0.00026851
6	Banapiaja	0	0	59	0	14.75	0.0006473
7	Bhalia	12	18	28	0	14.5	0.00062554
8	Bhuin neem	0	19	0	0	4.75	6.7128E-05
9	Bhurudu koli	0	1	0	0	0.25	1.8595E-07
10	Bichhuati	2	0	0	0	0.5	7.438E-07
11	Chadhei godi	1	0	0	0	0.25	1.8595E-07
12	Chara	86	21	104	0	52.75	0.00827872
13	Chhana grass	0	0	26	0	6.5	0.0001257
14	D. Moi	0	0	68	0	17	0.00085984
15	Dhataki	36	0	41	0	19.25	0.0011025
16	Dhau	0	5	0	0	1.25	4.6488E-06
17	Dhobi	0	1	0	0	0.25	1.8595E-07
18	Dudhilai	1	0	0	0	0.25	1.8595E-07
19	Harada	4	3	0	0	1.75	9.1116E-06
20	Jamu	0	9	0	0	2.25	1.5062E-05
21	Jateijati	0	0	43	0	10.75	0.00034382
22	Jatia grass	5	0	0	0	1.25	4.6488E-06
23	Kaitha	2	0	0	0	0.5	7.438E-07
24	Karada	10	25	0	0	8.75	0.00022779
25	Kauchia	10	38	0	0	12	0.00042843
26	Kelikerua	37	35	39	0	27.75	0.0022911
27	Kendu	28	69	103	0	50	0.00743804
28	Khajuri	3	30	91	0	31	0.00285918
29	Khakada	0	3	0	0	0.75	1.6736E-06
30	Khira koli	0	3	0	0	0.75	1.6736E-06
31	Kodala	0	0	46	0	11.5	0.00039347
32	Kurei	9	82	78	0	42.25	0.00531095
33	Kusuma	10	0	0	0	2.5	1.8595E-05
34	Luna koli	0	5	0	0	1.25	4.6488E-06
35	Mahula	11	0	0	0	2.75	2.25E-05
36	Moi	1	26	0	0	6.75	0.00013556
37	Muturi	2	0	71	0	18.25	0.00099093
38	Nunu nuni	1	0	0	0	0.25	1.8595E-07
39	Palasa	0	1	0	0	0.25	1.8595E-07
40	Panamahuri lai	2	0	0	0	0.5	7.438E-07
41	Pania	1	0	0	0	0.25	1.8595E-07
42	Piasal	3	0	0	0	0.75	1.6736E-06
43	Rai	0	6	0	0	1.5	6.6942E-06
44	Sabai grass	0	19	0	0	4.75	6.7128E-05
45	Sahaj	24	10	54	0	22	0.00144
46	Sal	109	104	81	0	73.5	0.01607286
47	Satabari	10	5	50	0	16.25	0.00078564
48	Siali lai	0	12	72	0	21	0.00131207
49	Sirisha	0	0	66	0	16.5	0.00081
50	Sugandhi	5	20	68	0	23.25	0.00160829
51	Sum	0	0	36	0	9	0.00024099
52	Sunari	1	0	0	0	0.25	1.8595E-07

Compt. No.:		Gallery		6			
GPS Gr.1-		N: 20.00.33.5		E: 084.31.57.8			
GPS Gr.2-		N:20.00.40.0.		E:084.31.36.8			
GPS Gr.3-		N:19.58.42.6		E:084.33.23.7			
GPS Gr.4-		N:		E:			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	2	11	13	0	6.5	0.00036764
2	Aruguna	1	0	0	0	0.25	5.4385E-07
3	Bhui neem	17	0	0	0	4.25	0.00015717
4	Bhurudu koli	2	0	0	0	0.5	2.1754E-06
5	Chadhei gudi	4	0	0	0	1	8.7016E-06
6	Chara	41	0	15	0	14	0.00170552
7	D.Kendu	11	0	0	0	2.75	6.5806E-05
8	Dhataki	22	0	0	0	5.5	0.00026322
9	Dhobi	7	0	15	0	5.5	0.00026322
10	Duba	8	0	0	0	2	3.4807E-05
11	Gila	5	0	0	0	1.25	1.3596E-05
12	Harada	6	0	0	0	1.5	1.9579E-05
13	Jamu	7	0	6	0	3.25	9.1911E-05
14	Kantai koli	13	0	0	0	3.25	9.1911E-05
15	Karada	1	13	0	0	3.5	0.00010659
16	Kelikeruan	34	0	0	0	8.5	0.00062869
17	Kendu	23	15	4	0	10.5	0.00095935
18	Khajuri	12	0	11	0	5.75	0.0002877
19	Khelua lai	8	0	27	0	8.75	0.00066622
20	Khira koli	15	0	0	0	3.75	0.00012237
21	Kurei	26	0	37	0	15.75	0.00215855
22	Mahula	31	0	0	0	7.75	0.00052264
23	Matha grass	8	0	0	0	2	3.4807E-05
24	Muturi	5	0	0	0	1.25	1.3596E-05
25	Nunu nuni	3	0	0	0	0.75	4.8947E-06
26	Palu	8	0	0	0	2	3.4807E-05
27	Sahaj	5	0	0	0	1.25	1.3596E-05
28	Sal	69	301	78	0	112	0.10915324
29	Satabari	7	0	0	0	1.75	2.6649E-05
30	Sugandhi	20	0	15	0	8.75	0.00066622
31	Sunari	2	0	0	0	0.5	2.1754E-06
32	Ankula	0	37	0	0	9.25	0.00074453
33	Khakada	0	10	0	0	2.5	5.4385E-05
34	Benia	0	10	0	0	2.5	5.4385E-05
35	Kasi	0	6	0	0	1.5	1.9579E-05
36	Moi	0	14	3	0	4.25	0.00015717
37	Dhamana	0	4	0	0	1	8.7016E-06
38	Khudia lai	0	16	0	0	4	0.00013923
39	Banamalli	0	0	100	0	25	0.00543852
40	Jatajati	0	0	10	0	2.5	5.4385E-05
41	Pokasunga	0	0	16	0	4	0.00013923
42	Sirisa	0	0	3	0	0.75	4.8947E-06
43	Salparni	0	0	49	0	12.25	0.00130579
44	Mundumundi	0	0	15	0	3.75	0.00012237
45	Kolathia	0	0	15	0	3.75	0.00012237

46	Kumbhi	0	0	34	0	8.5	0.00062869
47	Bhalia	0	0	10	0	2.5	5.4385E-05
48	Kusuma	0	0	20	0	5	0.00021754
Compt. No.:		Gallery		7			
GPS Gr.1-		N: 20.00.33.5		E: 084.31.57.8			
GPS Gr.2-		N:20.00.40.0.		E:084.31.36.8			
GPS Gr.3-		N:19.58.41.9		E:084.33.45.4			
GPS Gr.4-		N:		E:			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	35	3	7	0	11.25	0.00042728
2	Akula lai	0	5	0	0	1.25	5.275E-06
3	Amla	1	1	10	0	3	3.0384E-05
4	Araguna	2	0	0	0	0.5	8.44E-07
5	Baila	5	0	0	0	1.25	5.275E-06
6	Bana kolatha	0	5	0	0	1.25	5.275E-06
7	Benia	43	0	0	0	10.75	0.00039014
8	Benta kanta	3	0	0	0	0.75	1.899E-06
9	Bhalia	0	4	0	0	1	3.376E-06
10	Bhuinneem	0	0	51	0	12.75	0.00054881
11	Bhurdukoli	0	0	28	0	7	0.00016542
12	Chara	23	33	51	0	26.75	0.00241574
13	Cherenga	1	0	0	0	0.25	2.11E-07
14	Chhana grass	0	50	15	0	16.25	0.00089148
15	Dantari	1	0	0	0	0.25	2.11E-07
16	Dhaman	2	0	0	0	0.5	8.44E-07
17	Dhatiki	17	12	0	0	7.25	0.00017745
18	Dhau	0	0	13	0	3.25	3.5659E-05
19	Dhobi	0	56	21	0	19.25	0.00125102
20	Gila	0	10	0	0	2.5	2.11E-05
21	Jagula	0	50	0	0	12.5	0.0005275
22	Jamu	3	2	25	0	7.5	0.0001899
23	Jatajati	0	0	57	0	14.25	0.00068554
24	Jatia grass	31	0	0	0	7.75	0.00020277
25	Jhatika	0	0	29	0	7.25	0.00017745
26	Kapasia	6	0	0	0	1.5	7.596E-06
27	Karada	16	5	24	0	11.25	0.00042728
28	Kasi	1	0	0	0	0.25	2.11E-07
29	Keli kerua	0	12	18	0	7.5	0.0001899
30	Kendu	1	0	22	0	5.75	0.00011162
31	Khajuri	18	0	0	0	4.5	6.8364E-05
32	Khakada	38	8	0	0	11.5	0.00044648
33	Khelua lai	5	0	33	0	9.5	0.00030468
34	Khukundi lai	1	20	0	0	5.25	9.3051E-05
35	Kolathia lai	0	0	48	0	12	0.00048614
36	Kula lai	0	5	0	0	1.25	5.275E-06
37	Kumbhi	1	0	0	0	0.25	2.11E-07
38	Kurei	14	20	0	0	8.5	0.00024392
39	Kusum	8	10	0	0	4.5	6.8364E-05
40	Lunuluni	0	0	11	0	2.75	2.5531E-05
41	Masia	0	10	0	0	2.5	2.11E-05
42	Moda lai	1	0	0	0	0.25	2.11E-07

43	Moi	0	3	0	0	0.75	1.899E-06
44	Momodia	9	0	0	0	2.25	1.7091E-05
45	Muturi	2	0	0	0	0.5	8.44E-07
46	Nunu nuni	12	0	0	0	3	3.0384E-05
47	Olo	10	0	0	0	2.5	2.11E-05
48	Palasa	2	0	0	0	0.5	8.44E-07
49	Piasal	3	0	0	0	0.75	1.899E-06
50	Pita kauchia	0	10	0	0	2.5	2.11E-05
51	Pithala	0	5	0	0	1.25	5.275E-06
52	Sahaj	12	2	36	0	12.5	0.0005275
53	Sal	393	428	73	0	223.5	0.16863906
54	Satabari	0	10	3	0	3.25	3.5659E-05
55	Siali	3	0	0	0	0.75	1.899E-06
56	Siali lai	0	15	0	0	3.75	4.7475E-05
57	Sidha	0	10	0	0	2.5	2.11E-05
58	Sirisa	0	2	0	0	0.5	8.44E-07
59	Sugandhi	0	20	16	0	9	0.00027346
60	Sum	0	0	12	0	3	3.0384E-05
61	Sundar gundi	25	0	0	0	6.25	0.00013188
Compt. No.:		Gallery		8			
GPS Gr.1-		N: 20.00.33.5		E: 084.31.57.8			
GPS Gr.2-		N:20.00.40.0.		E:084.31.36.8			
GPS Gr.3-		N:19.59.47.1		E:084.33.50.8			
GPS Gr.4-		N:20.00.42.9		E:084.33.35.1			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	0	1	42	25	17	0.82940051
2	Amla	0	8	0	0	2	0.01147959
3	Araguna	4	0	0	0	1	0.0028699
4	Bahada	0	8	0	0	2	0.01147959
5	Baila	2	0	0	0	0.5	0.00071747
6	Baincha	7	0	52	0	14.75	0.62438217
7	Bela	6	1	29	0	9	0.23246173
8	Bhalia	0	0	27	0	6.75	0.13075973
9	Bhuin nimba	0	0	0	31	7.75	0.17237325
10	Bhurudukoli	0	0	0	56	14	0.5625
11	Chara	48	92	58	106	76	16.5765306
12	Chhhana grass	0	10	0	25	8.75	0.21972656
13	D.Moi	0	0	53	0	13.25	0.50384646
14	Dala singada	1	0	0	0	0.25	0.00017937
15	Dhamana	0	0	52	0	13	0.48501276
16	Dhatiki	1	10	0	0	2.75	0.0217036
17	Dhau	13	10	32	0	13.75	0.54259008
18	Dhobi	3	10	0	81	23.5	1.58490115
19	Gai Gobara	0	0	50	0	12.5	0.44842156
20	Genduli	0	1	0	0	0.25	0.00017937
21	Halanda	1	0	0	0	0.25	0.00017937
22	Jamu	0	6	0	0	1.5	0.00645727
23	Jatajati	1	0	0	52	13.25	0.50384646
24	Jhatika	0	0	83	60	35.75	3.66790896
25	Kantei koli	3	0	0	0	0.75	0.00161432
26	Karada	19	8	79	106	53	8.06154337

27	Kauchia	2	5	0	0	1.75	0.00878906
28	Keli kerua	27	45	0	73	36.25	3.77122529
29	Kendu	11	46	0	44	25.25	1.82973932
30	Khajuri	8	18	85	0	27.75	2.2100008
31	Khakada	15	0	0	0	3.75	0.04035794
32	Khelua lai	0	25	97	67	47.25	6.40722656
33	Khira koli	3	0	0	53	14	0.5625
34	Khukundi lai	1	0	0	0	0.25	0.00017937
35	Kolathia lai	0	0	0	49	12.25	0.43066406
36	Kumbhi	0	0	34	0	8.5	0.20735013
37	Kurei	7	58	0	70	33.75	3.26899314
38	Kusuma	8	4	0	0	3	0.02582908
39	Lunuluni	0	0	77	0	19.25	1.06347656
40	Mahula	1	5	30	0	9	0.23246173
41	Masania	0	0	0	5	1.25	0.00448422
42	Moi	1	7	0	0	2	0.01147959
43	Mundumundi	0	0	77	0	19.25	1.06347656
44	Nunununi	7	14	0	0	5.25	0.07910156
45	Palasha lai	8	0	29	0	9.25	0.24555564
46	Pania	4	0	0	0	1	0.0028699
47	Pithala lai	3	0	0	0	0.75	0.00161432
48	Rai	0	1	0	0	0.25	0.00017937
49	Sahaj	8	21	94	56	44.75	5.74715003
50	Sakata pulu	0	0	52	0	13	0.48501276
51	Sal	62	110	79	75	81.5	19.0625797
52	Satabari	2	30	0	22	13.5	0.5230389
53	Siali lai	8	0	0	0	2	0.01147959
54	Sindur gundi	1	0	0	0	0.25	0.00017937
55	Sirisha	1	0	0	0	0.25	0.00017937
56	Sishoo	2	0	0	0	0.5	0.00071747
57	Sugandhi	0	63	0	75	34.5	3.41589605
58	Sum	1	2	0	111	28.5	2.33107462
Compt. No.:		Gallery		9			
GPS Gr.1-		N: 20.00.33.5		E: 084.31.57.8			
GPS Gr.2-		N:20.00.40.0.		E:084.31.36.8			
GPS Gr.3-		N:20.00.23.3		E:084.32.03.2			
GPS Gr.4-		N:20.00.42.9		E:084.33.35.1			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	0	3	37	0	10	1
2	Amla	0	0	27	0	6.75	0.455625
3	Arguna	7	0	0	0	1.75	0.030625
4	Bahada	0	0	8	0	2	0.04
5	Bhalia	4	6	21	0	7.75	0.600625
6	Bhalia	0	0	21	0	5.25	0.275625
7	Chara	0	20	24	0	11	1.21
8	Dhatiki	0	0	10	0	2.5	0.0625
9	Dhau	0	2	45	0	11.75	1.380625
10	Dhobi	0	0	11	0	2.75	0.075625
11	Gotha kanta	0	0	15	0	3.75	0.140625
12	Halanda	0	2	0	0	0.5	0.0025
13	Harida	0	3	0	0	0.75	0.005625

14	Jhatiki	37	0	0	0	9.25	0.855625
15	Kahara	42	0	0	0	10.5	1.1025
16	Kantaikoli	14	0	0	0	3.5	0.1225
17	Karada	0	121	52	0	43.25	18.705625
18	Kelikeruna	0	56	57	0	28.25	7.980625
19	Kendu	0	52	28	0	20	4
20	Khajuri	56	28	19	0	25.75	6.630625
21	Khakada	5	7	0	0	3	0.09
22	Khelua lai	0	0	8	0	2	0.04
23	Kumbhi	0	4	0	0	1	0.01
24	Kurei	87	19	0	0	26.5	7.0225
25	Kurei	0	0	41	0	10.25	1.050625
26	Kusuma	5	5	0	0	2.5	0.0625
27	Mahul	0	5	23	0	7	0.49
28	Moi	0	4	0	0	1	0.01
29	Mundumundi	0	0	37	0	9.25	0.855625
30	Muturi	0	0	9	0	2.25	0.050625
31	Nuninuni	0	1	11	0	3	0.09
32	Palasa	6	0	8	0	3.5	0.1225
33	Pichhuli	0	0	7	0	1.75	0.030625
34	Sahaja	3	4	43	0	12.5	1.5625
35	Sal	331	177	104	0	153	234.09
36	Satabari	5	0	14	0	4.75	0.225625
37	Sirisha	0	0	15	0	3.75	0.140625
38	Som	0	1	15	0	4	0.16
39	Sugundhi	4	0	9	0	3.25	0.105625
Compt. No.:		Gallery		10			
GPS Gr.1-		N: 20.00.33.5		E: 084.31.57.8			
GPS Gr.2-		N:20.00.40.0.		E:084.31.36.8			
GPS Gr.3-		N:20.02.24.6		E:084.31.20.1			
GPS Gr.4-		N:20.02.47.5		E:084.30.57.6			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	6	0	10	0	4	6.3872E-05
2	Arguna	1	2	0	0	0.75	2.2455E-06
3	Bahada	0	0	1	0	0.25	2.495E-07
4	Bana piaja	0	0	10	0	2.5	2.495E-05
5	Bandhan	0	0	0	14	3.5	4.8902E-05
6	Bel	0	0	0	10	2.5	2.495E-05
7	Bhalia	7	4	1	0	3	3.5928E-05
8	Bhui neem	50	20	0	0	17.5	0.00122255
9	Bhurudakoli	0	5	0	0	1.25	6.2375E-06
10	Chhana grass	10	8	0	0	4.5	8.0838E-05
11	Chara	90	68	56	40	63.5	0.01609679
12	Dhaman	2	1	0	0	0.75	2.2455E-06
13	Dhatiki	19	3	0	0	5.5	0.00012076
14	Dhobi	16	12	9	0	9.25	0.00034157
15	Gotha kanta	0	12	0	0	3	3.5928E-05
16	Halanda	0	1	0	0	0.25	2.495E-07
17	Harada	2	4	0	0	1.5	8.982E-06
18	Iswar jata	0	0	3	0	0.75	2.2455E-06
19	Jama	8	0	7	10	6.25	0.00015594

20	Kanteikoli	0	4	0	0	1	3.992E-06
21	Karada	43	3	15	13	18.5	0.00136627
22	Kasi	2	0	0	0	0.5	9.98E-07
23	Kauchia	0	5	10	19	8.5	0.00028842
24	Kelikeruan	93	17	10	7	31.75	0.0040242
25	Kendu	14	13	12	10	12.25	0.00059905
26	khakada	0	26	0	13	9.75	0.00037949
27	Khelua lai	24	2	11	0	9.25	0.00034157
28	Khukundi	0	29	0	0	7.25	0.00020983
29	Khukundi lai	5	0	0	0	1.25	6.2375E-06
30	Kolathialai	0	2	0	0	0.5	9.98E-07
31	Kumbhi	5	0	0	0	1.25	6.2375E-06
32	Kurei	15	15	22	16	17	0.00115369
33	Kusuma	0	0	11	9	5	9.98E-05
34	Mahula	4	0	23	10	9.25	0.00034157
35	Mankad siali	0	0	0	18	4.5	8.0838E-05
36	Masani	2	0	0	0	0.5	9.98E-07
37	Moi	10	3	0	0	3.25	4.2166E-05
38	Mundumundi	0	0	0	38	9.5	0.00036028
39	Muturi	0	1	9	3	3.25	4.2166E-05
40	Nunununi	0	2	0	0	0.5	9.98E-07
41	Palasa	5	11	0	0	4	6.3872E-05
42	Pania	0	5	0	14	4.75	9.007E-05
43	Patuli	0	0	6	0	1.5	8.982E-06
44	Piasal	0	4	0	0	1	3.992E-06
45	Pinchuli	0	1	0	0	0.25	2.495E-07
46	Pokasunga	0	0	20	25	11.25	0.00050524
47	S. Gundi	0	1	0	23	6	0.00014371
48	S.Moi	0	0	10	0	2.5	2.495E-05
49	Sahaja	4	6	10	13	8.25	0.00027171
50	Rai	3	0	0	0	0.75	2.2455E-06
51	Sal	312	76	128	93	152.25	0.09253509
52	Satabari	14	0	6	0	5	9.98E-05
53	Siali lai	1	3	0	10	3.5	4.8902E-05
54	Sidha	0	2	0	0	0.5	9.98E-07
55	Siris	1	0	0	0	0.25	2.495E-07
56	Sisoo	0	2	0	0	0.5	9.98E-07
57	Sugandhi	30	23	0	0	13.25	0.00070085
Compt. No.:		Gallery		11			
GPS Gr.1-		N: 20.00.33.5		E: 084.31.57.8			
GPS Gr.2-		N:20.00.40.0.		E:084.31.36.8			
GPS Gr.3-		N:20.03.09.9		E:084.30.16.1			
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	2	3	0	0	1.25	1.0541E-05
2	Amla	18	0	0	0	4.5	0.00013662
3	Aurguna	0	8	0	0	2	2.6986E-05
4	Babula	0	1	0	0	0.25	4.2166E-07
5	Bahada	5	0	0	0	1.25	1.0541E-05
6	Bel	0	0	12	0	3	6.0719E-05
7	Bhurudu koli	0	1	0	0	0.25	4.2166E-07

8	Chara	59	68	72	0	49.75	0.01669801
9	Dhaman	0	3	0	0	0.75	3.7949E-06
10	Dhataki	10	2	14	0	6.5	0.00028504
11	Dhau	0	2	0	0	0.5	1.6866E-06
12	Dhobi	15	0	4	0	4.75	0.00015222
13	Halanda	5	2	0	0	1.75	2.0661E-05
14	Harida	2	2	0	0	1	6.7465E-06
15	Iswar jata	0	5	0	0	1.25	1.0541E-05
16	Jamu	25	0	0	0	6.25	0.00026354
17	Jatajatia	0	21	0	0	5.25	0.00018595
18	Kaluchia	0	1	3	0	1	6.7465E-06
19	Kantei koli	25	0	7	0	8	0.00043178
20	Karada	28	13	13	0	13.5	0.00122955
21	Kasi	2	0	0	0	0.5	1.6866E-06
22	Kendu	81	8	8	0	24.25	0.00396736
23	Khakada	10	3	9	0	5.5	0.00020408
24	Khelua lai	0	3	14	0	4.25	0.00012186
25	Kilakerua	31	7	0	0	9.5	0.00060887
26	Kolathia	0	6	0	0	1.5	1.518E-05
27	Kurei	71	25	13	0	27.25	0.0050097
28	Kusum	48	1	0	0	12.25	0.0010124
29	Luna koli	3	0	0	0	0.75	3.7949E-06
30	Mahula	12	14	0	0	6.5	0.00028504
31	Moi	10	9	6	0	6.25	0.00026354
32	Munudmundi	0	0	4	0	1	6.7465E-06
33	Nunununi	0	3	0	0	0.75	3.7949E-06
34	Palas	15	0	0	0	3.75	9.4873E-05
35	Pania	0	1	0	0	0.25	4.2166E-07
36	Piasal	2	0	0	0	0.5	1.6866E-06
37	Pithala	10	0	0	0	2.5	4.2166E-05
38	Pokasunga	0	0	30	0	7.5	0.00037949
39	S.Moi	7	0	0	0	1.75	2.0661E-05
40	Sahaj	18	16	15	0	12.25	0.0010124
41	Sal	268	142	98	0	127	0.1088143
42	Salua lai	5	0	0	0	1.25	1.0541E-05
43	Satabari	11	0	0	0	2.75	5.102E-05
44	Sugandhi	45	1	0	0	11.5	0.00089222
45	Sundara gundi	0	4	0	0	1	6.7465E-06
Compt. No.:		Gallery		12			
GPS Gr.1-		N: 20.04.31.04		E: 084.31.14.08			
GPS Gr.2-		N:20.004.21.03		E:084.30.46.02			
GPS Gr.3-							
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	1	1	0	0	0.5	1.28402E-06
2	Araguna	2	1	0	0	0.75	2.88904E-06
3	Bahada	5	0	0	0	1.25	3.21004E-05
4	Bhuinneem	17	9	0	0	6.5	0.000216999
5	Bhurudu Koli	31	0	0	0	7.75	0.00123394
6	Chara	64	67	0	0	32.75	0.005508751

7	Dhatiki	5	17	0	0	5.5	0.000155366
8	Dhau	7	0	0	0	1.75	6.29168E-05
9	Dhobi	1	38	0	0	9.75	0.000488247
10	Dudhilai	1	0	0	0	0.25	1.28402E-06
11	Gila	13	0	0	0	3.25	0.000216999
12	Halanda	2	0	0	0	0.5	5.13607E-06
13	Harida	2	0	0	0	0.5	5.13607E-06
14	Jamu	41	5	0	0	11.5	0.000679245
15	Jatajati	1	0	0	0	0.25	1.28402E-06
16	Karada	48	0	0	0	12	0.002958374
17	Karada	5	0	0	0	1.25	3.21004E-05
18	Kauchia	8	0	0	0	2	8.2177E-05
19	Kelakeruan	16	0	0	0	4	0.000328708
20	Kelikerun	45	0	0	0	11.25	0.002600133
21	Kendu	24	0	0	0	6	0.000739593
22	Kendu	12	0	0	0	3	0.000184898
23	Khajuri	89	0	0	0	22.25	0.010170694
24	Khakada	1	41	0	0	10.5	0.000566251
25	Khelualai	2	65	0	0	16.75	0.001440987
26	Khukundi	5	108	0	0	28.25	0.004098901
27	Kurei	2	0	0	0	0.5	5.13607E-06
28	Kusima	9	3	0	0	3	4.62246E-05
29	Lai	4	0	0	0	1	2.05443E-05
30	Mahula	3	0	0	0	0.75	1.15561E-05
31	Nunununi	1	0	0	0	0.25	1.28402E-06
32	Pania	2	0	0	0	0.5	5.13607E-06
33	Piasal	2	0	0	0	0.5	5.13607E-06
34	Rai	5	0	0	0	1.25	3.21004E-05
35	Rohani	4	0	0	0	1	2.05443E-05
36	Sahaja	1	0	0	0	0.25	1.28402E-06
37	Sal	160	228	0	0	97	0.048325241
38	Satabari	8	0	0	0	2	8.2177E-05
39	Satabari	61	0	0	0	15.25	0.004777825
40	Simili	1	0	0	0	0.25	1.28402E-06
41	Sugandhi	32	0	0	0	8	0.001314833
42	Sunari	2	0	0	0	0.5	5.13607E-06
Compt. No.:		Gallery		13			
GPS Gr.1-		N:20.04.29.00		E:84.31.23.09			
GPS Gr.2-		N:20.04.18.08		E:84.31.53.01			
GPS Gr.3-							
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	1	0	0	0	0.25	3.85222E-06
2	Akula	18	0	0	0	4.5	0.001248121
3	Amla	11	0	0	0	2.75	0.000466119
4	Araguna	2	0	0	0	0.5	1.54089E-05
5	Bhalia	5	0	0	0	1.25	9.63056E-05
6	Bhuinneem	5	0	0	0	1.25	9.63056E-05
7	Bhurudu Koli	5	0	0	0	1.25	9.63056E-05
8	Bhurudukoli	1	0	0	0	0.25	3.85222E-06
9	Chara	22	74	0	0	24	0.008875526

10	Chhanagrass	15	0	0	0	3.75	0.000866751
11	Dhatiki	3	5	0	0	2	6.16356E-05
13	Dhau	1	0	0	0	0.25	3.85222E-06
14	Dhobi	12	2	0	0	3.5	0.000188759
16	Harada	1	4	0	0	1.25	2.40764E-05
18	Jamu	3	7	0	0	2.5	9.63056E-05
20	Kauchia	1	0	0	0	0.25	3.85222E-06
21	Kendu	8	24	0	0	8	0.00098617
23	Khajuri	48	31	0	0	19.75	0.006010434
25	Khakada	3	1	0	0	1	1.54089E-05
1	Khalualai	22	2	0	0	6	0.00055472
3	Khukundi lai	2	0	0	0	0.5	1.54089E-05
4	Kilakeruan	48	0	0	0	12	0.008875526
5	Kumbhi	1	0	0	0	0.25	3.85222E-06
6	Kurei	19	14	0	0	8.25	0.001048768
8	Kusuma	6	0	0	0	1.5	0.00013868
9	Mahula	2	0	0	0	0.5	1.54089E-05
10	Mahula	1	0	0	0	0.25	3.85222E-06
11	Masia	2	0	0	0	0.5	1.54089E-05
12	Moi	1	4	0	0	1.25	2.40764E-05
14	Nunakoli	1	0	0	0	0.25	3.85222E-06
15	Palasa	10	0	0	0	2.5	0.000385222
16	Palasalai	14	0	0	0	3.5	0.000755036
17	Piasal	1	1	0	0	0.5	3.85222E-06
19	Pithallai	3	0	0	0	0.75	3.467E-05
20	Sahaja	16	23	0	0	9.75	0.001464808
21	Sal	81	230	0	0	77.75	0.093147759
22	Satabari	5	0	0	0	1.25	9.63056E-05
23	Sialalai	3	0	0	0	0.75	3.467E-05
24	Sugandhi	2	25	0	0	6.75	0.000702068
26	Sundargundi	2	0	0	0	0.5	1.54089E-05
Compt. No.:		Gallery		14			
GPS Gr.1-		N:20.04.27.8		E:84.32.13.1			
GPS Gr.2-		N:20.04.38.3		E:84.32.24.6			
GPS Gr.3-							
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	7	1	0	0	2	5.31823E-05
2	Amla	21	0	0	0	5.25	0.000366459
2	Bahada	5	0	0	0	1.25	2.07743E-05
3	Bhuin neem	33	0	0	0	8.25	0.000904929
3	Chara	23	62	0	0	21.25	0.006003778
4	Dhatiki	4	6	0	0	2.5	8.30973E-05
5	Dhau	2	0	0	0	0.5	3.32389E-06
6	Dhobi	2	4	0	0	1.5	2.9915E-05
7	Gotha	1	0	0	0	0.25	8.30973E-07
7	Jamu	9	5	0	0	3.5	0.000162871
8	Jatajati	11	0	0	0	2.75	0.000100548
9	Kantei koli	12	0	0	0	3	0.00011966
9	Karada	30	0	0	0	7.5	0.000747875
10	Kauchia	25	0	0	0	6.25	0.000519358

10	Keli kerua	81	19	0	0	25	0.008309727
11	Kendu	10	15	0	0	6.25	0.000519358
12	Khajuri	56	94	0	0	37.5	0.018696885
13	Khakada	6	0	0	0	1.5	2.9915E-05
14	Khelua lai	28	24	0	0	13	0.00224695
15	Kolathia Lai	7	0	0	0	1.75	4.07177E-05
15	Kumbhi	1	0	0	0	0.25	8.30973E-07
16	Kurei	3	16	0	0	4.75	0.000299981
17	Kusum	8	1	0	0	2.25	6.73088E-05
18	Mahula	18	5	0	0	5.75	0.000439585
19	Moi	8	3	0	0	2.75	0.000100548
20	Neem	4	0	0	0	1	1.32956E-05
20	Palasha	3	0	0	0	0.75	7.47875E-06
21	Patua Kanta	1	0	0	0	0.25	8.30973E-07
21	Piasal	2	0	0	0	0.5	3.32389E-06
22	Sahaja	17	19	0	0	9	0.001076941
23	Sal	77	202	0	0	69.75	0.064683744
24	Satabari	3	0	0	0	0.75	7.47875E-06
24	Sirisha	1	0	0	0	0.25	8.30973E-07
25	Sugandhi	25	29	0	0	13.5	0.002423116
25	Sugandhi	29	0	0	0	7.25	0.000698848
26	Sum	6	2	0	0	2	5.31823E-05
27	Tanda Grass	1	10	0	0	2.75	0.000100548
Compt. No.:		Gallery		15			
GPS Gr.1-		N:20.02.30.7		E:84.32.33.7			
GPS Gr.2-		N:20.03.04.8		E:84.32.20.8			
GPS Gr.3-		N:20.03.04.8		E:84.32.20.8			
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	5	0	70	0	18.75	0.00097656
2	Amla	75	4	41	0	30	0.0025
3	Araguna	19	4	0	0	5.75	9.184E-05
4	Arjuna	0	0	57	0	14.25	0.00056406
5	Baincha koli	0	1	0	0	0.25	1.7361E-07
6	Bana kolatha	8	0	0	0	2	1.1111E-05
7	Bhalia	1	0	0	0	0.25	1.7361E-07
8	Bhurubu Koli	0	13	0	0	3.25	2.934E-05
9	Chadhei Godi	0	6	0	0	1.5	0.00000625
10	Chara	74	37	55	0	41.5	0.00478403
11	Chhana grass	30	0	41	0	17.75	0.00087517
12	Dhatiki	0	24	0	0	6	0.0001
13	Dhau	15	8	0	0	5.75	9.184E-05
14	Dhobi	0	0	41	0	10.25	0.00029184
15	Halanda	0	2	0	0	0.5	6.9444E-07
16	harida	0	1	0	0	0.25	1.7361E-07
17	Jamu	30	6	0	0	9	0.000225
18	Jatajati	0	97	41	0	34.5	0.00330625
19	Keli kerua	91	17	63	0	42.75	0.00507656
20	Kantei koli	7	16	0	0	5.75	9.184E-05
21	Karada	5	0	71	0	19	0.00100278
22	Kasi	0	7	0	0	1.75	8.5069E-06

23	Kendu	29	19	36	0	21	0.001225
24	Khajuri	29	8	62	0	24.75	0.00170156
25	Khakada	5	4	0	0	2.25	1.4063E-05
26	Khelua Lai	95	2	0	0	24.25	0.00163351
27	Kolathia	0	1	0	0	0.25	1.7361E-07
28	Kumbhi	2	0	0	0	0.5	6.9444E-07
29	Kurei	13	0	101	0	28.5	0.00225625
30	Kusuma	2	1	41	0	11	0.00033611
31	Mahaula	24	0	34	0	14.5	0.00058403
32	Moi	1	0	72	0	18.25	0.00092517
33	Muturi	0	0	51	0	12.75	0.00045156
34	Nunununi	2	21	0	0	5.75	9.184E-05
35	Palasha	0	1	0	0	0.25	1.7361E-07
36	Palasha lai	0	0	51	0	12.75	0.00045156
37	Patua	0	2	0	0	0.5	6.9444E-07
38	Pithala lai	7	0	0	0	1.75	8.5069E-06
39	Rai	4	4	0	0	2	1.1111E-05
40	Sahaja	32	24	45	0	25.25	0.00177101
41	Sal	185	64	80	0	82.25	0.01879184
42	Siali lai	5	1	0	0	1.5	0.00000625
43	Sirisha	16	0	0	0	4	4.4444E-05
44	Sugandhi	13	40	50	0	25.75	0.00184184
45	Sum	10	0	24	0	8.5	0.00020069
46	Sunari	0	4	0	0	1	2.7778E-06
Compt. No.:		Gallery		16			
GPS Gr.1-		N:20.00.33.5		E:84.31.57.8			
GPS Gr.2-		N:20.00.40.0.		E:84.31.36.8			
GPS Gr.3-		N:20.03.09.9		E:84.30.16.1			
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	2	3	0	0	1.25	1.0541E-05
2	Amla	18	0	0	0	4.5	0.00013662
3	Aurguna	0	8	0	0	2	2.6986E-05
4	Babula	0	1	0	0	0.25	4.2166E-07
5	Bahada	5	0	0	0	1.25	1.0541E-05
6	Bel	0	0	12	0	3	6.0719E-05
7	Bhurudu koli	0	1	0	0	0.25	4.2166E-07
8	Chara	59	68	72	0	49.75	0.01669801
9	Dhaman	0	3	0	0	0.75	3.7949E-06
10	Dhataki	10	2	14	0	6.5	0.00028504
11	Dhau	0	2	0	0	0.5	1.6866E-06
12	Dhobi	15	0	4	0	4.75	0.00015222
13	Halanda	5	2	0	0	1.75	2.0661E-05
14	Harida	2	2	0	0	1	6.7465E-06
15	Iswar jata	0	5	0	0	1.25	1.0541E-05
16	Jamu	25	0	0	0	6.25	0.00026354
17	Jatajatia	0	21	0	0	5.25	0.00018595
18	Kaluchia	0	1	3	0	1	6.7465E-06
19	Kantei koli	25	0	7	0	8	0.00043178
20	Karada	28	13	13	0	13.5	0.00122955
21	Kasi	2	0	0	0	0.5	1.6866E-06

22	Kendu	81	8	8	0	24.25	0.00396736
23	Khakada	10	3	9	0	5.5	0.00020408
Compt. No.:		Gallery		17			
GPS Gr.1-		N:20.02.13.0		E:84.34.04.3			
GPS Gr.2-		N:20.01.32.6		E:84.35.06.1			
GPS Gr.3-		N:20.01.48.4		E:84.33.48.9			
GPS Gr.4-		N:20.01.38.7		E:84.34.15.5			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	6	0	56	35	24.25	0.0006475
2	Amla	4	2	0	0	1.5	2.4774E-06
3	Ankula	0	40	0	0	10	0.00011011
4	Arguna	13	4	0	0	4.25	1.9888E-05
5	Arjuna	0	0	0	63	15.75	0.00027313
6	Bela	5	0	0	0	1.25	1.7204E-06
7	Bhalia	1	0	0	0	0.25	6.8817E-08
8	Bhurudu koli	1	0	93	0	23.5	0.00060806
9	Bhuin neem	0	0	45	0	11.25	0.00013935
10	Chadheigudi	24	0	0	55	19.75	0.00042949
11	Chara	42	42	64	0	37	0.00150736
12	Dhamana	2	0	0	0	0.5	2.7527E-07
13	Dhatiki	2	27	0	0	7.25	5.7875E-05
14	Dhau	3	0	65	72	35	0.00134881
15	Dhobi	40	5	0	36	20.25	0.00045151
16	Gotha	15	0	0	0	3.75	1.5484E-05
17	harida	0	2	0	0	0.5	2.7527E-07
18	Jamu	7	18	103	0	32	0.00112749
19	Jhatika	0	0	76	0	19	0.00039749
20	Kantai koli	6	5	0	0	2.75	8.3268E-06
21	Karada	0	28	80	103	52.75	0.00306379
22	Kauchia	0	0	0	59	14.75	0.00023955
23	Kelikerua	10	9	35	47	25.25	0.000702
24	Kendu	30	14	78	54	44	0.00213167
25	Khajuri	1	0	93	46	35	0.00134881
26	Khakada	16	62	61	0	34.75	0.00132961
27	Khelua lai	18	47	0	54	29.75	0.00097451
28	Khukundi	0	20	54	0	18.5	0.00037684
29	Kurei	0	65	0	0	16.25	0.00029075
30	Kusuma	1	5	0	44	12.5	0.00017204
31	Mahula	2	11	86	61	40	0.00176171
32	Mankadasiali	14	0	0	0	3.5	1.3488E-05
33	Masia	2	0	0	0	0.5	2.7527E-07
34	Moi	1	17	0	0	4.5	2.2297E-05
35	Mundi	0	3	0	0	0.75	6.1935E-07
36	Muturi	2	0	0	44	11.5	0.00014562
37	Nunununi	0	2	0	83	21.25	0.0004972
38	Palasa	0	23	0	76	24.75	0.00067447
39	Patua	11	0	0	0	2.75	8.3268E-06
40	Patuli	0	0	0	32	8	7.0468E-05
41	Piasal	0	0	45	0	11.25	0.00013935
42	Pichhuli lai	0	0	0	46	11.5	0.00014562
43	Rai	0	2	76	42	30	0.00099096

44	Sahaja	4	6	0	69	19.75	0.00042949
45	Sal	51	145	128	112	109	0.01308179
46	Satabari	24	5	0	0	7.25	5.7875E-05
47	Siali	4	0	0	0	1	1.1011E-06
48	Siali lai	0	0	0	37	9.25	9.421E-05
49	Sirisha	0	0	65	0	16.25	0.00029075
50	Sugandhi	26	44	45	0	28.75	0.0009101
51	Sum	1	0	97	0	24.5	0.00066092
52	Talamuli	0	0	55	0	13.75	0.00020817
Compt. No.:		Rambha		1			
GPS Gr.1-		N:20 05 10.2		E:84 30 03.6			
GPS Gr.2-		N:20 05 23.2		E:84 30 32.2			
GPS Gr.3-							
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	4	0	0	0	1	3.91236E-05
2	Amla	3	0	0	0	0.75	2.2007E-05
3	Ankula	10	0	0	0	2.5	0.000244523
4	Arguna	4	3	0	0	1.75	2.9954E-05
5	Baila	5	0	0	0	1.25	6.11306E-05
6	Benia	3	0	0	0	0.75	2.2007E-05
7	Bhalia	3	0	0	0	0.75	2.2007E-05
8	Bhalia	1	1	0	0	0.5	2.44523E-06
9	Bichuati	5	0	0	0	1.25	6.11306E-05
10	Bnamali	5	0	0	0	1.25	6.11306E-05
11	Chanagrass	15	0	0	0	3.75	0.000550176
12	Chara	64	12	0	0	19	0.003530906
13	Dhamana	27	0	0	0	6.75	0.001782569
14	Dhatiki	3	0	0	0	0.75	2.2007E-05
15	Dhau	2	10	0	0	3	8.80281E-05
16	Dhobi	4	1	0	0	1.25	1.52827E-05
17	Dhudhilai	4	0	0	0	1	3.91236E-05
18	Halanda	1	0	0	0	0.25	2.44523E-06
19	Harada	6	0	0	0	1.5	8.80281E-05
20	Jamu	5	1	0	0	1.5	2.2007E-05
21	Jamu	1	0	0	0	0.25	2.44523E-06
22	Jatajati	13	0	0	0	3.25	0.000413243
23	Kahakada	3	0	0	0	0.75	2.2007E-05
24	Karada	19	23	0	0	10.5	0.001078344
25	Kasi	1	3	0	0	1	9.7809E-06
26	Kauchaia	8	0	0	0	2	0.000156494
27	Kelakerua	33	14	0	0	11.75	0.001350376
28	Kendu	27	0	0	0	6.75	0.001782569
29	Khakada	5	0	0	0	1.25	6.11306E-05
30	Khelualai	3	3	0	0	1.5	2.2007E-05
31	Khukundi	38	0	0	0	9.5	0.003530906
32	Kurei	13	28	0	0	10.25	0.001027606
33	Kurei	28	0	0	0	7	0.001917057
34	Kusuma	37	2	0	0	9.75	0.000929797
35	Mahula	2	0	0	0	0.5	9.7809E-06
36	Mankadasialia	8	0	0	0	2	0.000156494

37	Masania	2	0	0	0	0.5	9.7809E-06
38	Moi	4	44	0	0	12	0.00140845
39	Mudumudia	22	2	0	0	6	0.000352112
40	Palasha	41	2	0	0	10.75	0.001130305
41	Pania	2	0	0	0	0.5	9.7809E-06
42	Pokasunga	2	0	0	0	0.5	9.7809E-06
43	S.Gundi	12	0	0	0	3	0.000352112
44	Sahaja	2	0	0	0	0.5	9.7809E-06
45	Sal	51	156	0	0	51.75	0.026193866
46	Sarabari	3	0	0	0	0.75	2.2007E-05
47	Siali	27	65	0	0	23	0.005174097
48	Sidha	4	0	0	0	1	3.91236E-05
49	Sikeya	8	0	0	0	2	0.000156494
50	Sirisha	2	0	0	0	0.5	9.7809E-06
51	Sisoo	4	0	0	0	1	3.91236E-05
52	Suanari	1	0	0	0	0.25	2.44523E-06
53	Sugandhi	33	5	0	0	9.5	0.000882726
54	Sunari	1	0	0	0	0.25	2.44523E-06
Compt. No.:		Rambha		2			
GPS Gr.1-		N: 20 06 50.5		E: 084 31 02.6			
GPS Gr.2-		N:20 06 59.4		E:084 30 51.0			
GPS Gr.3-							
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	4	0	0	0	1	1.8519E-05
2	Amla	6	0	0	0	1.5	4.1668E-05
3	Arguna	5	0	0	0	1.25	2.8936E-05
4	Banahaladi	2	0	0	0	0.5	4.6298E-06
5	Banapiaja	3	0	0	0	0.75	1.0417E-05
6	Banasorisha	100	0	0	0	25	0.01157447
7	Bhurudukoli	2	0	0	0	0.5	4.6298E-06
8	Bnakolatha	24	0	0	0	6	0.00066669
9	Chanagrass	80	0	0	0	20	0.00740766
10	Chara	17	131	0	0	37	0.00633818
11	Dhamana	4	11	0	0	3.75	6.5106E-05
12	Dhatiki	1	5	0	0	1.5	1.0417E-05
13	Dhau	4	0	0	0	1	1.8519E-05
14	Ghotokanta	20	0	0	0	5	0.00046298
15	Halanda	2	0	0	0	0.5	4.6298E-06
16	Jamu	8	0	0	0	2	7.4077E-05
17	Jatajati	36	0	0	0	9	0.00150005
18	Kalakuachia	4	0	0	0	1	1.8519E-05
19	Kanteikoli	2	0	0	0	0.5	4.6298E-06
20	Karada	16	8	0	0	6	0.00016667
21	Kasi	4	0	0	0	1	1.8519E-05
22	Kehelualai	8	0	0	0	2	7.4077E-05
23	Keliderua	35	0	0	0	8.75	0.00141787
24	Kendu	10	101	0	0	27.75	0.00356523
25	Kentikoli	3	0	0	0	0.75	1.0417E-05
26	Khajuri	16	0	0	0	4	0.00029631
27	Khakada	18	0	0	0	4.5	0.00037501

28	Khelualai	3	0	0	0	0.75	1.0417E-05
29	Kurei	8	42	0	0	12.5	0.0007234
30	Luni	6	0	0	0	1.5	4.1668E-05
31	Mahula	1	0	0	0	0.25	1.1574E-06
32	Masania	9	0	0	0	2.25	9.3753E-05
33	Moi	6	17	0	0	5.75	0.00015307
34	Mondalai	10	0	0	0	2.5	0.00011574
35	Mudumudia	12	0	0	0	3	0.00016667
36	Muturi	5	0	0	0	1.25	2.8936E-05
37	Palasha	7	8	0	0	3.75	6.5106E-05
38	Pania	3	0	0	0	0.75	1.0417E-05
39	Piasal	4	0	0	0	1	1.8519E-05
40	S.Gundi	4	0	0	0	1	1.8519E-05
41	Sahaja	15	0	0	0	3.75	0.00026043
42	Sal	84	324	0	0	102	0.04816833
43	Satabari	28	2	0	0	7.5	0.00026043
44	Sialilai	11	0	0	0	2.75	0.00014005
45	Sidha	8	0	0	0	2	7.4077E-05
46	Sugandhi	10	53	0	0	15.75	0.00114848
47	Sum	1	0	0	0	0.25	1.1574E-06
48	Sunari	5	0	0	0	1.25	2.8936E-05
Compt. No.:		Rambha		3			
GPS Gr.1-		N: 20 07 10.6		E: 084 29 53.9			
GPS Gr.2-		N:20 07 06.9		E:084 30 10.5			
GPS Gr.3-							
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	1	0	0	0	0.25	1.4105E-06
2	Akula	10	0	0	0	2.5	0.00014105
3	Akula lai	6	0	0	0	1.5	5.0778E-05
4	Ankula	4	0	0	0	1	2.2568E-05
5	Arguna	10	29	0	0	9.75	0.00053635
6	Baila	19	22	0	0	10.25	0.00059277
7	Banabarada	1	5	0	0	1.5	1.2695E-05
8	Banamali	6	0	0	0	1.5	5.0778E-05
9	Barakoli	2	0	0	0	0.5	5.642E-06
10	Benia	37	0	0	0	9.25	0.00193099
11	Chara	18	40	0	0	14.5	0.00118624
12	Dhamna	16	0	0	0	4	0.00036109
13	Dhatiki	12	0	0	0	3	0.00020311
14	Dhobi	7	0	0	0	1.75	6.9115E-05
15	Dhusura kendu	3	0	0	0	0.75	1.2695E-05
16	Genduli	6	0	0	0	1.5	5.0778E-05
17	Gotha lai	11	0	0	0	2.75	0.00017067
18	Harada	3	0	0	0	0.75	1.2695E-05
19	Jamu	18	31	0	0	12.25	0.00084666
20	Kalachua	14	0	0	0	3.5	0.00027646
21	Karada	11	1	0	0	3	5.0778E-05
22	Kasi	1	0	0	0	0.25	1.4105E-06
23	Kauchia	9	0	0	0	2.25	0.00011425
24	Kelikerua	13	0	0	0	3.25	0.00023838

25	Kendu	2	11	0	0	3.25	5.9594E-05
26	Khakada	32	18	0	0	12.5	0.00088157
27	Khelaua lai	4	0	0	0	1	2.2568E-05
28	Khelualai	14	0	0	0	3.5	0.00027646
29	Khukundi	126	0	0	0	31.5	0.02239324
30	Kumbhi	1	0	0	0	0.25	1.4105E-06
31	Kurei	16	3	0	0	4.75	0.0001273
32	Kurei	3	0	0	0	0.75	1.2695E-05
33	Kusuma	10	28	0	0	9.5	0.00050919
34	Mankada siali	6	0	0	0	1.5	5.0778E-05
35	Masania	1	0	0	0	0.25	1.4105E-06
36	Moi	6	11	0	0	4.25	0.00010191
37	Mundi	7	0	0	0	1.75	6.9115E-05
38	Palasha	4	14	0	0	4.5	0.00011425
39	Piasala	3	0	0	0	0.75	1.2695E-05
40	Rai	1	0	0	0	0.25	1.4105E-06
41	S.Gundi	43	10	0	0	13.25	0.00099053
42	Sahaja	10	6	0	0	4	9.0273E-05
43	Sal	162	276	0	0	109.5	0.06764942
44	Satabari	8	2	0	0	2.5	3.5263E-05
45	Siali lai	42	0	0	0	10.5	0.00248814
46	Sirisha	3	0	0	0	0.75	1.2695E-05
47	Sisoo	1	0	0	0	0.25	1.4105E-06
48	Sugandhi	26	0	0	0	6.5	0.0009535
49	Sunari	4	5	0	0	2.25	2.8563E-05
Compt. No.:		Rambha		4			
GPS Gr.1-		N:20 05 27.9		E:84 29 12.1			
GPS Gr.2-		N:20 06 05.9		E:84 29.31.9			
GPS Gr.3-							
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	6	0	0	0	1.5	5.6391E-05
2	Akula lai	76	0	0	0	19	0.0090476
3	Amla	1	14	0	0	3.75	8.8111E-05
5	Araguna	8	5	0	0	3.25	6.6181E-05
7	B.Neem	10	0	0	0	2.5	0.00015664
8	Bahada	3	0	0	0	0.75	1.4098E-05
9	Baincha	2	0	0	0	0.5	6.2657E-06
10	Banapiaja	1	0	0	0	0.25	1.5664E-06
11	Bandhana	1	0	0	0	0.25	1.5664E-06
12	Bela	6	0	0	0	1.5	5.6391E-05
13	Benia lai	2	0	0	0	0.5	6.2657E-06
14	Bheru	1	0	0	0	0.25	1.5664E-06
15	Biala	1	0	0	0	0.25	1.5664E-06
16	Chara	63	7	0	0	17.5	0.00191886
18	Dhamana	4	0	0	0	1	2.5063E-05
19	Dhatiki	1	7	0	0	2	2.5063E-05
21	Dhau	40	1	0	0	10.25	0.00065829
23	Dhobi	33	10	0	0	10.75	0.00072407
25	Gila	10	0	0	0	2.5	0.00015664
26	Halanda	31	0	0	0	7.75	0.00150532

27	Jajhangi	2	0	0	0	0.5	6.2657E-06
28	Jamu	12	0	0	0	3	0.00022556
29	Jatajati	80	0	0	0	20	0.01002505
30	Kaniari	1	0	0	0	0.25	1.5664E-06
31	Kapasia	4	0	0	0	1	2.5063E-05
32	Karada	53	3	0	0	14	0.00122807
1	Kataka	4	0	0	0	1	2.5063E-05
2	Kauchia	5	3	0	0	2	2.5063E-05
4	Kelikerua	23	29	0	0	13	0.0010589
5	Kelikerua	26	0	0	0	6.5	0.0010589
6	Kendu	29	7	0	0	9	0.00050752
9	Khakada	5	18	0	0	5.75	0.00020716
10	Khakada	18	0	0	0	4.5	0.00050752
11	Khelualai	7	10	0	0	4.25	0.00011317
13	Khukundi lai	28	0	0	0	7	0.00122807
14	Kumbhi	7	5	0	0	3	5.6391E-05
16	Kurei	15	8	0	0	5.75	0.00020716
18	Kusuma	23	14	0	0	9.25	0.00053611
20	Mahula	16	1	0	0	4.25	0.00011317
22	Masania	1	0	0	0	0.25	1.5664E-06
23	Moi	5	0	0	0	1.25	3.916E-05
24	Mudumudia	18	0	0	0	4.5	0.00050752
25	Muturi lai	1	0	0	0	0.25	1.5664E-06
26	Nunununi	2	1	0	0	0.75	3.5244E-06
28	Palasha	1	0	0	0	0.25	1.5664E-06
29	Pengu	2	0	0	0	0.5	6.2657E-06
30	Rai	1	0	0	0	0.25	1.5664E-06
31	S.Gundi	1	0	0	0	0.25	1.5664E-06
32	Sahaja	6	0	0	0	1.5	5.6391E-05
33	Sal	225	89	0	0	78.5	0.03861053
35	Satabari	2	0	0	0	0.5	6.2657E-06
36	Siali lai	5	13	0	0	4.5	0.00012688
38	Sidha	1	0	0	0	0.25	1.5664E-06
39	Sirisha	1	5	0	0	1.5	1.4098E-05
41	Sugandhi	25	23	0	0	12	0.00090225
43	Sunari	1	0	0	0	0.25	1.5664E-06
Compt. No.:		Rambha		5			
GPS Gr.1-		N: 20 05 27.9		E: 084 29 12.1			
GPS Gr.2-		N:20 06 05.9		E:084 29.31.9			
GPS Gr.3-							
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Akula	111	0	0	0	27.75	0.00992832
2	Amla	7	0	0	0	1.75	3.9484E-05
3	Arguna	4	0	0	0	1	1.2893E-05
4	B.Malli	3	0	0	0	0.75	7.2522E-06
5	B.Neema	32	0	0	0	8	0.00082514
6	B.Piaja	10	0	0	0	2.5	8.058E-05
7	Bahada	1	0	0	0	0.25	8.058E-07
8	Baila	4	0	0	0	1	1.2893E-05
9	Baincha koli	4	0	0	0	1	1.2893E-05

10	Bandhana	8	1	0	0	2.25	1.6318E-05
12	Bela	9	5	0	0	3.5	3.9484E-05
14	Benia	3	0	0	0	0.75	7.2522E-06
15	Bhalia	1	0	0	0	0.25	8.058E-07
16	Bheru	25	0	0	0	6.25	0.00050363
17	Chara	96	82	0	0	44.5	0.00638278
19	Dhamana	17	0	0	0	4.25	0.00023288
20	Dhatiki	21	0	0	0	5.25	0.00035536
21	Dhau	9	0	0	0	2.25	6.527E-05
22	Dhobi	20	4	0	0	6	0.00011604
24	Genduli	4	0	0	0	1	1.2893E-05
25	Gila	14	0	0	0	3.5	0.00015794
26	Harada	4	0	0	0	1	1.2893E-05
27	Jamu	2	18	0	0	5	8.058E-05
29	Jatajati	17	0	0	0	4.25	0.00023288
30	Karada	38	36	0	0	18.5	0.00110315
32	Kasi	1	0	0	0	0.25	8.058E-07
33	Kelikerua	15	43	0	0	14.5	0.00067768
	Kendu	36	61	0	0	24.25	0.00189545
	Khakada	45	31	0	0	19	0.00116358
	Khelua lai	83	0	0	0	20.75	0.00555119
	Kukundi lai	15	0	0	0	3.75	0.00018131
	Kula lai	8	0	0	0	2	5.1571E-05
	Kumbhi	5	0	0	0	1.25	2.0145E-05
	Kurei	29	106	0	0	33.75	0.00367145
	Kusuma	11	71	0	0	20.5	0.00135456
	Mahula	17	2	0	0	4.75	7.2724E-05
	Masania	5	0	0	0	1.25	2.0145E-05
	Moi	3	6	0	0	2.25	1.6318E-05
	Mudumudi	71	4	0	0	18.75	0.00113316
	Palasha	6	0	0	0	1.5	2.9009E-05
	Pania	1	0	0	0	0.25	8.058E-07
	Piasala	4	0	0	0	1	1.2893E-05
	Pinchhuli	2	0	0	0	0.5	3.2232E-06
	Pithala lai	2	0	0	0	0.5	3.2232E-06
	Pokasunga	39	0	0	0	9.75	0.00122563
	Sal	132	0	0	0	33	0.01404034
	Satabari	18	2	0	0	5	8.058E-05
	Siali lai	18	5	0	0	5.75	0.00010657
	Sidha	1	0	0	0	0.25	8.058E-07
	Simili	1	0	0	0	0.25	8.058E-07
	Sirisha	5	0	0	0	1.25	2.0145E-05
	Sisoo	1	0	0	0	0.25	8.058E-07
	Sugandhi	28	65	0	0	23.25	0.00174235
	Sunari	16	2	0	0	4.5	6.527E-05
Compt. No.:		Rambha		6			
GPS Gr.1-		N: 20 05 27.9		E: 084 29 12.1			
GPS Gr.2-		N:20 06 05.9		E:084 29.31.9			
GPS Gr.3-							
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)

1	Achu	6	4	0	0	2.5	3.1919E-05
3	Amal	34	1	0	0	8.75	0.00039101
5	Arguna	6	0	0	0	1.5	4.5964E-05
6	B.kolatha	8	0	0	0	2	8.1713E-05
7	B.Piaja	8	0	0	0	2	8.1713E-05
8	B.Sorisha	20	0	0	0	5	0.00051071
9	Bainchakoli	1	0	0	0	0.25	1.2768E-06
10	Benia	4	0	0	0	1	2.0428E-05
11	Bhalia	8	0	0	0	2	8.1713E-05
12	Bhurudukoli	25	0	0	0	6.25	0.00079798
13	Chara	201	18	0	0	54.75	0.01530882
15	Chhanagrass	25	0	0	0	6.25	0.00079798
16	Dhobi	2	0	0	0	0.5	5.1071E-06
17	Gaigundi	11	0	0	0	2.75	0.00015449
18	Gotha	1	0	0	0	0.25	1.2768E-06
19	Halanda	2	0	0	0	0.5	5.1071E-06
20	Harada	9	0	0	0	2.25	0.00010342
21	Jamu	22	7	0	0	7.25	0.00026844
23	Jatajati	4	0	0	0	1	2.0428E-05
24	Kanteikoli	4	2	0	0	1.5	1.1491E-05
2	Karada	2	0	0	0	0.5	5.1071E-06
3	Kasi	8	0	0	0	2	8.1713E-05
4	Kelikerua	61	22	0	0	20.75	0.00219892
6	Kendu	14	19	0	0	8.25	0.0003476
7	Kendu	19	0	0	0	4.75	0.00046091
8	Khajuri	50	2	0	0	13	0.0008631
10	Khakada	2	18	0	0	5	0.00012768
12	Khukundi	40	0	0	0	10	0.00204284
13	Kurei	9	0	0	0	2.25	0.00010342
14	Kusuma	18	0	0	0	4.5	0.00041367
15	Mankadasiali	28	0	0	0	7	0.00100099
16	Masania	7	0	0	0	1.75	6.2562E-05
17	Moi	1	21	0	0	5.5	0.00015449
19	Mundi	12	0	0	0	3	0.00018386
20	Muturi	5	0	0	0	1.25	3.1919E-05
21	Palasha	10	8	0	0	4.5	0.00010342
23	Patuli	3	0	0	0	0.75	1.1491E-05
24	Piasal	3	0	0	0	0.75	1.1491E-05
25	Pichuli lai	7	0	0	0	1.75	6.2562E-05
26	Pokasunga	18	0	0	0	4.5	0.00041367
27	Rai	12	0	0	0	3	0.00018386
28	Ranikathi	10	0	0	0	2.5	0.00012768
29	S.Gundi	7	0	0	0	1.75	6.2562E-05
30	Sal	158	150	0	0	77	0.03027993
32	Satabari	4	0	0	0	1	2.0428E-05
33	Sialilai	53	0	0	0	13.25	0.00358645
34	Sugandhi	90	13	0	0	25.75	0.00338632
36	Tilika	17	0	0	0	4.25	0.00036899
Compt. No.:		Rambha		7			
GPS Gr.1-		N: 20 07 50.2		E: 084 27 00.3			
GPS Gr.2-		N:20 08 07.6		E:084 27 02.4			

GPS Gr.3-							
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Amla	2	0	0	0	0.5	0.00153787
2	Ankula	24	0	0	0	6	0.22145329
3	Arguna	46	0	0	0	11.5	0.81353326
4	Arjuna	4	0	0	0	1	0.00615148
5	B.Neem	15	47	0	0	15.5	0.36947328
7	Bahada	2	0	0	0	0.5	0.00153787
8	Benia	55	0	0	0	13.75	1.16301423
9	Bheru	40	0	0	0	10	0.61514802
10	Chara	10	76	0	0	21.5	0.71088043
12	Dhamana	6	0	0	0	1.5	0.01384083
13	Dhatiki	8	12	0	0	5	0.03844675
15	Dhobi	8	5	0	0	3.25	0.01624375
17	Dudhilai	4	0	0	0	1	0.00615148
18	Genduli	1	0	0	0	0.25	0.00038447
19	Halanda	1	2	0	0	0.75	0.00086505
21	Harada	1	0	0	0	0.25	0.00038447
22	Jamu	16	22	0	0	9.5	0.13879277
24	Jari	1	0	0	0	0.25	0.00038447
25	Jatajati	12	0	0	0	3	0.05536332
26	Kanteikoli	1	0	0	0	0.25	0.00038447
27	Kara	1	0	0	0	0.25	0.00038447
28	Karada	21	0	0	0	5.25	0.16955017
29	Kauchia	10	10	0	0	5	0.03844675
1	Kelikerua	9	10	0	0	4.75	0.03469819
2	Kelikerua	10	0	0	0	2.5	0.03844675
3	Kendu	48	4	0	0	13	0.25990004
5	Khakada	25	22	0	0	11.75	0.21232218
7	Khelua lai	15	0	0	0	3.75	0.08650519
8	Khukundia	20	28	0	0	12	0.22145329
10	Kumbhi	2	0	0	0	0.5	0.00153787
11	Kurei	74	56	0	0	32.5	1.62437524
13	Kusum	62	62	0	0	31	1.47789312
15	Mahula	1	6	0	0	1.75	0.00470973
17	Mankadasili	88	0	0	0	22	2.97731642
18	Masania	1	0	0	0	0.25	0.00038447
19	Moi	5	5	0	0	2.5	0.00961169
21	Mudumudia	10	0	0	0	2.5	0.03844675
22	Muturi lai	2	0	0	0	0.5	0.00153787
23	Palasha	2	0	0	0	0.5	0.00153787
24	Piasal	1	0	0	0	0.25	0.00038447
25	Pinchhuli	20	0	0	0	5	0.153787
26	S.Gundi	19	0	0	0	4.75	0.13879277
27	Sal	142	8	0	0	37.5	2.16262976
29	Sialilai	23	52	0	0	18.75	0.54065744
31	Sidha	1	0	0	0	0.25	0.00038447
32	Sugandhi	53	49	0	0	25.5	1
34	Sunari	5	9	0	0	3.5	0.01883891
Compt. No.:		Darpangia		1			

GPS Gr.1-		N: 20 08 28.3		E:84 26 08.8			
GPS Gr.2-		N:20 07 11.0		E:84 26 30.4			
GPS Gr.3-							
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Ankula	2	0	0	0	0.5	3.1549E-06
2	Araguna	197	4	0	0	50.25	0.0318651
4	B.Neem	13	5	0	0	4.5	0.00025555
6	Bahada	2	3	0	0	1.25	1.9718E-05
8	Bana Piaja	2	0	0	0	0.5	3.1549E-06
9	Bandhan	1	0	0	0	0.25	7.8872E-07
10	Bela	1	0	0	0	0.25	7.8872E-07
11	Bhalia	12	1	0	0	3.25	0.00013329
13	Bheru	1	0	0	0	0.25	7.8872E-07
14	Chadheigudi	2	0	0	0	0.5	3.1549E-06
15	Chara	61	16	0	0	19.25	0.00467632
17	Datiki	2	0	0	0	0.5	3.1549E-06
18	Dhau	1	2	0	0	0.75	7.0985E-06
20	Mahula	2	0	0	0	0.5	3.1549E-06
21	Dudhilai	4	0	0	0	1	1.262E-05
22	Genduli	1	0	0	0	0.25	7.8872E-07
23	Halanda	2	12	0	0	3.5	0.00015459
25	Harida	2	0	0	0	0.5	3.1549E-06
26	Jamu	2	20	0	0	5.5	0.00038174
28	Jatajati	66	0	0	0	16.5	0.00343567
29	Kalua lai	29	0	0	0	7.25	0.00066331
30	Kanteikoli	3	3	0	0	1.5	2.8394E-05
32	Karada	36	0	0	0	9	0.00102218
33	Kelakerua	27	10	0	0	9.25	0.00107976
35	Kendu	53	16	0	0	17.25	0.0037551
2	Khajuri	1	0	0	0	0.25	7.8872E-07
3	Khakada	1	8	0	0	2.25	6.3886E-05
5	Khelua lai	5	0	0	0	1.25	1.9718E-05
6	Khujuri	4	0	0	0	1	1.262E-05
7	Khukundi	15	7	0	0	5.5	0.00038174
9	Kurei	9	27	0	0	9	0.00102218
11	Kusuma	35	3	0	0	9.5	0.00113891
13	Mahula	5	0	0	0	1.25	1.9718E-05
14	Makada siali	3	0	0	0	0.75	7.0985E-06
15	Moi	9	4	0	0	3.25	0.00013329
17	Mundumundi	67	0	0	0	16.75	0.00354057
18	Mururi	2	0	0	0	0.5	3.1549E-06
19	Palasa	9	0	0	0	2.25	6.3886E-05
20	Pokasunga	23	0	0	0	5.75	0.00041723
21	S.Gundi	3	0	0	0	0.75	7.0985E-06
22	Sal	134	26	0	0	40	0.02019125
24	Satabari	21	1	0	0	5.5	0.00038174
26	Siali lai	54	0	0	0	13.5	0.00229991
27	Sidha	3	0	0	0	0.75	7.0985E-06
28	Sirisha	2	0	0	0	0.5	3.1549E-06
29	Sugandhi	16	5	0	0	5.25	0.00034783

31	Sunari	6	0	0	0	1.5	2.8394E-05
32	Sundara mundi	2	0	0	0	0.5	3.1549E-06
Compt. No.:		Darpangia		2			
GPS Gr.1-		N: 20 05 45.3		E: 084 26 14.5			
GPS Gr.2-		N:20 06 12.1		E:084 26 04.6			
GPS Gr.3-							
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	2	0	0	0	0.5	6.1726E-06
2	Akula	19	0	0	0	4.75	0.00055708
3	Amla	4	0	0	0	1	2.469E-05
4	Ankula	2	0	0	0	0.5	6.1726E-06
5	Baila	6	20	0	0	6.5	0.00104317
7	Bheru	21	0	0	0	5.25	0.00068053
8	Chara	22	38	0	0	15	0.00555534
10	Dhamna	12	0	0	0	3	0.00022221
11	Dhau	1	0	0	0	0.25	1.5432E-06
12	Dhau	14	14	0	0	7	0.00120983
13	Dhobi	15	2	0	0	4.25	0.00044597
15	Gila	5	0	0	0	1.25	3.8579E-05
16	Harada	1	0	0	0	0.25	1.5432E-06
17	Jamu	2	0	0	0	0.5	6.1726E-06
18	Kanteikoli	6	0	0	0	1.5	5.5553E-05
19	Karada	29	6	0	0	8.75	0.00189036
21	Kasi	2	0	0	0	0.5	6.1726E-06
22	Kelikerua	3	27	0	0	7.5	0.00138884
24	Kendu	2	43	0	0	11.25	0.00312488
26	Khakada	18	51	0	0	17.25	0.00734694
28	Khukundi	20	0	0	0	5	0.00061726
	Kula lai	40	0	0	0	10	0.00246904
	Kurei	21	44	0	0	16.25	0.00651981
	Kusuma	23	4	0	0	6.75	0.00112496
	Mahula	1	4	0	0	1.25	3.8579E-05
	Mankadasiali	40	0	0	0	10	0.00246904
	Moi	11	0	0	0	2.75	0.00018672
	Mudumudia	15	61	0	0	19	0.00891324
	Piasal	1	0	0	0	0.25	1.5432E-06
	Pokasonga	44	0	0	0	11	0.00298754
	Sahaja	10	0	0	0	2.5	0.00015432
	Sal	22	0	0	0	5.5	0.00074688
	Satabari	1	13	0	0	3.5	0.00030246
	Sialilai	3	0	0	0	0.75	1.3888E-05
	Sirisha	20	0	0	0	5	0.00061726
	Sugandhi	10	0	0	0	2.5	0.00015432
	Sunari	4	0	0	0	1	2.469E-05
	Sundaramundi	6	0	0	0	1.5	5.5553E-05
Compt. No.:		Darpangia		3			
GPS Gr.1-		N:20 04 13.3		E:84 25 25.0			
GPS Gr.2-		N:20 04 29.9		E:84 25 09.4			
GPS Gr.3-		N:20 04 48.0		E:84 26.04.7			
GPS Gr.4-							

Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	13	9	0	0	5.5	0.00011885
2	Amla	1	2	0	0	0.75	2.21E-06
3	Araguna	0	0	4	0	1	3.929E-06
4	Arjuna	15	8	0	0	5.75	0.0001299
5	Asadhua	0	3	0	0	0.75	2.21E-06
6	B.Neem	0	5	0	0	1.25	6.139E-06
7	Bamboo	4	0	0	0	1	3.929E-06
8	Bandhana	0	3	0	0	0.75	2.21E-06
9	Bhalia	1	0	68	0	17.25	0.00116911
10	Bheru	0	0	43	0	10.75	0.00045404
11	Chara	152	4	27	0	45.75	0.00822356
12	Chuna koli	0	2	0	0	0.5	9.8224E-07
13	Dhamana	1	0	0	0	0.25	2.4556E-07
14	Dhatiki	0	4	0	0	1	3.929E-06
15	Dhau	5	0	51	0	14	0.00077008
16	Dhobi	29	17	16	0	15.5	0.00094393
17	Dudhilai	0	4	0	0	1	3.929E-06
18	Gangasiuli	0	13	7	0	5	9.8224E-05
19	Genduli	0	1	0	0	0.25	2.4556E-07
20	Gila	1	0	0	0	0.25	2.4556E-07
21	Halanda	5	1	0	0	1.5	8.8402E-06
22	Harada	0	6	0	0	1.5	8.8402E-06
23	Jamu	13	5	0	0	4.5	7.9561E-05
24	Jatajati	0	14	0	0	3.5	4.813E-05
25	Kantei koli	3	0	0	0	0.75	2.21E-06
26	Karada	33	4	72	0	27.25	0.0029175
27	Kasi	5	6	0	0	2.75	2.9713E-05
28	Kataka	0	8	0	0	2	1.5716E-05
29	Kauchia	0	1	0	0	0.25	2.4556E-07
30	Kelikerua	14	0	20	0	8.5	0.00028387
31	Kendu	53	10	10	0	18.25	0.00130859
32	Khakada	14	0	0	0	3.5	4.813E-05
33	Khelua lai	0	0	61	0	15.25	0.00091373
34	Khukundi	15	0	0	0	3.75	5.5251E-05
35	Kula lai	0	22	0	0	5.5	0.00011885
36	Kurei	47	8	48	0	25.75	0.00260515
37	Kusuma	45	2	0	0	11.75	0.00054244
38	Luni	0	4	0	0	1	3.929E-06
39	Mahul	19	5	13	0	9.25	0.00033617
40	Mankada siali	0	156	0	0	39	0.00597595
41	Masania	3	3	56	0	15.5	0.00094393
42	Moi	16	0	32	0	12	0.00056577
43	Mudumudia	30	0	0	0	7.5	0.000221
44	Mundumundi	0	0	18	0	4.5	7.9561E-05
45	Pagu	0	1	0	0	0.25	2.4556E-07
46	Palasha	0	4	0	0	1	3.929E-06
47	Pania	0	2	0	0	0.5	9.8224E-07
48	Patuli	4	0	15	0	4.75	8.8647E-05
49	Piasal	2	0	0	0	0.5	9.8224E-07
50	Pichhuli	0	0	36	0	9	0.00031825

51	Rai	0	0	22	0	5.5	0.00011885
52	S.Gundi	0	2	0	0	0.5	9.8224E-07
53	Sahaja	0	0	21	0	5.25	0.00010829
54	Sal	96	105	87	0	72	0.02036773
55	Satabari	10	2	15	0	6.75	0.00017901
56	Siali	0	0	50	0	12.5	0.0006139
57	Siali lai	30	4	0	0	8.5	0.00028387
58	Sirisha	2	10	0	0	3	3.5361E-05
59	Sugandhi	35	7	32	0	18.5	0.00134469
60	Sunari	0	11	0	0	2.75	2.9713E-05
Compt. No.:		Darpangia		4			
GPS Gr.1-		N: 20 03 38.4		E: 084 25 57.1			
GPS Gr.2-		N:20 02 51.0		E:084 26 29.2			
GPS Gr.3-		N:20 03.09.5		E:084 26 23.6			
GPS Gr.4-		N:20 03.08.5		E:084 26 31.7			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	1	6	0	18	6.25	0.00026003
2	Amla	0	3	0	1	1	6.6569E-06
3	Ankul	0	60		25	28.3333	0.00534398
4	Araguna	9	1	0	17	6.75	0.0003033
5	B.Neem	3	0	0	0	0.75	3.7445E-06
6	Bana piaja	0	0	14	0	3.5	8.1547E-05
7	Bandhana	3	0	0	0	0.75	3.7445E-06
8	Bel	0	0	4	0	1	6.6569E-06
9	Benia	4	0	0	0	1	6.6569E-06
10	Chara	12	34	27	26	24.75	0.00407775
11	Chhana grass	2	0	0	0	0.5	1.6642E-06
12	Dhatiki	1	0	9	0	2.5	4.1605E-05
13	Dhobi	46	57	11	24	34.5	0.00792333
14	Dudhi lai	5	0	0	13	4.5	0.0001348
15	Genduli	0	0	8	0	2	2.6627E-05
16	Halanda	1	0	0	0	0.25	4.1605E-07
17	Harida	4	0	0	0	1	6.6569E-06
18	Jamu	0	4	0	1	1.25	1.0401E-05
19	Jatajati	15	0	0	0	3.75	9.3612E-05
20	Kantei koli	2	8	0	3	3.25	7.0313E-05
21	Karaba lai	1	0	0	0	0.25	4.1605E-07
22	Karada	6	5	18	82	27.75	0.0051262
23	Kelikerua	23	0	0	0	5.75	0.00022009
24	Kendu	5	6	0	17	7	0.00032619
25	Khakada	17	27	0	0	11	0.00080548
26	Khelua lai	6	0	0	1	1.75	2.0387E-05
27	Khukundi	18	1	0	0	4.75	0.0001502
28	Kurei	0	4	14	0	4.5	0.0001348
29	Kusuma	19	33	7	0	14.75	0.00144828
30	Luni	1	0	0	0	0.25	4.1605E-07
31	Mankadsiali	63	0	0	0	15.75	0.00165132
32	Masania	6	5	0	0	2.75	5.0343E-05
33	Modimodica	0	0	12	0	3	5.9912E-05
34	Moi	2	10	0	0	3	5.9912E-05
35	Mudumudia	0	10	0	0	2.5	4.1605E-05

36	Mundumundi	0	0	0	8	2	2.6627E-05
37	Muturi	1	0	0	0	0.25	4.1605E-07
38	Palasa	10	4	8	0	5.5	0.00020137
39	Patuli	0	3	0	0	0.75	3.7445E-06
40	Piasala	1	0	0	0	0.25	4.1605E-07
41	S. Gundi	11	3	0	23	9.25	0.00056958
42	Sahaja	7	14	0	21	10.5	0.00073392
43	Sal	114	41	74	101	82.5	0.04530829
44	Salparni	0	0	8	0	2	2.6627E-05
45	Satabari	4	1	14	17	9	0.00053921
46	Sialilai	14	4	0	0	4.5	0.0001348
47	Sidha	0	0	18	0	4.5	0.0001348
48	Sugandhi	26	39	0	30	23.75	0.00375489
49	Sunari	2	0	0	0	0.5	1.6642E-06
Compt. No.:		Darpangia		5			
GPS Gr.1-		N:20 01 45.8		E:84 26 08.8			
GPS Gr.2-		N:20 00 54.8		E:84 25 31.8			
GPS Gr.3-		N:20 01 08.3		E:84 26 24.6			
GPS Gr.4-		N:20 00 57.7		E:84 26 11.0			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	0	0	4	0	1	7.7916E-06
2	Amla	8	1	0	0	2.25	3.9445E-05
3	Ankula	0	1	0	0	0.25	4.8698E-07
4	Arguna	0	0	0	3	0.75	4.3828E-06
5	Arjuna	27	0	0	0	6.75	0.00035501
6	B.Malli	0	10	0	0	2.5	4.8698E-05
7	Bainchakoli	1	0	0	0	0.25	4.8698E-07
8	Bamboo	7	0	0	0	1.75	2.3862E-05
9	Banapiaja	0	0	11	0	2.75	5.8924E-05
10	Bandhana	11	0	0	0	2.75	5.8924E-05
11	Bhalia	0	8	0	7	3.75	0.00010957
12	Bhuin neem	0	0	0	6	1.5	1.7531E-05
13	Chara	37	46	8	16	26.75	0.00557539
14	Danturi	1	0	0	0	0.25	4.8698E-07
15	Dhalakauchia	0	19	0	0	4.75	0.0001758
16	Dhamana	5	0	0	0	1.25	1.2174E-05
17	Dhau	1	15	0	0	4	0.00012467
18	Dhobi	2	13	18	11	11	0.00094279
19	Halanda	9	0	0	0	2.25	3.9445E-05
20	Jamu	6	0	0	0	1.5	1.7531E-05
21	Jatajati	0	5	0	0	1.25	1.2174E-05
22	Kaniari	3	0	0	0	0.75	4.3828E-06
23	Kanteikoli	1	4	3	7	3.75	0.00010957
24	Kepiti	0	0	15	7	5.5	0.0002357
25	Karada	39	76	0	18	33.25	0.00861412
26	Kasi	7	0	0	0	1.75	2.3862E-05
27	Katak	0	0	11	6	4.25	0.00014074
28	Kathapana	1	0	0	0	0.25	4.8698E-07
29	Kauchia	0	20	0	3	5.75	0.00025761
30	Kelikerua	12	19	28	0	14.75	0.00169516
31	Kendu	8	4	8	7	6.75	0.00035501

32	Khukundi	13	19	0	0	8	0.00049866
33	Kulalai	22	0	0	0	5.5	0.0002357
34	Kurei	0	2	33	18	13.25	0.00136792
35	Kusuma	79	39	0	13	32.75	0.008357
36	Mahula	0	0	12	0	3	7.0125E-05
37	Mankadasiali	1	0	18	0	4.75	0.0001758
38	Moi	10	0	0	0	2.5	4.8698E-05
39	Mudimudia	15	7	0	7	7.25	0.00040955
40	Mundi	0	5	0	0	1.25	1.2174E-05
41	Muturi	2	2	0	0	1	7.7916E-06
42	Palasha	7	2	7	3	4.75	0.0001758
43	Pania	0	6	0	0	1.5	1.7531E-05
44	Patuli	10	0	0	0	2.5	4.8698E-05
45	Pinchuli	4	6	0	8	4.5	0.00015778
46	Pokasanga	0	4	49	13	16.5	0.00212127
47	Ranibilli	0	9	0	0	2.25	3.9445E-05
48	Rekula	0	0	16	3	4.75	0.0001758
49	S. Moi	0	0	12	0	3	7.0125E-05
50	S.Gundi	0	53	0	0	13.25	0.00136792
51	Sahaja	0	0	14	20	8.5	0.00056294
52	Sakata palu	0	0	37	7	11	0.00094279
53	Sal	75	11	17	39	35.5	0.00981939
54	Satabari	3	1	0	0	1	7.7916E-06
55	Sialilai	15	0	0	0	3.75	0.00010957
56	Sidha	0	0	5	2	1.75	2.3862E-05
57	Sirisha	2	0	0	0	0.5	1.9479E-06
58	Sisoo	3	0	0	0	0.75	4.3828E-06
59	Sugandhi	9	12	0	0	5.25	0.00021476
60	Sunari	2	6	0	0	2	3.1166E-05
Compt. No.:		Darpangia		6			
GPS Gr.1-		N:20 01 06.7		E:84 24 59.4			
GPS Gr.2-		N:20 01 00.3		E:84 25 06.6			
GPS Gr.3-		N:20 00 55.9		E:84 25 18.0			
GPS Gr.4-		N:20 00 52.0		E:84 25 08.8			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Amla	0	0	0	13	3.25	4.4719E-05
2	Ankula	0	13	0	0	3.25	4.4719E-05
3	Arguna	8	2	0	9	4.75	9.5524E-05
4	B.Tagara	9	0	0	0	2.25	2.1433E-05
5	Baila	1	0	12	0	3.25	4.4719E-05
6	Bainchkoli	0	11	0	0	2.75	3.2018E-05
7	Bandhan	0	5	0	0	1.25	6.6153E-06
8	Bela	0	10	0	18	7	0.00020745
9	Bhalia	4	0	19	0	5.75	0.00013998
10	Bheru	0	27	45	0	18	0.00137174
11	Chara	20	60	18	0	24.5	0.00254132
12	Chunakoli	2	0	0	0	0.5	1.0584E-06
13	Dhamana	4	0	0	0	1	4.2338E-06
14	Dhatiki	0	0	17	0	4.25	7.6473E-05
15	Dhau	5	14	34	24	19.25	0.00156888
16	Dhobi	0	12	17	18	11.75	0.00058453

17	Gangasiuli	0	0	0	28	7	0.00020745
18	Gotha kanta	0	0	42	26	17	0.00122356
19	Halanda	5	0	0	0	1.25	6.6153E-06
20	Harida	1	20	0	9	7.5	0.00023815
21	Hati kanta	0	0	0	21	5.25	0.00011669
22	Jamu	10	0	0	0	2.5	2.6461E-05
23	Jatajati	0	40	0	0	10	0.00042338
24	Kalakauchia	0	24	0	0	6	0.00015242
25	Kaniari	3	0	0	0	0.75	2.3815E-06
26	Kanteikoli	2	0	5	0	1.75	1.2966E-05
27	Karada	29	20	33	38	30	0.00381039
28	Kasi	0	4	0	0	1	4.2338E-06
29	Kasuma	0	20	0	0	5	0.00010584
30	Katak	0	0	15	0	3.75	5.9537E-05
31	Kathapana	2	0	0	0	0.5	1.0584E-06
32	Kauchia	4	0	19	9	8	0.00027096
33	Kelikerua	11	0	42	0	13.25	0.00074329
34	Kendu	28	0	0	0	7	0.00020745
35	Khajuri	2	0	0	0	0.5	1.0584E-06
36	Khakada	20	38	0	0	14.5	0.00089015
37	Khelualai	8	0	0	0	2	1.6935E-05
38	Khukundi	11	0	17	16	11	0.00051229
39	Kulalai	0	37	0	0	9.25	0.00036225
40	Kurei	0	24	16	0	10	0.00042338
41	Kusuma	75	0	9	14	24.5	0.00254132
42	Lai bahada	1	0	0	0	0.25	2.6461E-07
43	Mahula	7	0	0	10	4.25	7.6473E-05
44	Masania	0	0	0	11	2.75	3.2018E-05
45	Moi	0	0	0	17	4.25	7.6473E-05
46	Mudumudia	19	20	0	0	9.75	0.00040247
47	Mundumundi	0	0	11	0	2.75	3.2018E-05
48	Muturi	2	0	0	17	4.75	9.5524E-05
49	Palasha	0	0	11	10	5.25	0.00011669
50	Piasal	0	16	0	0	4	6.774E-05
51	Pinchuli	12	2	15	17	11.5	0.00055992
52	Pita kauchia	0	0	15	0	3.75	5.9537E-05
53	Pokasunga	5	27	35	40	26.75	0.00302953
54	Ranabili	1	0	0	0	0.25	2.6461E-07
55	S. Palu	0	0	10	44	13.5	0.0007716
56	S.Gundi	0	0	0	18	4.5	8.5734E-05
57	S.Moi	5	0	0	0	1.25	6.6153E-06
58	S.Mundi	17	0	0	0	4.25	7.6473E-05
59	Sahada	2	0	0	0	0.5	1.0584E-06
60	Sahaja	0	0	21	48	17.25	0.00125981
61	Sal	19	0	0	0	4.75	9.5524E-05
62	Sialilai	38	20	0	0	14.5	0.00089015
63	Sugandhi	9	32	0	19	15	0.0009526
64	Sunari	3	21	31	18	18.25	0.00141011
Compt. No.:		Darpangia		7			
GPS Gr.1-		N:20.00.25.01		E:84.24.22.03			
GPS Gr.2-		N:20.01.28.05		E:84.24.21.09			

GPS Gr.3-		N:20.00 13.6		E:84.24.07.8			
GPS Gr.4-		N:20.00 46.6		E:84.24.48.5			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Ankula	8	5	17	0	7.5	0.00010512
2	Araguna	1	3	0	13	4.25	3.3756E-05
3	Arjuna	0	0	19	0	4.75	4.2166E-05
4	Baila	0	0	50	0	12.5	0.00029201
5	Bana haladi	0	0	26	0	6.5	7.8958E-05
6	Bandhan	2	0	0	0	0.5	4.6721E-07
7	Bhalia	0	0	0	62	15.5	0.00044899
8	Brahmania	0	0	0	26	6.5	7.8958E-05
9	Chara	85	10	0	70	41.25	0.00317994
10	Chunakoli	0	8	0	0	2	7.4753E-06
11	Dantari	0	6	0	0	1.5	4.2049E-06
12	Dhamana	0	1	0	0	0.25	1.168E-07
13	Dhau	4	4	49	30	21.75	0.00088408
14	Dhobi	2	1	0	32	8.75	0.00014308
15	Halanda	17	0	17	62	24	0.00107645
16	Harida	4	4	0	0	2	7.4753E-06
17	Jamu	0	9	0	0	2.25	9.461E-06
18	Kaniari	0	1	0	18	4.75	4.2166E-05
19	Kanteikoli	0	11	22	0	8.25	0.0001272
20	Karada	9	1	48	73	32.75	0.00200444
21	Kasi	0	5	0	0	1.25	2.9201E-06
22	Katak	0	0	7	0	1.75	5.7233E-06
23	Kauchia	17	0	14	0	7.75	0.00011225
24	Kelikerua	8	5	0	0	3.25	1.974E-05
25	Kendu	51	6	0	73	32.5	0.00197396
26	Khajuri	1	0	0	13	3.5	2.2893E-05
27	Khakada	11	13	22	24	17.5	0.00057233
28	Khukundia lai	0	1	0	0	0.25	1.168E-07
29	Kulalai	0	1	0	0	0.25	1.168E-07
30	Kumbhi	5	0	0	43	12	0.00026911
31	Kurei	24	3	11	48	21.5	0.00086387
32	Kusuma	166	0	14	23	50.75	0.00481331
33	Mahula	1	0	17	52	17.5	0.00057233
34	Mankadasiali	6	0	0	0	1.5	4.2049E-06
35	Moi	4	24	30	0	14.5	0.00039292
36	Mudumudia	0	3	0	0	0.75	1.0512E-06
37	Mundi	5	0	40	0	11.25	0.00023652
38	Palasha	23	0	8	47	19.5	0.00071063
39	Patalagaruda	0	13	0	0	3.25	1.974E-05
40	Patuli	0	35	0	0	8.75	0.00014308
41	Pendu	0	1	0	0	0.25	1.168E-07
42	Phollajhadu	0	1	0	0	0.25	1.168E-07
43	Piasal	0	9	0	0	2.25	9.461E-06
44	Pichhuli	5	10	27	62	26	0.00126333
45	Pokasunga	48	0	23	70	35.25	0.00232215
46	Ranibili	2	8	0	0	2.5	1.168E-05
47	S. Palu	0	0	26	55	20.25	0.00076634
48	S.Gundi	0	0	41	34	18.75	0.00065701

49	S.Mundi	0	1	0	0	0.25	1.168E-07
50	Sahaja	14	24	45	31	28.5	0.00151796
51	Sal	288	90	24	46	112	0.02344269
52	Satabari	0	9	0	0	2.25	9.461E-06
53	Sialilai	0	36	0	0	9	0.00015138
54	Sidha	11	0	0	0	2.75	1.4133E-05
55	Sugandhi	32	0	0	26	14.5	0.00039292
56	Sunari	2	25	21	32	20	0.00074753
Compt. No.:		Darpangia		8			
GPS Gr.1-		N: 20 01 04.1		E: 084 20 34.3			
GPS Gr.2-		N:20 01 03.0		E:084 26 28.0			
GPS Gr.3-		N:20 01 10.7		E:084 27 19.9			
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	9	3	0	0	3	4.5551E-05
2	Amla	36	3	24	0	15.75	0.0012555
3	Arjuna	9	0	0	0	2.25	2.5623E-05
4	B.Neem	2	0	0	0	0.5	1.2653E-06
5	Bahada	2	7	0	0	2.25	2.5623E-05
6	Bainchakoli	82	0	0	0	20.5	0.00212698
7	Bhalia	2	0	0	0	0.5	1.2653E-06
8	Bhurudu koli	0	0	9	0	2.25	2.5623E-05
9	Chara	143	98	24	0	66.25	0.02221408
10	Dhau	0	1	25	0	6.5	0.00021384
11	Dhatiki	10	0	0	0	2.5	3.1633E-05
12	Dhobi	7	18	0	0	6.25	0.0001977
13	Halanda	4	38	0	0	10.5	0.000558
14	Jamu	28	2	0	0	7.5	0.00028469
15	Jatajati	45	0	0	0	11.25	0.00064056
16	Kanteikoli	5	7	0	0	3	4.5551E-05
17	Karada	33	0	32	0	16.25	0.00133648
18	Kelikerua	28	36	28	0	23	0.00267739
19	Kendu	29	34	33	0	24	0.00291527
20	Khajuri	4	0	0	0	1	5.0612E-06
21	Khakada	0	6	0	0	1.5	1.1388E-05
22	Khelualai	11	20	0	0	7.75	0.00030399
23	Khirakoli	24	0	0	0	6	0.0001822
24	Khukundi	0	7	0	0	1.75	1.55E-05
25	Kulalai	9	0	0	0	2.25	2.5623E-05
26	Kumbhi	0	5	0	0	1.25	7.9082E-06
27	Kurei	37	3	12	0	13	0.00085535
28	Kusuma	5	6	15	0	6.5	0.00021384
29	Lunuluni	0	0	27	0	6.75	0.0002306
30	Mahula	8	7	28	0	10.75	0.00058489
31	Moi	0	1	19	0	5	0.00012653
32	Mudimudia	8	6	0	0	3.5	6.2E-05
33	Munudmundi	0	0	27	0	6.75	0.0002306
34	Muturi	0	1	0	0	0.25	3.1633E-07
35	Nuni	2	0	0	0	0.5	1.2653E-06
36	Palasa	0	7	5	0	3	4.5551E-05
37	Patuli	0	3	0	0	0.75	2.8469E-06

38	Pichhuli	0	0	32	0	8	0.00032392
39	Rai	10	0	0	0	2.5	3.1633E-05
40	Sahaja	3	23	18	0	11	0.00061241
41	Sal	234	60	51	0	86.25	0.03765084
42	Satabari	20	1	0	0	5.25	0.0001395
43	Sialilai	5	0	0	0	1.25	7.9082E-06
44	Sidha	0	2	0	0	0.5	1.2653E-06
45	Sirisha	13	0	10	0	5.75	0.00016734
46	Sugandhi	54	30	0	0	21	0.002232
47	Sum	3	0	0	0	0.75	2.8469E-06
Compt. No.:		Darpangia		9			
GPS Gr.1-		N:20 03 01.1		E:084 27 34.3			
GPS Gr.2-		N:20 02 40.2		E:084 27 43.9			
GPS Gr.3-		N:20 01 24.9		E:084 27 46.9			
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	32	11	0	0	10.75	0.000858
2	Amla	38	10	0	0	12	0.00106913
3	B.Kolatha	2	0	0	0	0.5	1.8561E-06
4	B.Piaja	8	0	0	0	2	2.9698E-05
5	Bahada	6	0	0	0	1.5	1.6705E-05
6	Bainchakoli	0	2	0	0	0.5	1.8561E-06
7	Bandhana	7	0	0	0	1.75	2.2738E-05
8	Bhalia	6	0	0	0	1.5	1.6705E-05
9	Bheru	0	0	21	0	5.25	0.00020464
10	Chara	79	10	42	0	32.75	0.00796325
11	Chhana grass	0	65	0	0	16.25	0.00196054
12	Dhamana	3	0	0	0	0.75	4.1763E-06
13	Dhatiki	1	106	0	0	26.75	0.0053127
14	Dhobi	3	19	0	0	5.5	0.00022459
15	Harida	1	0	0	0	0.25	4.6403E-07
16	Jamu	15	0	0	0	3.75	0.00010441
17	Kanteikoli	17	0	0	0	4.25	0.00013411
18	Karada	9	1	35	0	11.25	0.00093966
19	Kelikerua	4	21	17	0	10.5	0.00081855
20	Kendu	16	11	0	0	6.75	0.00033828
21	Khajuri	26	5	0	0	7.75	0.00044593
22	Khakada	2	0	0	0	0.5	1.8561E-06
23	Khelua lai	40	0	21	0	15.25	0.00172666
24	Khirakoli	0	13	0	0	3.25	7.8421E-05
25	Khukundi	25	0	16	0	10.25	0.00078004
26	Kumbhi	1	0	0	0	0.25	4.6403E-07
27	Kurei	0	18	39	0	14.25	0.00150764
28	Luni	0	5	0	0	1.25	1.1601E-05
29	Lunuluni	0	0	6	0	1.5	1.6705E-05
30	Mahula	14	0	0	0	3.5	9.095E-05
31	Modimodica	0	0	30	0	7.5	0.00041763
32	Moi	0	3	0	0	0.75	4.1763E-06
33	Muturi	5	0	0	0	1.25	1.1601E-05
34	Palasha	1	0	0	0	0.25	4.6403E-07
35	Patuli	2	0	0	0	0.5	1.8561E-06

36	Pichhuli	0	0	49	0	12.25	0.00111414
37	Pokasunga	0	35	38	0	18.25	0.00247283
38	Sahaja	47	32	30	0	27.25	0.00551316
39	Sal	142	9	44	0	48.75	0.01764482
40	Salparni	0	0	36	0	9	0.00060139
41	Satabari	5	0	13	0	4.5	0.00015035
42	Siali lai	5	3	0	0	2	2.9698E-05
43	Sidha	3	0	0	0	0.75	4.1763E-06
44	Sirisha	0	8	0	0	2	2.9698E-05
45	Sugandhi	40	0	23	0	15.75	0.00184174
46	Sum	0	16	0	0	4	0.00011879
Compt. No.:		Darpangia		10			
GPS Gr.1-		N: 20 03 06.4		E: 084 27 56.3			
GPS Gr.2-		N:20 03 28.3		E:084 27 48.2			
GPS Gr.3-		N:20 03 13.6		E:084 28 37.6			
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	3	1	0	0	1	4.5269E-06
2	Amla	3	5	0	0	2	1.8108E-05
3	Ankula	0	0	13	0	3.25	4.7816E-05
4	B.Piaja	0	1	0	0	0.25	2.8293E-07
5	B.Sorisha	0	55	0	0	13.75	0.00085587
6	B.Tulasi	0	1	0	0	0.25	2.8293E-07
7	Bana kolthia	0	0	30	0	7.5	0.00025464
8	Bandhana	0	15	0	0	3.75	6.366E-05
9	Benia	0	0	22	0	5.5	0.00013694
10	Bhalia	26	0	0	0	6.5	0.00019126
11	Chara	48	89	48	0	46.25	0.0096834
12	Chhana grass	0	10	0	0	2.5	2.8293E-05
13	Dhamana	2	1	0	0	0.75	2.5464E-06
14	Dhatiki	4	0	0	0	1	4.5269E-06
15	Dhobi	55	0	0	0	13.75	0.00085587
16	Halanda	1	0	0	0	0.25	2.8293E-07
17	Harida	0	1	0	0	0.25	2.8293E-07
18	Jamu	0	14	0	0	3.5	5.5455E-05
19	Jatajati	71	0	0	0	17.75	0.00142627
20	Kantei koli	29	5	7	0	10.25	0.00047561
21	Karada	0	0	16	0	4	7.2431E-05
22	Kelikerua	5	7	0	0	3	4.0742E-05
23	Kendu	17	38	15	0	17.5	0.00138637
24	Khajuri	87	14	14	0	28.75	0.00374179
25	Khakada	0	1	30	0	7.75	0.0002719
26	Kulalai	18	0	0	0	4.5	9.167E-05
27	Kurei	52	10	27	0	22.25	0.00224112
28	Kusuma	0	0	8	0	2	1.8108E-05
29	Mahula	3	3	0	0	1.5	1.0186E-05
30	Muturi	0	1	0	0	0.25	2.8293E-07
31	Palu	0	2	7	0	2.25	2.2918E-05
32	Patuli	0	5	0	0	1.25	7.0733E-06
33	Piasal	3	0	0	0	0.75	2.5464E-06
34	Pokasunga	0	0	29	0	7.25	0.00023795

35	Rai	4	5	0	0	2.25	2.2918E-05
36	Ram kedar	0	0	19	0	4.75	0.00010214
37	Sahaja	2	9	14	0	6.25	0.00017683
38	Sal	237	285	180	0	175.5	0.13943074
39	Satabari	33	5	0	0	9.5	0.00040856
40	Siali	0	0	14	0	3.5	5.5455E-05
41	Sirisha	12	2	0	0	3.5	5.5455E-05
42	Sugandhi	51	10	8	0	17.25	0.00134705
43	Sugandhi	0	0	8	0	2	1.8108E-05
44	Tilaka	0	10	0	0	2.5	2.8293E-05
Compt. No.:		Darpangia		11			
GPS Gr.1-		N:20 04 44.6		E:084 26 52.2			
GPS Gr.2-		N:20 04 25.4		E:084 26 03.7			
GPS Gr.3-		N:20 03 13.6		E:084 28 37.6			
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	0	8	0	0	2	9.395E-06
2	Ambada	1	0	0	0	0.25	1.468E-07
3	Amla	0	5	0	0	1.25	3.6699E-06
4	Ankula	5	0	0	0	1.25	3.6699E-06
5	B.Malli	10	0	0	0	2.5	1.468E-05
6	B.Neem	4	12	0	0	4	3.758E-05
7	Baila	0	5	0	0	1.25	3.6699E-06
8	Bela	2	3	0	0	1.25	3.6699E-06
9	Benia	0	78	0	0	19.5	0.00089312
10	Bhalia	2	0	0	0	0.5	5.8719E-07
11	Bheru	13	0	0	0	3.25	2.4809E-05
12	Chara	118	66	0	0	46	0.00496998
13	Chhanagrass	90	0	0	0	22.5	0.00118906
14	Chunakoli	0	2	0	0	0.5	5.8719E-07
15	Dhamana	7	9	0	0	4	3.758E-05
16	Dhatiki	15	1	0	0	4	3.758E-05
17	Dhau	30	9	0	0	9.75	0.00022328
18	Dhobi	71	44	0	0	28.75	0.0019414
19	Gila	123	0	0	0	30.75	0.0022209
20	Gotha	0	3	0	0	0.75	1.3212E-06
21	Halanda	0	8	0	0	2	9.395E-06
22	Harada	5	8	0	0	3.25	2.4809E-05
23	Jamu	13	65	0	0	19.5	0.00089312
24	Jatajati	0	28	0	0	7	0.00011509
25	Kapasia	0	7	0	0	1.75	7.1931E-06
26	Karada	62	56	0	0	29.5	0.00204401
27	Kasi	0	6	0	0	1.5	5.2847E-06
28	Kelikerua	13	21	0	0	8.5	0.0001697
29	Kendu	12	21	0	0	8.25	0.00015986
30	Kentikoli	5	0	0	0	1.25	3.6699E-06
31	Kurei	113	69	0	0	45.5	0.00486252
32	Khajuri	10	5	0	0	3.75	3.3029E-05
33	Khakada	6	62	0	0	17	0.00067879
34	Khelualai	160	0	0	0	40	0.00375802
35	Khukundi	56	19	0	0	18.75	0.00082574

36	Kumbhi	0	6	0	0	1.5	5.2847E-06
37	Kusuma	2	0	0	0	0.5	5.8719E-07
38	Mahula	6	5	0	0	2.75	1.7763E-05
39	Mankadasalia	0	43	0	0	10.75	0.00027143
40	Masania	7	6	0	0	3.25	2.4809E-05
41	Moi	4	2	0	0	1.5	5.2847E-06
42	Mudumudia	20	0	0	0	5	5.8719E-05
43	Palasha	5	32	0	0	9.25	0.00020097
44	Palu	32	39	0	0	17.75	0.00074001
45	Pania	0	3	0	0	0.75	1.3212E-06
46	Pichuli	1	0	0	0	0.25	1.468E-07
47	Pokosunga	0	48	0	0	12	0.00033822
48	S.Gundi	10	19	0	0	7.25	0.00012346
49	Sahaja	82	10	0	0	23	0.00124249
50	Sal	299	240	0	0	134.75	0.04264779
51	Satabari	7	0	0	0	1.75	7.1931E-06
52	Sirisha	2	0	0	0	0.5	5.8719E-07
53	Sisoo	0	14	0	0	3.5	2.8772E-05
54	Sugandhi	75	25	0	0	25	0.00146798
Compt. No.:		Darpangia		12			
GPS Gr.1-		N: 20 04 44.6		E: 084 26 52.2			
GPS Gr.2-		N:20 04 25.4		E:084 26 03.7			
GPS Gr.3-							
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	4	11	0	0	3.75	2.7857E-05
3	Ankula	1	0	0	0	0.25	4.9524E-07
4	B.Muga	1	0	0	0	0.25	4.9524E-07
5	B.Piaja	3	0	0	0	0.75	4.4571E-06
6	B.Sorisha	5	0	0	0	1.25	1.2381E-05
7	Baincha	2	0	0	0	0.5	1.9809E-06
8	Bainchakoli	5	0	0	0	1.25	1.2381E-05
9	Bela	1	0	0	0	0.25	4.9524E-07
10	Bhalia	7	8	0	0	3.75	2.7857E-05
12	Chara	89	64	0	0	38.25	0.00289824
14	Cherenga	1	0	0	0	0.25	4.9524E-07
15	Chhanagrass	150	0	0	0	37.5	0.0111428
16	Dhamana	3	0	0	0	0.75	4.4571E-06
17	Dhatiki	10	33	0	0	10.75	0.00022892
19	Dhau	5	0	0	0	1.25	1.2381E-05
20	Dhobi	13	16	0	0	7.25	0.00010412
22	Gotha	5	0	0	0	1.25	1.2381E-05
23	Harada	5	5	0	0	2.5	1.2381E-05
24	Harada	5	0	0	0	1.25	1.2381E-05
25	Jamu	36	15	0	0	12.75	0.00032203
27	Jatajati	223	0	0	0	55.75	0.02462757
1	Kanteikoli	5	2	0	0	1.75	6.0666E-06
3	Karada	31	0	0	0	7.75	0.00047592
4	Kasi	1	0	0	0	0.25	4.9524E-07
5	Kathapana	2	0	0	0	0.5	1.9809E-06
6	Kauchia	3	0	0	0	0.75	4.4571E-06

7	Kelikerua	20	9	0	0	7.25	0.00010412
9	Kendu	37	45	0	0	20.5	0.00083249
11	Khajuri	24	36	0	0	15	0.00044571
13	Khakada	39	19	0	0	14.5	0.00041649
14	Khakada	19	0	0	0	4.75	0.00017878
15	Khelualai	17	90	0	0	26.75	0.00141749
17	Khukundi	50	0	0	0	12.5	0.00123809
18	Kumbhi	2	5	0	0	1.75	6.0666E-06
20	Kurei	38	164	0	0	50.5	0.0050519
22	Kusuma	1	0	0	0	0.25	4.9524E-07
23	Luni	1	0	0	0	0.25	4.9524E-07
24	Mahula	2	0	0	0	0.5	1.9809E-06
25	Moi	3	1	0	0	1	1.9809E-06
27	Muturi	1	0	0	0	0.25	4.9524E-07
28	Narakoli	3	0	0	0	0.75	4.4571E-06
29	Palasha	8	14	0	0	5.5	5.9924E-05
31	Palu	155	0	0	0	38.75	0.01189803
32	Piasal	1	2	0	0	0.75	1.1143E-06
34	Pinchuli	10	0	0	0	2.5	4.9524E-05
35	Pithala	5	0	0	0	1.25	1.2381E-05
36	Rai	1	0	0	0	0.25	4.9524E-07
37	Sahaja	57	60	0	0	29.25	0.00169482
39	Sal	182	144	0	0	81.5	0.01315791
41	Satabari	2	0	0	0	0.5	1.9809E-06
42	Sidha	1	0	0	0	0.25	4.9524E-07
43	Sirisha	1	0	0	0	0.25	4.9524E-07
44	Som	4	0	0	0	1	7.9238E-06
45	Sugandhi	29	37	0	0	16.5	0.00053931
47	Sunari	1	0	0	0	0.25	4.9524E-07
48	Tiliki	14	0	0	0	3.5	9.7066E-05
Compt. No.:		Baibali		1			
GPS Gr.1-		N: 20 00 45.9		E: 084 23 15.0			
GPS Gr.2-		N:20 01 13.3		E:084 23 07.1			
GPS Gr.3-		N:20 00 06.3		E:084 23 08.4			
GPS Gr.4-		N:20 59 53.1		E:084 22 33.6			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	0	1	0	0	0.25	2.8124E-07
2	Amla	0	0	14	0	3.5	5.5122E-05
3	Ankula	1	24	15	10	12.5	0.00070309
4	Arguna	0	10	22	19	12.75	0.00073149
5	B.mali	0	82	0	0	20.5	0.00189103
6	Baila	4	13	47	34	24.5	0.00270099
7	Bamboo (Salia)	0	0	0	12	3	4.0498E-05
8	Bana haladi	0	0	14	0	3.5	5.5122E-05
9	Bana ada	0	0	0	13	3.25	4.7529E-05
10	Bandhana	4	0	0	0	1	4.4998E-06
11	Bela	0	0	15	0	3.75	6.3278E-05
12	Benia	0	0	0	11	2.75	3.4029E-05
13	Botilai	3	0	0	0	0.75	2.5311E-06
14	Chara	11	0	0	0	2.75	3.4029E-05
15	Chhunakoli	1	0	0		0.33333	4.9997E-07

16	Dantari	2	19	0	0	5.25	0.00012402
17	Dhamana	5	9	0	0	3.5	5.5122E-05
18	Dhatiki	5	0	0	0	1.25	7.0309E-06
19	Dhau	0	0	31	41	18	0.00145792
20	Dhobi	4	0	0	22	6.5	0.00019012
21	Dudhilai	2	0	0	0	0.5	1.1249E-06
22	Gila	0	5	0	0	1.25	7.0309E-06
23	Halanda	5	0	10	52	16.75	0.00126247
24	Harada	7	0	0	0	1.75	1.3781E-05
25	Jatajati	14	0	0	0	3.5	5.5122E-05
26	Jhatika	0	0	0	36	9	0.00036448
27	Kaincha	0	0	0	10	2.5	2.8124E-05
28	Kaniari	0	5	0	0	1.25	7.0309E-06
29	Kanteikoli	12	0	12	16	10	0.00044998
30	Kapasia	0	3	0	0	0.75	2.5311E-06
31	Karada	85	0	38	20	35.75	0.00575098
32	Kasi	0	13	0	0	3.25	4.7529E-05
33	Kataka	0	15	11	0	6.5	0.00019012
34	Kauchia	0	1	11	0	3	4.0498E-05
35	Kelilerua	4	0	0	28	8	0.00028799
36	Kendu	28	16	11	0	13.75	0.00085074
37	Kenteikoli	0	2	0	0	0.5	1.1249E-06
38	Khakada	0	0	18	0	4.5	9.112E-05
39	Kharakhri	0	5	0	0	1.25	7.0309E-06
40	Khelualai	0	7	0	12	4.75	0.00010153
41	Khukundi	21	43	0	22	21.5	0.00208002
42	Kila kauchia	0	0	0	14	3.5	5.5122E-05
43	Kumbhi	3	0	0	0	0.75	2.5311E-06
44	Kurei	2	1	10	0	3.25	4.7529E-05
45	Kusuma	83	10	8	15	29	0.0037843
46	Mahul	0	0	18	0	4.5	9.112E-05
47	Mankadasiali	66	0	0	0	16.5	0.00122506
48	Masania	0	2	0	17	4.75	0.00010153
49	Moi	6	8	17	0	7.75	0.00027027
50	Mudumudia	1	12	0	0	3.25	4.7529E-05
51	Muturi	1	0	0	19	5	0.00011249
52	Palasha	10	2	0	0	3	4.0498E-05
53	Pania	0	1	0	0	0.25	2.8124E-07
54	Patuli	2	3	0	0	1.25	7.0309E-06
55	Pinchulai	0	21	0	0	5.25	0.00012402
56	Pokasunga	0	0	12	39	12.75	0.00073149
57	Ranabilli	0	0	0	12	3	4.0498E-05
58	S. Palu	0	0	9	20	7.25	0.00023652
59	S.Gundi	16	0	54	0	17.5	0.00137805
60	S.Moi	0	0	0	51	12.75	0.00073149
61	S.Mundi	0	8	0	0	2	1.7999E-05
62	Sahada	0	0	20	15	8.75	0.00034451
63	Sahaja	1	0	31	0	8	0.00028799
64	Sal	2	0	0	19	5.25	0.00012402
65	Satabari	3	8	0	0	2.75	3.4029E-05
66	Sialilai	13	26	0	0	9.75	0.00042776

67	Sirisha	4	0	0		1.33333	7.9996E-06
68	Sugandhi	5	0	0	35	10	0.00044998
69	Sunari	0	2	9	0	2.75	3.4029E-05
Compt. No.:		Baibali		2			
GPS Gr.1-		N: 19 59 46.2		E: 084 21 48.7			
GPS Gr.2-		N:19 59 59.8		E:084 21 34.9			
GPS Gr.3-		N:19 59 49.2		E:084 22 20.5			
GPS Gr.4-		N:19 59 51.8		E:084 22 14.5			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	0	0	17	19	9	0.00013913
2	Amla	0	2	0	0	0.5	4.2943E-07
3	Ankula	0	0	0	12	3	1.5459E-05
4	Arguna	0	0	0	34	8.5	0.0001241
5	B.mali	0	10	0	0	2.5	1.0736E-05
6	B.Piaja	0	2	0	0	0.5	4.2943E-07
7	Baghabarada	0	0	20	0	5	4.2943E-05
8	Bandhana	2	0	0	0	0.5	4.2943E-07
9	Benia	0	0	34	25	14.75	0.00037371
10	Bheru	0	0	29	0	7.25	9.0287E-05
11	Chara	118	102	38	0	64.5	0.00714612
12	Dantarakanta	0	20	0	0	5	4.2943E-05
13	Dhamana	2	6	0	0	2	6.8709E-06
14	Dhau	17	20	28	0	16.25	0.00045358
15	Dhobi	5	22	33	84	36	0.00222616
16	Dubagrass	0	5	0	0	1.25	2.6839E-06
17	Gangasiuli	0	0	27	0	6.75	7.8263E-05
18	Gokhar kanta	0	0	0	47	11.75	0.00023715
19	Halanda	0	0	16	0	4	2.7483E-05
20	Harada	7	7	0	0	3.5	2.1042E-05
21	Jamu	3	1	0	14	4.5	3.4784E-05
22	Gangasiuli	95	0	0	0	23.75	0.0009689
23	Jatajati	19	0	0	0	4.75	3.8756E-05
24	Kaniari	0	2	0	0	0.5	4.2943E-07
25	Kantei koli	0	0	69	0	17.25	0.00051113
26	Kapasia	0	10	0	0	2.5	1.0736E-05
27	Karada	34	3	57	85	44.75	0.00343983
28	Kasi	5	2	0	23	7.5	9.6621E-05
29	Kathapania	0	6	0	0	1.5	3.8649E-06
30	Kauchia	0	0	0	37	9.25	0.00014697
31	Kelikerua	1	3	34	0	9.5	0.00015502
32	Kendu	17	22	11	18	17	0.00049642
33	Khakada	8	6	0	57	17.75	0.00054119
34	Khukundilai	0	30	0	0	7.5	9.6621E-05
35	Kulailai	5	2	0	0	1.75	5.2605E-06
36	Kumbhi	0	0	15	0	3.75	2.4155E-05
37	Kurei	1	25	20	21	16.75	0.00048193
38	Kusuma	3	19	43	14	19.75	0.00067002
39	Mahula	5	6	0	19	7.5	9.6621E-05
40	Masania	8	5	0	0	3.25	1.8143E-05
41	Moi	30	0	0	0	7.5	9.6621E-05
42	Mundimundi	41	148	25	0	53.5	0.00491653

43	Palasalai	2	0	55	0	14.25	0.0003488
44	Pania	6	0	0	0	1.5	3.8649E-06
45	Patuli	5	19	0	0	6	6.1838E-05
46	Pengu	0	10	0	0	2.5	1.0736E-05
47	Piasal	6	3	16	0	6.25	6.7098E-05
48	Pichhulialai	6	18	24	21	17.25	0.00051113
49	Pokosonga	4	0	0	25	7.25	9.0287E-05
50	S. Palu	0	0	9	25	8.5	0.0001241
51	S.Gundi	0	1	65	85	37.75	0.00244785
52	S.moi	0	27	25	0	13	0.00029029
53	Sahaja	6	19	41	0	16.5	0.00046765
54	Sal	329	0	0	66	98.75	0.0167504
55	Satabari	9	9	0	0	4.5	3.4784E-05
56	Sialiali	46	12	0	0	14.5	0.00036115
57	Sirisha	1	0	0	0	0.25	1.0736E-07
58	Sugandhi	16	5	30	16	16.75	0.00048193
59	Sunari	4	9	40	0	13.25	0.00030157
Compt. No.:		Baibali		3			
GPS Gr.1-		N: 19 59 34.2		E: 084 20 43.3			
GPS Gr.2-		N:19 59 24.2		E:084 20 10.4			
GPS Gr.3-		N:19 59 19.3		E:084 20 57.4			
GPS Gr.4-		N:19 59 56.1		E:084 20 40.2			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	3	0	0	0	0.75	1.2739E-06
2	Amla	7	1	0	0	2	9.0588E-06
3	Ankula	3	2	0	12	4.25	4.0906E-05
4	Arguna	3	7	0	17	6.75	0.00010319
5	B.mali	0	17	0	0	4.25	4.0906E-05
6	Bahada	3	1	0	0	1	2.2647E-06
7	Baila	0	0	0	18	4.5	4.586E-05
8	Barakoli	0	0	8	0	2	9.0588E-06
9	Benia	0	0	0	33	8.25	0.00015414
10	Bhalia	6	11	18	9	11	0.00027403
11	Bisalyakarani	0	0	20	0	5	5.6617E-05
12	Chara	44	28	0	0	18	0.00073376
13	Dhaman	0	0	26	15	10.25	0.00023793
14	Dhatiki	6	0	15	12	8.25	0.00015414
15	Dhau	5	41	37	33	29	0.00190461
16	Dhobi	11	10	0	27	12	0.00032612
17	Gambhari	0	2	0	0	0.5	5.6617E-07
18	Gangasuli	44	41	12	25	30.5	0.00210673
19	Genduli	0	0	28	0	7	0.00011097
20	Goruhada	0	0	0	22	5.5	6.8507E-05
21	Gotha kanta	0	2	0	11	3.25	2.3921E-05
22	Halanda	0	0	10	11	5.25	6.2421E-05
23	Harida	4	23	41	0	17	0.0006545
24	Jamu	0	10	11	0	5.25	6.2421E-05
25	Kaniari	0	6	0	0	1.5	5.0956E-06
26	Kanteikoli	0	6	0	0	1.5	5.0956E-06
27	Kapasia	0	1	0	0	0.25	1.4154E-07
28	Karada	34	0	47	0	20.25	0.00092867

29	Kasi	2	1	20	15	9.5	0.00020439
30	Kathachampa	0	1	0	0	0.25	1.4154E-07
31	Kauchia	9	2	29	10	12.5	0.00035386
32	Kendu	9	5	0	0	3.5	2.7743E-05
33	Kepiti	0	0	18	0	4.5	4.586E-05
34	Khakada	3	4	0	0	1.75	6.9356E-06
35	Khukundia	4	0	0	15	4.75	5.1097E-05
36	Kodala	0	0	29	0	7.25	0.00011904
37	Kulalai	0	5	0	0	1.25	3.5386E-06
38	Kumbhi	9	0	17	0	6.5	9.5683E-05
39	Kurei	25	44	12	17	24.5	0.00135938
40	Kusuma	8	1	0	9	4.5	4.586E-05
41	Mahaneem	0	0	0	18	4.5	4.586E-05
42	Mahula	4	0	31	26	15.25	0.00052668
43	Mankadsiali	126	0	7	10	35.75	0.00289442
44	Masania	0	1	0	14	3.75	3.1847E-05
45	Moi	25	0	19	19	15.75	0.00056179
46	Mudumudia	2	46	0	0	12	0.00032612
47	Mundumundi	0	0	0	24	6	8.1529E-05
48	Muturi	2	0	0	0	0.5	5.6617E-07
49	Nuni	0	6	0	0	1.5	5.0956E-06
50	Palasha	7	5	0	0	3	2.0382E-05
51	Pania	1	4	15	38	14.5	0.00047615
52	Patuli	0	2	0	0	0.5	5.6617E-07
53	Pengu	0	24	0	0	6	8.1529E-05
54	Piasal	3	3	0	0	1.5	5.0956E-06
55	Pichhuli	69	34	0	20	30.75	0.00214141
56	Pokosunga	15	0	48	20	20.75	0.00097509
57	Rai	0	0	9	0	2.25	1.1465E-05
58	Ranabilli	0	0	0	6	1.5	5.0956E-06
59	S.Gundi	0	11	15	18	11	0.00027403
60	S.Moi	0	10	31	16	14.25	0.00045987
61	S.Palu	0	0	0	11	2.75	1.7127E-05
62	Sahaja	28	46	0	35	27.25	0.00168168
63	Sal	62	218	11	37	82	0.01522782
64	Salapa	0	1	0	0	0.25	1.4154E-07
65	Salparni	0	0	18	22	10	0.00022647
66	Satabari	3	3	0	0	1.5	5.0956E-06
67	Siali	19	0	0	0	4.75	5.1097E-05
68	Sirisha	6	0	10	31	11.75	0.00031267
69	Sugandhi	20	10	0	15	11.25	0.00028663
70	Sunari	1	9	0	15	6.25	8.8465E-05
Compt. No.:		Baibali		4			
GPS Gr.1-		N: 19 59 03.1		E: 084 24 13.8			
GPS Gr.2-		N:19 59 08.7		E:084 23 55.1			
GPS Gr.3-		N:19 59 36.0		E:084 24 18.6			
GPS Gr.4-		N:19 59 28.2		E:084 24 32.2			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	5	4	42	0	12.75	0.00026313
2	Ankula lai	10	0	0	0	2.5	1.0117E-05
3	Arguna	0	13	0	0	3.25	1.7097E-05

4	B.mali	6	0	0	0	1.5	3.642E-06
5	B.sorisha	0	18	0	0	4.5	3.2778E-05
6	Bahada	0	1	33	0	8.5	0.00011695
7	Banapana	3	0	0	0	0.75	9.1049E-07
8	Bandhana	7	0	0	0	1.75	4.9571E-06
9	Bela	5	0	0	0	1.25	2.5292E-06
10	Benia	0	0	92	42	33.5	0.00181654
11	Benia kanta	0	0	0	33	8.25	0.00011017
12	Bhalia	1	0	35	0	9	0.00013111
13	Chara	60	10	0	76	36.5	0.00215646
14	Chhanalai	0	1	0	0	0.25	1.0117E-07
15	Dhamana	0	6	0	0	1.5	3.642E-06
16	Dhatiki	0	2	0	61	15.75	0.00040153
17	Dhau	9	18	0	0	6.75	7.375E-05
18	Dhobi	21	19	41	11	23	0.00085627
19	Dhudilai	0	20	0	0	5	4.0466E-05
20	Gangasuali	66	11	0	0	19.25	0.00059981
21	Harada	29	1	0	0	7.5	9.1049E-05
22	jamu	9	22	31	0	15.5	0.00038888
23	Kaniar	1	0	0	0	0.25	1.0117E-07
24	Kanteikoli	0	2	0	0	0.5	4.0466E-07
25	Karada	46	5	30	33	28.5	0.00131475
26	Kauchia	1	0	28	45	18.5	0.00055399
27	Kelikerua	19	7	32	0	14.5	0.00034032
28	Kendu	55	22	38	64	44.75	0.00324146
29	Khajuri	4	0	0	15	4.75	3.6521E-05
30	Khakada	12	21	53	0	21.5	0.00074822
31	Khukundia	0	1	0	0	0.25	1.0117E-07
32	Kulalai	32	0	0	0	8	0.00010359
33	Kumbhi	2	0	0	11	3.25	1.7097E-05
34	Kurei	30	0	20	51	25.25	0.001032
35	Kusuma	35	14	0	24	18.25	0.00053911
36	Mahula	1	0	50	50	25.25	0.001032
37	Masania	0	1	0	0	0.25	1.0117E-07
38	Moi	5	14	35	0	13.5	0.000295
39	Mundumundi	29	1	0	15	11.25	0.00020486
40	Muturi	3	8	40	0	12.75	0.00026313
41	Palasha	3	0	0	25	7	7.9314E-05
42	Pania	4	0	0	0	1	1.6187E-06
43	Patuli	0	42	0	0	10.5	0.00017846
44	Piasala	1	0	0	0	0.25	1.0117E-07
45	Pichhuli	0	0	0	38	9.5	0.00014608
46	Pokasunga	0	1	55	50	26.5	0.0011367
47	Ranibili	1	0	0	0	0.25	1.0117E-07
48	S.Gundi	0	0	27	44	17.75	0.00050998
49	S.Moi	0	0	36	0	9	0.00013111
50	S.Palu	0	0	42	71	28.25	0.00129179
51	Sahaja	27	0	46	56	32.25	0.0016835
52	Sal	238	1	25	76	85	0.0116948
53	Salparni	0	0	0	19	4.75	3.6521E-05
54	Satabari	6	7	0	19	8	0.00010359

55	Sialilai	11	5	0	0	4	2.5899E-05
56	Sidha	10	0	0	0	2.5	1.0117E-05
57	Sirisha	2	0	34	0	9	0.00013111
58	Sugandhi	27	60	0	56	35.75	0.00206875
59	Sunari	1	2	0	0	0.75	9.1049E-07
60	Teak	0	0	53	0	13.25	0.00028418
61	Ulla	0	0	44	0	11	0.00019586
Compt. No.:		Baibali		5			
GPS Gr.1-		N: 19 59 41.0		E: 084 22 30.1			
GPS Gr.2-		N:19 59 26.5		E:084 22 14.5			
GPS Gr.3-		N:19 59 40.1		E:084 22 14.5			
GPS Gr.4-		N:19 59 40.9		E:084 21 58.0			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	0	1	0	0	0.25	1.4446E-07
2	Amla	0	0	18	0	4.5	4.6806E-05
3	Ankula	2	0	0	23	6.25	9.029E-05
4	Araguna	0	8	12	0	5	5.7785E-05
5	Arjuna	0	0	0	12	3	2.0803E-05
6	B.mali	69	0	0	0	17.25	0.00068779
7	B.piaja	5	0	0	0	1.25	3.6116E-06
8	Baila	0	0	19	0	4.75	5.2151E-05
9	Baincha	0	1	0	0	0.25	1.4446E-07
10	Bamboo (salia)	0	0	41	0	10.25	0.00024284
11	Barakoli	2	0	0	0	0.5	5.7785E-07
12	Benia	0	0	42	18	15	0.00052007
13	Bhalia	0	0	0	17	4.25	4.175E-05
14	Bijasal	0	0	24	0	6	8.3211E-05
15	Chara	2	18	28	0	12	0.00033284
16	Dhaman	0	0	35	0	8.75	0.00017697
17	Dhau	0	0	36	22	14.5	0.00048598
18	Dhobi	9	10	85	4	27	0.00168502
19	Dudhilai	0	15	0	0	3.75	3.2504E-05
20	Gangasiuli	33	5	0	0	9.5	0.00020861
21	Gotha kanta	0	0	44	0	11	0.00027968
22	Halanda	0	0	91	32	30.75	0.00218559
23	Harada	2	7	0	0	2.25	1.1702E-05
24	Jamu	23	0	0	0	5.75	7.6421E-05
25	Jatajati	0	9	0	0	2.25	1.1702E-05
26	Jhatika	0	0	0	31	7.75	0.00013883
27	Kanteikoli	8	0	0	10	4.5	4.6806E-05
28	Kapasia	1	0	0	0	0.25	1.4446E-07
29	Karada	16	31	0	60	26.75	0.00165396
30	Kasi	4	0	14	0	4.5	4.6806E-05
31	Kathachampa	0	1	0	0	0.25	1.4446E-07
32	Kauchia	2	0	61	7	17.5	0.00070787
33	Kelikerua	0	19	0	8	6.75	0.00010531
34	Kendu	8	16	0	0	6	8.3211E-05
35	Kepiti	0	0	42	0	10.5	0.00025483
36	Khakada	9	17	76	0	25.5	0.001503
37	Khukundia	107	0	0	23	32.5	0.00244143
38	Kulalai	0	12	0	0	3	2.0803E-05

39	Kumbhi	0	0	30	0	7.5	0.00013002
40	Kurei	9	2	32	0	10.75	0.00026711
41	Kusuma	24	54	43	47	42	0.00407734
42	Mandalai	0	2	0	0	0.5	5.7785E-07
43	Mankadasiali	0	2	0	0	0.5	5.7785E-07
44	Moi	0	23	0	0	5.75	7.6421E-05
45	Mudumudia	2	0	0	0	0.5	5.7785E-07
46	Mundumundi	0	6	91	0	24.25	0.00135926
47	Muturilai	0	1	0	26	6.75	0.00010531
48	Palashalai	0	7	0	0	1.75	7.0787E-06
49	Pengu	15	0	0	0	3.75	3.2504E-05
50	Pokasunga	0	5	0	18	5.75	7.6421E-05
51	Ranabilli	0	0	27	0	6.75	0.00010531
52	S.gundi	0	14	0	0	3.5	2.8315E-05
53	S.moi	1	0	63	31	23.75	0.00130378
54	S.mundi	18	0	69	30	29.25	0.00197756
55	Sahada	0	0	0	12	3	2.0803E-05
56	Sahaja	9	13	41	0	15.75	0.00057338
57	Sal	119	67	0	29	53.75	0.00667783
58	Satabari	2	17	0	0	4.75	5.2151E-05
59	Sialilai	33	24	88	0	36.25	0.00303735
60	Sidha	6	0	0		2	9.2457E-06
61	Sugandhi	0	21	27	0	12	0.00033284
62	Sunari	13	9	0	0	5.5	6.992E-05
Compt. No.:		Baibali		6			
GPS Gr.1-		N: 19 59 20.8		E: 084 24 25.7			
GPS Gr.2-		N:19 58 53.8		E:084 24 55.3			
GPS Gr.3-		N:20 00 03.6		E:084 24 55.3			
GPS Gr.4-		N:19 59 31.4		E:084 24 51.8			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Amla	0	0	12	38	12.5	0.00019554
2	Ankula	0	10	0		3.33333	1.3905E-05
3	B.Kaitha	0	0	0	21	5.25	3.4492E-05
4	B.malli	0	5	0		1.66667	3.4762E-06
5	B.Neem	4	0	0	0	1	1.2514E-06
6	B.Piaja	4	4	0	0	2	5.0057E-06
7	B.sorisha	28	50	0	0	19.5	0.00047586
8	Bahada	0	7	0	0	1.75	3.8325E-06
9	Baincha	1	0	0	0	0.25	7.8214E-08
10	Bana kolatha	0	0	14	0	3.5	1.533E-05
11	Bhalia	0	27	37	23	21.75	0.000592
12	Botilai	5	0	0	0	1.25	1.9554E-06
13	Chadheigodi	0	10	0		3.33333	1.3905E-05
14	Chara	122	101	33	45	75.25	0.00708629
15	Chhanagrass	0	125	0	0	31.25	0.0012221
16	Dhatiki	20	0	0	0	5	3.1286E-05
17	Dhobi	0	1	0		0.33333	1.3905E-07
18	Dhudilai	3	0	0	0	0.75	7.0393E-07
19	Dhusurakendu	3	0	0	0	0.75	7.0393E-07
20	Harada	1	12	0	0	3.25	1.3218E-05
21	Jamu	13	2	23	20	14.5	0.00026311

22	Jatajati	32	0	0	0	8	8.0091E-05
23	Jhatiki	0	8	25	67	25	0.00078214
24	Kanteikoli	5	7	0	0	3	1.1263E-05
25	Karada	6	0	23	0	7.25	6.5778E-05
26	Kasi	2	0	0	0	0.5	3.1286E-07
27	Kathachampa	91	53	0	0	36	0.00162185
28	Kauchia	0	1	0	0	0.25	7.8214E-08
29	Kelikerua	60	0	33	76	42.25	0.00223388
30	Kendu	74	40	18	84	54	0.00364916
31	Khajuri	29	57	20	0	26.5	0.00087882
32	Khakada	3	0	14	39	14	0.00024528
33	Khelualai	0	10	0	63	18.25	0.0004168
34	Kila kauchia	0	0	0	26	6.5	5.2873E-05
35	Kolathalai	28	0	0	0	7	6.132E-05
36	Kurei	9	27	48	0	21	0.00055188
37	Kusuma	1	0	0	0	0.25	7.8214E-08
38	Luni	0	0	15	65	20	0.00050057
39	Mahula	0	23	46	27	24	0.00072082
40	Moi	0	0	0	36	9	0.00010137
41	Mundumundi	0	2	0	0	0.5	3.1286E-07
42	Muturi	0	1	0	0	0.25	7.8214E-08
43	Palasha	20	4	0	0	6	4.5051E-05
44	Pithala	0	0	0	22	5.5	3.7856E-05
45	Pokosunga	7	0	0	75	20.5	0.00052591
46	Rai	6	2	0	39	11.75	0.00017278
47	S. Gundi	0	0	25	0	6.25	4.8884E-05
48	S. palu	0	0	14	0	3.5	1.533E-05
49	Sahaja	29	35	61	80	51.25	0.00328695
50	Sal	179	379	69	71	174.5	0.0381063
51	Salparni	0	0	0	25	6.25	4.8884E-05
52	Satabari	7	5	20	0	8	8.0091E-05
53	Sidha	0	2	0	0	0.5	3.1286E-07
54	Sugandhi	56	11	81	47	48.75	0.0029741
55	Sum	0	0	7	24	7.75	7.5164E-05
56	Sunari	0	0	0	47	11.75	0.00017278
Compt. No.:		Baibali		7			
GPS Gr.1-		N: 20 00 48.4		E: 084 26 35.5			
GPS Gr.2-		N:19 59 35.0		E:084 25 49.63			
GPS Gr.3-		N:19 59 35.3		E:084 25 49.9			
GPS Gr.4-		N:20 00 05.9		E:084 25 35.8			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Amla	0	6	0	3	2.25	2.1996E-05
2	Anisorisha	0	8	0	0	2	1.7379E-05
3	Ankula	8	0	2	3	3.25	4.5892E-05
4	Arguna	1	2	0	1	1	4.3448E-06
5	B.kolatha	0	5	0	0	1.25	6.7888E-06
6	B.malli	17	0	0	0	4.25	7.8478E-05
7	Baincha	0	0	0	2	0.5	1.0862E-06
8	Bainchakoli	1	0	0	0	0.25	2.7155E-07
9	Bana kolatha	0	0	2	43	11.25	0.00054989
10	Bana piaja	14	5	1	8	7	0.0002129

11	Bana sorisa	0	0	22	21	10.75	0.0005021
12	Banamalli	0	0	6	5	2.75	3.2858E-05
13	Bheru	0	10	4	4	4.5	8.7982E-05
14	Bhuin neem	2	0	1	3	1.5	9.7758E-06
15	Chara	70	79	22	38	52.25	0.01186158
16	Dhamana	0	7	0	1	2	1.7379E-05
17	Dhatiki	3	29	13	18	15.75	0.00107778
18	Dhobi	0	10	12	5	6.75	0.00019796
19	Dhobilai	0	5	0	0	1.25	6.7888E-06
20	Dudhi lai	0	11	5	2	4.5	8.7982E-05
21	Halanda	6	0	2	0	2	1.7379E-05
22	Harada	0	3	4	2	2.25	2.1996E-05
23	Jamu	19	0	1	9	7.25	0.00022837
24	Kaitha	0	0	0	1	0.25	2.7155E-07
25	Kalakauchia	0	19	0	0	4.75	9.803E-05
26	Kanteikoli	2	6	3	2	3.25	4.5892E-05
27	Karada	11	2	13	9	8.75	0.00033265
28	Katha pania	1	0	1	0	0.5	1.0862E-06
29	Kathachampa	0	7	0	0	1.75	1.3306E-05
30	Kauchia	12	0	3	6	5.25	0.00011975
31	Kelikerua	0	10	14	6	7.5	0.0002444
32	Kendu	9	10	3	5	6.75	0.00019796
33	Khajuri	0	23	3	17	10.75	0.0005021
34	Khakada	0	13	5	7	6.25	0.00016972
35	Khelua lai	24	0	3	2	7.25	0.00022837
36	Khukundi	20	0	3	1	6	0.00015641
37	Kila kauchia	0	0	3	5	2	1.7379E-05
38	Kolathialai	0	9	0	0	2.25	2.1996E-05
39	Kulalai	0	2	0	0	0.5	1.0862E-06
40	Kurei	7	10	11	11	9.75	0.00041303
41	Kusuma	37	4	1	2	11	0.00052572
42	Lai Bahada	1	0	0	0	0.25	2.7155E-07
43	Luni koli	0	0	0	1	0.25	2.7155E-07
44	Mahul	0	5	6	2	3.25	4.5892E-05
45	Mankad lai	0	0	4	2	1.5	9.7758E-06
46	Marda lai	4	3	0	2	2.25	2.1996E-05
47	Modimodica	0	0	2	1	0.75	2.444E-06
48	Mudumudia	4	0	0	0	1	4.3448E-06
49	Muturi	2	0	0	4	1.5	9.7758E-06
50	Nunikoli	0	2	0	0	0.5	1.0862E-06
51	Palasha	12	0	0	0	3	3.9103E-05
52	Palasha lai	0	0	4	3	1.75	1.3306E-05
53	Palasi grass	0	5	0	0	1.25	6.7888E-06
54	Pengu	9	0	1	0	2.5	2.7155E-05
55	Piasal	0	7	6	4	4.25	7.8478E-05
56	Pichhuli	5	0	2	1	2	1.7379E-05
57	Pokasunga	0	43	36	9	22	0.00210288
58	S. Moi	7	0	2	4	3.25	4.5892E-05
59	Sahada	0	2	1	0	0.75	2.444E-06
60	Sahaja	1	17	6	8	8	0.00027807
61	Sal	192	113	72	81	114.5	0.05696145

62	Satabari	0	9	0	0	2.25	2.1996E-05
63	Satabari	0	0	3	2	1.25	6.7888E-06
64	Siali lai	7	0	3	2	3	3.9103E-05
65	S mundi	142	0	0	0	35.5	0.00547554
66	Sugandhi	14	40	9	24	21.75	0.00205536
67	Sunari	1	0	1	0	0.5	1.0862E-06
Compt. No.:		Baibali		8			
GPS Gr.1-		N: 19 59 10.1		E: 084 27 27.3			
GPS Gr.2-		N:19 58 10.0		E:084 26 02.6			
GPS Gr.3-		N:19 57 54.0		E:084 26 32.9			
GPS Gr.4-		N:19 57 14.0		E:084 26 03.5			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
1	Achu	0	1	0	0	0.25	2.3935E-07
2	Akula	0	7	0	0	1.75	1.1728E-05
3	Amla	0	0	0	12	3	3.4467E-05
4	Arguna	12	6	0	0	4.5	7.755E-05
5	Arjuna	0	3	0	0	0.75	2.1542E-06
6	B.Piaja	0	1	14	0	3.75	5.3854E-05
7	Bahada	0	1	0	0	0.25	2.3935E-07
8	Bandhan	12	0	0	0	3	3.4467E-05
9	Bela	1	0	0	0	0.25	2.3935E-07
10	Benia	0	35	0	0	8.75	0.00029321
11	Bhalia	2	0	0	22	6	0.00013787
12	Chara	57	18	32	35	35.5	0.00482631
13	Chhana	13	0	0	0	3.25	4.0451E-05
14	Chhanagras	0	0	0	43	10.75	0.00044256
15	Chunakoli	0	7	0	0	1.75	1.1728E-05
16	D.kendu	0	12	0	0	3	3.4467E-05
17	Dhaman	3	12	0	15	7.5	0.00021542
18	Dhatiki	0	7	14	26	11.75	0.00052873
19	Dhau	3	7	6	10	6.5	0.0001618
20	Dhobi	0	1	18	46	16.25	0.00101126
21	Gotha kanta	4	0	0	28	8	0.0002451
22	Halanda	0	5	0	0	1.25	5.9838E-06
23	Harada	0	3	0	0	0.75	2.1542E-06
24	Jamu	0	18	0	0	4.5	7.755E-05
25	Kantei koli	0	0	0	8	2	1.5319E-05
26	Karada	5	77	28	32	35.5	0.00482631
27	Kasi	2	10	0	0	3	3.4467E-05
28	Kauchia	0	4	22	0	6.5	0.0001618
29	Kelikerua	35	0	19	54	27	0.00279181
30	Kendu	22	10	8	24	16	0.00098039
31	Khajuri	0	4	0	35	9.75	0.00036406
32	Khakada	0	13	0	0	3.25	4.0451E-05
33	Khelualai	0	24	0	0	6	0.00013787
34	Khukundi	0	0	11	0	2.75	2.8962E-05
35	Kolthai lai	0	0	13	0	3.25	4.0451E-05
36	Kulalai	2	0	0	0	0.5	9.5741E-07
37	Kurei	4	5	0	9	4.5	7.755E-05
38	Kusuma	17	19	0	0	9	0.0003102
39	Luni	3	0	0	0	0.75	2.1542E-06

40	Lunuluni	0	0	21	17	9.5	0.00034563
41	Mahula	0	11	0	0	2.75	2.8962E-05
42	Mankadasiali	0	31	0	0	7.75	0.00023002
43	Marda lai	5	0	0	0	1.25	5.9838E-06
44	Modimodica	0	0	11	0	2.75	2.8962E-05
45	Moi	5	0	13	53	17.75	0.00120658
46	Mudumudia	0	4	0	0	1	3.8296E-06
47	Muthagrass	6	0	0	0	1.5	8.6167E-06
48	Palasha	14	20	9	36	19.75	0.0014938
49	Palu	0	0	41	0	10.25	0.00040235
50	Patuli	1	0	0	0	0.25	2.3935E-07
51	Pinchuli	2	0	0	0	0.5	9.5741E-07
52	Pokasunga	0	5	22	0	6.75	0.00017449
53	S.gundi	3	82	0	0	21.25	0.00172932
54	Sahada	0	8	0	27	8.75	0.00029321
55	Sahaja	0	24	19	0	10.75	0.00044256
56	Sal	110	82	50	83	81.25	0.02528162
57	Salparni	0	0	16	0	4	6.1274E-05
58	Sialilai	5	10	0	0	3.75	5.3854E-05
59	Sugandhi	5	0	0	0	1.25	5.9838E-06
60	Sum	0	0	18	54	18	0.0012408
61	Sunari	8	2	0	0	2.5	2.3935E-05
62	Tandagrass	0	20	0	0	5	9.5741E-05
Compt. No.:		Baibali		9			
GPS Gr.1-		N: 19 59 57.8		E: 084 28 25.4			
GPS Gr.2-		N:19 59 37.0		E:084 28 30.6			
GPS Gr.3-		N:20 00 09.8		E:084 28 30.5			
GPS Gr.4-		N:20 00 19.3		E:084 28 31.5			
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
	Achu	0	29	0	22	12.75	0.00033752
	Amla	2	60	0	10	18	0.00067271
	Arjuna	0	1	38	0	9.75	0.00019737
	B.sorisha	0	2	0	0	0.5	5.1906E-07
	Baincha	0	21	0	0	5.25	5.7227E-05
	Baula	0	0	15	8	5.75	6.8646E-05
	Bhalia	1	6	37	0	11	0.00025123
	Bhurudukoli	8	5	0	0	3.25	2.193E-05
	Chara	149	112	37	94	98	0.01994037
	Chhanagrass	74	32	0	0	26.5	0.00145805
	Dhatiki	20	2	0	19	10.25	0.00021814
	Dhau	0	3	17	14	8.5	0.00015001
	Dhobi	0	1	0	2	0.75	1.1679E-06
	Dudhilai	0	11	0	0	2.75	1.5702E-05
	Jamu	8	4	29	0	10.25	0.00021814
	Kanteikoli	0	1	11	0	3	1.8686E-05
	Karada	0	9	12	51	18	0.00067271
	Kathachampa	26	0	0	0	6.5	8.7722E-05
	Kelikerua	163	77	30	28	74.5	0.01152374
	Kendu	47	85	48	59	59.75	0.00741237
	Khajuri	21	2	14	8	11.25	0.00026278
	Khakada	0	0	44	37	20.25	0.0008514

	Khelualai	0	3	0	0	0.75	1.1679E-06
	Kurei	0	0	0	20	5	5.1906E-05
	Kusuma	1	2	36	9	12	0.00029898
	Lunikoli	0	1	0	0	0.25	1.2977E-07
	Lunuluni	0	0	15	34	12.25	0.00031157
	Mahula	3	13	28	15	14.75	0.00045172
	Mathgrass	10	0	0	0	2.5	1.2977E-05
	Nuni	3	0	0	0	0.75	1.1679E-06
	Palasha	5	14	0	13	8	0.00013288
	Palashalai	9	0	0	0	2.25	1.0511E-05
	Palu	0	0	0	48	12	0.00029898
	Patuakanta	0	4	0	0	1	2.0763E-06
	Patuli	0	1	0	0	0.25	1.2977E-07
	Pokasunga	0	0	42	59	25.25	0.00132374
	Rai	6	3	0	0	2.25	1.0511E-05
	S.gundi	3	0	0	0	0.75	1.1679E-06
	Sahaja	22	6	0	36	16	0.00053152
	Sal	242	108	91	85	131.5	0.03590315
	Satabari	0	5	0	0	1.25	3.2442E-06
	Sirisha	0	1	25	0	6.5	8.7722E-05
	Sugandhi	0	18	0	0	4.5	4.2044E-05
	Sum	0	4	0	0	1	2.0763E-06
	Sunari	0	0	8	0	2	8.305E-06
	Tanda grass	0	0	0	59	14.75	0.00045172
Compt. No.:		Odinabdi		1			
GPS Gr.1-		N: 20 11 21.8		E: 084 26 24.7			
GPS Gr.2-		N:20 11 16.0		E:084 26 23.5			
GPS Gr.3-							
GPS Gr.4-							
Sl.No	Species	G1	G2	G3	G4	Avg.	n(N/n1)
	Achu	10	0	0	0	2.5	0.00037998
	Arguna	16	10	0	0	6.5	0.00064217
	Bandhana	8	1	0	0	2.25	7.6947E-05
	Benia	41	0	0	0	10.25	0.00638753
	Chara	20	1	0	0	5.25	0.00041893
	Halanda	3	0	0	0	0.75	3.4199E-05
	Jamu	27	0	0	0	6.75	0.00277008
	Kalikerua	21	0	0	0	5.25	0.00167573
	Kanteikoli	12	0	0	0	3	0.00054718
	Kasi	1	0	0	0	0.25	3.7998E-06
	Kathapana	1	0	0	0	0.25	3.7998E-06
	Kauchia	1	0	0	0	0.25	3.7998E-06
	Kendu	22	56	0	0	19.5	0.00577956
	Khakada	48	6	0	0	13.5	0.00277008
	Khelualai	4	0	0	0	1	6.0797E-05
	Kumbhi	2	2	0	0	1	1.5199E-05
	Kumbhi	2	0	0	0	0.5	1.5199E-05
	Kurei	30	7	0	0	9.25	0.0013005
	Kusuma	40	36	0	0	19	0.00548697
	Mahula	8	0	0	0	2	0.00024319
	Mankadasiali	32	76	0	0	27	0.01108033

	Moi	20	32	0	0	13	0.00256869
	Muda	2	0	0	0	0.5	1.5199E-05
	Palasha	14	2	0	0	4	0.00024319
	Pania	3	0	0	0	0.75	3.4199E-05
	Patuli	1	0	0	0	0.25	3.7998E-06
	Piasal	1	0	0	0	0.25	3.7998E-06
	Pokasunga	30	0	0	0	7.5	0.00341986
	S.gundi	1	0	0	0	0.25	3.7998E-06
	Sal	58	54	0	0	28	0.0119163
	Sialilai	13	4	0	0	4.25	0.00027454
	Sialilai	4	0	0	0	1	6.0797E-05
	Sirisha	2	0	0	0	0.5	1.5199E-05
	Sisoo	2	0	0	0	0.5	1.5199E-05
	Sugandhi	30	0	0	0	7.5	0.00341986
	Sunari	1	0	0	0	0.25	3.7998E-06

Annexure-XXXVII

Regeneration Status of RWC				
Mujagada Range				
Block	**Compartment**	**RWC Area In Ha**	**Density**	**Regeneration status**
Tiliki	1a	529.939	0.3	Moderate
Tiliki	1b	174.464	0.3	Moderate
Tiliki	1c	20	0.3	Moderate
Tiliki	2a	280.291	0.3	Moderate
Tiliki	2b	549.292	0.3	Moderate
Kullada	1a	425.838	0.3	Moderate
Kullada	1b	105	0.3	Moderate
Kullada	2a	167.376	0.3	Moderate
Kullada	2b	65	0.3	Moderate
Kullada	3a	348.414	0.3	Moderate
Kullada	3b	68	0.3	Moderate
Kullada	4	350.789	0.3	Moderate
Rambha	1b	21.223	0.3	fair
Rambha	4b	5.261	0.3	Good
Rambha	6b	43.75	0.3	Good
Rambha	7b	24.282	0.4	Good
Darpangia	1b	12.91	0.3	Fair
Baiballi	10	324.322	0.4	Moderate
Baiballi	11	475.84	0.4	Fair
Baiballi	12	449.535	0.4	Fair
Jaganathprasad	11a	474.788	0.3	Fair
Jaganathprasad	11b	2.428	0.3	Fair
Gallery	3b	4.047	0.3	Excellent
Gallery	4b	10	0.3	Excellent
Gallery	4c	26.249	0.3	Excellent
Gallery	5b	7	0.4	Excellent
Gallery	5c	40.2	0.3	Excellent
Gallery	6b	39.255	0.4	Excellent
Gallery	6c	129.521	0.4	Moderate
Gallery	6d	6	0.4	Moderate
Gallery	7b	10.094	0.4	Good
Gallery	7c	16.228	0.3	Moderate
Gallery	7d	6.07	0.3	Excellent
Gallery	7e	14.771	0.4	Excellent
Gallery	8b	11.4	0.5	Excellent

Gallery	9b	10	0.4	Good
Gallery	11b	69.047	0.4	Moderate
Gallery Range				
Dimirijholli	1b	5	0.3	Moderate
Dimirijholli	1c	4.002	0.3	Good
Dimirijholli	2b	10.198	0.4	Good
Dimirijholli	2c	1.736	0.3	Moderate
Gallery	16b	10.724	0.3	Good
Gallery	18b	8	0.3	Moderate
Gallery	19b	6.475	0.3	fair
Gallery	20b	5	0.4	Moderate
Gallery	23b	2	0.3	Moderate
Gallery	23c	9.6	0.3	Moderate
Chadiapalli	1a	191.386	0.2	Good
Chadiapalli	1b	55	0.2	Moderate
Chadiapalli	1c	1.781	0.2	Moderate
Ambajhara	3b	2.428	0.4	Moderate
Ambajhara	6b	11.967	0.4	Moderate
Central Range				
Tiliki	3a	338.729	0.4	Good
Tiliki	3b	338.163	0.4	Good
Tiliki	4	567.491	0.4	Good
Tiliki	5a	659.385	0.5	Good
Tiliki	5b	60	0.5	Moderate
Tiliki	6a	438.86	0.3	Moderate
Tiliki	6b	125	0.3	Good
Vinjigiri	1a	301.804	0.4	Moderate
Vinjigiri	1b	93.637	0.3	Good
Vinjigiri	2a	732.297	0.5	Good
Vinjigiri	2b	15	0.4	Moderate
Vinjigiri	3a	395.39	0.4	Moderate
Vinjigiri	3b	94.334	0.3	Moderate
Vinjigiri	4a	281.928	0.3	Moderate
Vinjigiri	4b	75	0.3	Moderate
Ragada	1	567.584	0.3	Good
Ragada	2a	505.383	0.3	Moderate
Ragada	2b	7.77	0.4	Moderate
Ragada	3a	367.867	0.4	Moderate
Ragada	3b	439.296	0.3	Excellent
Ragada	4a	819.339	0.4	Excellent
Ragada	4b	139.941	0.4	Moderate

Ragada	5a	258.171	0.4	Moderate
Ragada	5b	284.962	0.4	Excellent
Ragada	6a	452.796	0.4	Good
Ragada	6b	40	0.5	Excellent
Ragada	7a	787.495	0.4	Good
Ragada	7b	32.335	0.4	Excellent
Ragada	8	408.64	0.4	Fair
Ragada	9	760.967	0.4	Moderate
Ragada	10a	469.474	0.4	Excellent
Ragada	10b	30	0.4	Moderate
Kaliamba	1	905.14	0.4	Excellent
Kaliamba	2	898.745	0.5	Excellent
Kaliamba	3	611.25	0.5	Excellent
Kaliamba	4a	527.135	0.4	Moderate
Kaliamba	4b	58	0.5	Moderate
Kaliamba	5a	217.968	0.5	Excellent
Kaliamba	5b	199.952	0.4	Excellent
Kaliamba	6a	280.295	0.5	Moderate
Kaliamba	6b	125	0.4	Good
Malati	1a	197.132	0.2	Moderate
Malati	1b	569.278	0.2	Excellent
Dumdumi(East)	1a	374.038	0.3	Excellent
Dumdumi(East)	1b	214.914	0.3	Moderate
Dumdumi(West)	1a	283.424	0.3	Moderate
Dumdumi(West)	1b	140	0.3	Moderate
Tarasing Range				
Ambazora	7b	15.985	0.5	Good
Ambazora	9b	15	0.4	Good
Ambazora	11b	18.818	0.4	Good
Ambazora	13b	20	0.5	Excellent
Brahmanasahi	1	534.318	0.4	Excellent
Brahmanasahi	2	785.852	0.3	Excellent
Brahmanasahi	5b	40	0.5	Excellent
Brahmanasahi	6b	25	0.5	Excellent
Chandragiri	5b	20	0.4	Moderate
Chandragiri	6b	12.141	0.3	Moderate
Gunduribadi	2b	10	0.4	Excellent
Ghogado	3b	16.416	0.4	Good
Ghogado	3c	17.393	0.5	Good
Ghogado	4b	209.25	0.4	Good

Ghogado	4c	295.407	0.4	Fair
Ghogado	4d	21.76	0.4	Moderate
Ghogado	5b	8.865	0.5	Fair
Ghogado	5c	6.893	0.5	Fair
Ghogado	5d	25.01	0.4	Fair
Paichalia	1	556.609	0.3	Fair
Paichalia	2	554.666	0.3	Low
Paichalia	3	709.624	0.3	Low
Jagannathprasad Range				
Paichalia	4	679.522	0.3	Low
Paichalia	5a	693.643	0.3	Low
Paichalia	5b	8	0.3	Low
Jaganathprasad	1	925.01	0.2	Low
Jaganathprasad	2a	600.86	0.2	moderate
Jaganathprasad	2b	25	0.3	Moderate
Jaganathprasad	3a	575.648	0.3	Moderate
Jaganathprasad	3b	28.804	0.3	Moderate
Jaganathprasad	4	428.976	0.3	Good
Jaganathprasad	5a	479.995	0.3	Moderate
Jaganathprasad	5b	142.223	0.3	Moderate
Jaganathprasad	6a	423.518	0.3	Moderate
Jaganathprasad	6b	110.476	0.3	Moderate
Jaganathprasad	7	544.096	0.4	Moderate
Jaganathprasad	8	482.541	0.3	Good
Jaganathprasad	9a	817.885	0.3	Moderate
Jaganathprasad	9b	45	0.2	Moderate
Jaganathprasad	10a	393.792	0.2	Low
Jaganathprasad	10b	10.846	0.2	Low

ANNEXURE -XXXVIII

Survival Percentage of Plantation Raised in Ghumsur North Division							
MUJAGADA RANGE							
Sl. No.	**Year of Plantation**	**Name of Plantation**	**Site**	**Area in Ha./ Km.**		**Beat/ Section**	**Survival in %**
1	2005-06	NFFWP- Block Plantation	Gallery R.F.C/17 (Sutangi VSS)	15	Ha.	Biripadar/ Bhanjanagar	30
2	2006-07	B. Economic	Gallery R.F.C/15 (Sutangi)	15	Ha.	Biripadar/ Bhanjanagar	40
3	"do"	R.D.F. (RWC)	Gallery R.F.C/4 (Chadhiapalli)	20	Ha.	Binjhagiri/ Bhanjanagar	20
4	2006-07	R.D.F. (RWC)	Gallery R.F.C/5 (Jogimari)	20	Ha.	Binjhagiri/ Bhanjanagar	30
5	"do"	B. Economic	Gallery R.F.C/6 (Rajkunda)	50	Ha.	Sidhapadar/ Bhanjanagar	50
6	"do"	"do"	Kullada R.F.C/1	25	Ha.	Benakunda/ Bhanjanagar	50
7	2007-08	RWC-RDF (ANR with Gap)	Gallery R.F.C/4 (Samapalli)	70	Ha.	Binjhagiri/ Bhanjanagar	30
8	"do"	"do"	Gallery R.F.C/11 (Nidhiapalli)	95	Ha.	Mujagada (N)/ Mujagada	30
9	"do"	"do"	Kullada R.F.C/3 (Pankala)	70	Ha.	Kullada/ Kullada	35
10	"do"	"do"	Baibali R.F.C/10 (Ripitipalli)	100	Ha.	Ripitipalli/ Daha	30
11	"do"	RWC (Block)	Gallery R.F.C/5 (Barunapur & Binjhagiri)	50	Ha.	Binjhagiri/ Bhanjanagar	50
12	2007-08	Bamboo	Gallery R.F.C/2 (Mahaguda)	20	Ha.	Mujagada (S)/ Mujagada	30
13	"do"	"do"	Baibali R.F.C/10 (Ripitipalli)	20	Ha.	Ripitipalli/ Daha	30
14	"do"	OBDA-NBM (A.R)	Gallery R.F.C/7	20	Ha.	Gandisula/ Bhanjanagar	70
15	"do"	"do"	Gallery R.F.C/6	25	Ha.	Sidhapadar/ Bhanjanagar	70
16	2008-09	Eco (RDF) ANR with Gap	Gallery R.F.C/6	50	Ha.	Sidhapadar/ Bhanjanagar	30
17	2009-10	Eco-Block	Tiliki R.F.C/2	10	Ha.	Hatiguda (S)/ Daha	50

18	"do"	"do"	Gallery R.F.C/6	15	Ha.	Sidhapadar/ Bhanjanagar	50
19	"do"	RDF (without gap planting)	Gallery R.F.C/3	25	Ha.	Mujagada (S)/ Mujagada	30
20	"do"	"do"	Gallery R.F.C/6	25	Ha.	Sidhapadar/ Bhanjanagar	30
21	"do"	"do"	Baibali R.F.C/11	25	Ha.	Ripitipalli/ Daha	30
22	2010-11	Eco-Block	Gallery R.F.C/9	20	Ha.	Mujagada (N)/ Mujagada	60
23	"do"	NBM-OBDA	Gallery R.F.C/7	20	Ha.	Gandisula/ Bhanjanagar	60
24	"do"	CAMPA (Block) A.R.	Gallery R.F.C/5	80	Ha.	Binjhagiri/ Bhanjanagar	40
25	"do"	"do"	Gallery R.F.C/12	30	Ha.	Rambha/ Rambha	40
26	"do"	"do"	Baibali R.F.C/9	50	Ha.	Langalakhola/ Mujagada	50
27	"do"	"do"	Tiliki R.F.C/1	50	Ha.	Hatiguda (N)/ Daha	60
28	"do"	"do"	Baibali R.F.C/4	30	Ha.	Baibali/ Baibali	30
29	"do"	CAMPA Avenue Plantation	Nidhiapalli - Birikot Road	1.75	RKM	Gunduribadi/ Mujagada	20
30	"do"	"do"	Bhanjanagar Reservoir Bond	2	Km.	Bhanja/ Bhanjanagar	30
31	2011-12	Eco-Block A.R.	Rambha R.F.C/1	10	Ha.	Rambha/ Rambha	40
32	"do"	13th F.C.G. (OBDP)	Gallery R.F.C/7	20	Ha.	Gandisula/ Bhanjanagar	60
33	2012-13	Eco-Block	Gallery R.F.C/5	20	Ha.	Sidhapadar/ Bhanjanagar	50
34	"do"	OBDP	Gallery R.F.C/7	20	Ha.	Gandisula/ Bhanjanagar	60
35	2013-14	Eco-Block	Gallery R.F.C/5	20	Ha.	Binjhagiri/ Bhanjanagar	80
36	"do"	OBDP	Gallery R.F.C/11	20	Ha.	Mujagada (N)/ Mujagada	70
37	"do"	Urban Plantation	SDPO Office & Nuagaon Bridge	7500	Nos.	Bhanja/ Bhanjanagar	60
38	2014-15	Eco-Block	Gallery R.F.C/3	20	Ha.	Mujagada (S)/ Mujagada	80
39	"do"	13th F.C.G. (Outside W.P)	Raipalli Revenue Land	30	Ha.	Latapalli/ Kullada	75
40	"do"	Urban Plantation	Bhanjanagar Town	10000	Nos.	Bhanja/ Bhanjanagar	80

41	"do"	NBM-OBDA	Baibali R.F.C/12	20	Ha.	Baibali/ Baibali	70
42	"do"	"do"	Darapangia R.F.C/12	20	Ha.	Durgaprasad (S)/ Rambha	80
43	"do"	FDA - NAP (ANR)	Darapangia VSS	5	Ha.	Gutuliguda/ Mujagada	60

Central Range					
Sl. No	**Year**	**Name of the Scheme**	**Name of the Plantation Site**	**Area in Ha./RKM**	**Survival Percentage %**
1	**2**	**3**	**4**	**5**	**6**
1.	2006-07	Economic Plantation (RDF)	Tiliki RF C/5	50	40
			Vinjigiri RF C/2	50	60
			Kaliamba RF C/6	25	60
2.	2007-08	12th FCG RWC Circle - ANR Plantation	Tiliki RF C/3	50	40
			Tiliki RF C/5	50	50
			Tiliki RF C/6	25	50
			Kaliamba RF C/6	60	50
			Kaliamba RF C/4	50	70
			Vinjigiri RF C/2	50	60
			Ragada RF C/4	50	60
			Ragada RF C/3	50	40
			Vinjigiri RF C/4	50	60
		12th FCG RWC Circle - AR Plantation	Vinjigiri RF C/1	50	50
			Malati RF	15	80
			Vinjigiri RF C/4	20	70
			Malati (Balipada)	20	60

			Dumudumi East	20	30
3.	2008-09	Eco. Block Plantation	Kaliamba RF C/6	20	60
			Vinjigiri RF C/3	20	70
			Vinjigiri RF C/4	20	70
4.	2009-10	Eco. Plantation	Dumudumi RF East	25	70
5.	2010-11	Eco. Plantation	Malati RF	20	80
		CAMPA APO 2009-10-Block Plantation	Kaliamba RF C/2	40	60
			Kaliamba RF C/4	30	60
			Tiliki RF C/5	55	70
			Ragada RF C/3	40	70
			Ragada RF C/5	20	70
			Vinjigiri RF C/1	35	70
			Dumudumi East	60	60
6.	2011-12	Eco. Plantation	Malati RF	25	80
7.	2012-13	Eco. Plantation	Dumudumi RF	20	80
		4406-COL-Avenue Plantation	Lunipada to Badadodanga	4	80
8.	2013-14	Eco. Plantation	Malati RF	20	80
9.	2014-15	13th FCG - Block Plantation Outside Plantation Area (Non-Plan)	Bibhutia	20	80
10.		State Plan - IGC - Avenue Plantation	Lathipada to Khariguda	10	80
11.	2015-16	State-Plan - IGC - Eco. Block Plantation	Ragada RF C/5	20	95
12		State-Plan - IGC - Avenue Plantation	Khandrabali to Gangapur	10	95

Tarasingi Range						
Sl.No.	**Name of the Range**	**Name of RF /Compartment**	**Area Planted**		**Scheme under which planted**	**Survival Percentage**
			Year of Plantation	**Area in Ha.**		
1	Tarasingi	Ambajhara R.F C/13	2005-06	6 Hac	Eco Block	**40**
2	Tarasingi	Ambajhara R.F C/12	2005-06	9 Hac.	Eco Block	**45**
3	Tarasingi	Gunduribadi RF C/1	2005-06	5 Hac.	Eco Block	**46**
			Total	**20 Hac.**		
4	Tarasingi	Ghogada R.F C/4, Ghogada VSS	2005-06	10 Hac.	NMPB	**35**
5	Tarasingi	B.Sahi R.F C/3, Dangabhumi VSS	2005-06	10 Hac.	NMPB	**30**
6	Tarasingi	Chandragiri R.F C/5, Salapataila VSS	2005-06	10 Hac.	NMPB	**25**
7	Tarasingi	B.Sahi R.F C/3 ,Kandhasarala VSS	2005-06	10 Hac.	NMPB	**20**
8	Tarasingi	Paichalia R.F C/2, Burudungi VSS	2005-06	10 Hac.	NMPB	**30**
9	Tarasingi	Paichalia R.F C/1, Mandapathara VSS	2005-06	10 Hac.	NMPB	**25**
10	Tarasingi	Paichalia R.F C/1, Budhabari VSS	2005-06	10 Hac.	NMPB	**35**
11	Tarasingi	Paichalia R.F C/1, K.Nabagochha VSS	2005-06	10 Hac.	NMPB	**40**
12	Tarasingi	Paichalia R.F C/2. Nabagochha VSS	2005-06	10 Hac.	NMPB	**35**
13	Tarasingi	Gunduribadi RF C/4, Bhogora VSS	2005-06	10 Hac.	NMPB	**35**
			Total	**100 Hac.**		
14	Tarasingi	Gunduribadi R.F C/1	**2006-07**	6 Hac.	Eco Block	**25**
16	Tarasingi	Ambajhara R.F C/10	2006-07	10 Hac.	-do-	**30**
			Total	**16 Hac.**		
17	Tarasingi	Ambajhara R.F C/10	**2007-08**	35 Hac.	12 FCG / RDF	**30**
18	Tarasingi	Gunduribadi R.F C/4	2007-08	25 Hac.	-do-	**25**

19	Tarasingi	Ghogada R.F C/3	2007-08	15 Hac.	-do-	**25**
			Total	**75 Hac.**		
20	Tarasingi	Chandragiri RF C/5	2007-08	25 Hac.	12 FCG / Block	**55**
21	Tarasingi	Chandragiri RF C/5	2007-08	40 Hac.	12 FCG / Bamboo	**65**
22	Tarasingi	Gunduribadi RF C/3	2007-08	30 Hac.	Eco Block	**55**
23	Tarasingi	**2008-09 ------- NIL**				
24	Tarasingi	B.Sahi RF C/4	**2009-10**	15 Hac.	Eco Block	**65**
25	Tarasingi	Chandragiri RF C/8	**2010-11**	50 Hac.	CAMPA Block	**70**
26	Tarasingi	B.Sahi RF C/6	2010-11	30 Hac.	CAMPA Block	**75**
27	Tarasingi	Paichalia RF C/1	2010-11	50 Hac.	CAMPA Block	**75**
28	Tarasingi	Ambajhara R.F C/12	2010-11	50 Hac.	CAMPA Block	**75**
29	Tarasingi	Ghogada R.F C/1	2010-11	50 Hac.	CAMPA Block	**75**
			Total	**230 Hac.**		
30	Tarasingi	B.Sahi R.F C/6	2010-11	20 Hac.	Eco Block	**75**
31	Tarasingi	B.Sahi R.F C/4	**2011-12**	25 Hac.	Eco Block	**85**
32	Tarasingi	B.Sahi R.F C/3	**2012-13**	20 Hac.	Eco Block	**90**
33	Tarasingi	Chandragiri R.F C/9	2012-13	20 Hac.	NBM	**90**
34	Tarasingi	Chandragiri R.F C/9	**2013-14**	20 Hac.	OBDP	**90**
35	Tarasingi	B.Sahi R.F C/2	**2014-15**	20 Hac.	OBDP	**92**
36	Tarasingi	Chandragiri R.F C/8	2014-15	20 Hac.	NBM	**90**
37	Tarasingi	B.Sahi RF C/2	**2015-16**	20 Hac.	OBDP	**92**
38	Tarasingi	Chandragiri R.F C/9	2015-16	20 Hac.	NBM	**93**
39	Tarasingi	Ghogada R.F C/4	2015-16	50 Hac	(CAMPA Apo 2014-15) ANR With GAP	**95**
40	Tarasingi	Ambajhara R.F C/10	2015-16	50 Hac.	(CAMPA Apo 2014-15) ANR With GAP	**95**
41	Tarasingi	Chandragiri R.F C/5	2015-16	50 Hac.	(CAMPA Apo 2014-15) ANR With GAP	**92**
			Total	150 Hac.		

Gallery Range					
Sl. No.	**Name of the Scheme**	**Year**	**Name of the Site**	**Area**	**Survival Percentage**
1	NBM Plantation	2008-09	Dimirijholi RFC-1	30.0 Ha.	80%
2	OBDP Plantation	2009-10	Dimirijholi RFC-1	25.0 Ha.	80%
3	Eco-Block Plantation	2009-10	Dimirijholi RFC-2	20.0 Ha.	70%
4	OBDP Plantation	2010-11	Dimirijholi RFC-1	25.0 Ha.	80%
5	Eco-Block Plantation	2010-11	Chandragiri RFC-12	20.0 Ha.	75%
6	CAMPA Block Plantation	2010-11	Chandragiri RFC-11	40.0 Ha.	80%
7	CAMPA Block Plantation	2010-11	Chandragiri RFC-10	40.0 Ha.	60%
8	CAMPA Block Plantation	2010-11	Dimirijholi RFC-1	80.0 Ha.	70%
9	CAMPA Block Plantation	2010-11	Chandragiri RFC-3	40.0 Ha.	84%
10	Eco-Block Plantation	2011-12	Chandragiri RFC-11	15.0 Ha.	75%
11	13th FC outside P.O. Plantation	2012-13	Gangajhola PRF	10.0 Ha.	70%
12	NBM Plantation	2013-14	Chandragiri RFC-11	30.0 Ha.	85%
13	13th FC outside P.O. Plantation	2013-14	Burudei Hill	20.0 Ha.	80%
14	Eco-Block Plantation	2014-15	Gallery RFC-16	20.0 Ha.	86%
15	Bamboo mission (NBM)	2014-15	Gallery RFC-23	25.0 Ha.	80%
16	13th FCG outside. WP Plantation	2015-16	Mankadakumpa Mundia	20.0 Ha.	90%

Annexure-XXXIX

Regeneration Status of PWC				
Block	**Compartment**	**Area under P.W.C (in ha.)**	**Density**	**Regeneration status**
	1	5.875	0.3	Moderate
	2	64	0.3	Good
	4a	148.437	0.2	Moderate
	5a	109.375	0.2	moderate
	10	26.562	0.3	Moderate
	12	142.187	0.3	Moderate
	13	131.25	0.3	Moderate
	14	37.5	0.3	Good
Gallery (P)	15	155.468	0.3	Moderate
			0.3	Moderate
	17	37.5	0.4	Moderate
	1	104.375	0.4	good
	2	84.765	0.3	Moderate
	3	16.015	0.3	Moderate
	5	51.56	0.4	Moderate
Baibali (P)	7	35.937	0.3	Moderate
	1a	84.375	0.3	Moderate
	2	121.874	0.3	Moderate
	3	201.562	0.4	Moderate
	4	151.562	0.3	Moderate
	5	26.562	0.3	Moderate
	6	193.75	0.3	Moderate
	7	289.453	0.3	Moderate
	8	10.312	0.4	Moderate
	9	121.875	0.3	Moderate
	10	59.375	0.4	Moderate
	11	70.312	0.3	Moderate
Darpangia (P)	12	60.155	0.3	Moderate
	2	6.25	0.3	Moderate
	3	53.125	0.4	Moderate
	4a	192.187	0.3	Moderate
	5	157.812	0.3	low
	6a	162.5	0.4	Good
Rambha (P)	7a	220.312	0.3	Moderate
Ambazora (P)	1	14.453	0.4	Moderate

	3a	92.187	0.3	Good
Gallery (P)	1	84.375	0.3	Moderate
	2	75	0.4	Good
	3	45.665	0.4	Moderate
	10	15.234	0.3	Moderate
	11	62	0.3	Fair
	12	81.25	0.4	Moderate
	20a	51.843	0.4	Moderate
	23a	18.75	0.4	Moderate
Chandragiri (P)	4	54.687	0.4	Moderate
	5a	103.125	0.3	Good
	6a	64.062	0.3	Good
	7b	65.625	0.4	Good
	8	47.265	0.4	Moderate
	9	121.875	0.3	Moderate
Ambazora (P)	13a	8.203	0.3	good
	15	23.437	0.4	Moderate
	16	18.359	0.4	Moderate
	18	62.5	0.3	Good
	19	39	0.3	Good
Ghogada	1	106.25	0.4	Good
	2	46.875	0.4	Fair
	3a	48.437	0.3	Fair
	6	48	0.3	Moderate
Brahmanasahi	3	85.937	0.4	Moderate
	5a	3.906	0.4	Good
	6a	53.905	0.3	Moderate
Gundiribadi	1	21.093	0.3	Good
	4	65.625	0.4	Good

Annexure-XXXX

BIODIVERSITY INDICES ANNEXTURE

BIO-DIVERSITY INDEX OF NTFP SPECIES (TREE) OF MUJAGADA RANGE, GHUMSUR NORTH FOREST DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1		Acacia	*Acacia catechu*	6	30	0.001	-6.897	-0.007
2		Acchu	*Morinda pubescens*	44	1892	0.007	-4.904	-0.036
3		Ambeta	*Spondias pinnata*	4	12	0.001	-7.302	-0.005
4		Ankula	*Alangium Salvifolium*	8	56	0.001	-6.609	-0.009
5	(P.S)	Arjuna	*Terminalia arjuna*	14	182	0.002	-6.050	-0.014
6		Bahada	*Terminalia belerica*	11	110	0.002	-6.291	-0.012
7		Bandhana	*Ougeinia oojeinensis*	2	2	0.000	-7.995	-0.003
8		Bara	*Ficus bengalensis*	2	2	0.000	-7.995	-0.003
9		Barada	*Bahuinia purpurea*	1	0	0.000	-8.689	-0.001
10		Baila	*Lablab purpureus*	7	42	0.001	-6.743	-0.008
11		Baincha	*Symnosporia*	3	6	0.001	-7.590	-0.004
12		Baula	*Mimousops elengi*	1	0	0.000	-8.689	-0.001
13	(P.S)	Bela	*Aegle marmelos*	3	6	0.001	-7.590	-0.004
14	(P.S)	Bhallia	*Semecarpus*	44	1892	0.007	-4.904	-0.036
15		Bheru	*Chloroxylon*	1	0	0.000	-8.689	-0.001
16		Buduca	*Buduca spp*	1	0	0.000	-8.689	-0.001
17		Bura	*Bombax ceiba*	4	12	0.001	-7.302	-0.005
18		Cashew	*Anacardium*	5	20	0.001	-7.079	-0.006
19		Chunkoli	*Ziziphus funiculosa*	1	0	0.000	-8.689	-0.001
20		Char	*Buchanania lanzan*	62	3782	0.010	-4.561	-0.048
21	(P.S)	Dhaman	*Grewia tiliaefolia*	24	552	0.004	-5.511	-0.022
22	(P.S)	Dhau	*Anogeissus latifola*	38	1406	0.006	-5.051	-0.032
23		Dhobi	*D. Paniculata*	16	240	0.003	-5.916	-0.016
24		Dimiri	*Ficus racemosa*	1	0	0.000	-8.689	-0.001
25		Gambhari	*Gmelina arborea*	2	2	0.000	-7.995	-0.003
26		Gangasiuli	*Nyctanthes*	1	0	0.000	-8.689	-0.001
27		Gotha	*Z. xylopyrus*	2	2	0.000	-7.995	-0.003
28		Hadabhanga	*C. quadrangula*	1	0	0.000	-8.689	-0.001
29		Halanda	*Adina cordifolia*	41	1640	0.007	-4.975	-0.034
30	(P.S)	Harida	*Terminalia chebula*	20	380	0.003	-5.693	-0.019
31		Hinjala	*Barington ia*	8	56	0.001	-6.609	-0.009
32	(P.S)	Jammu	*Syzygium cumini*	84	6972	0.014	-4.258	-0.060
33		Japhara	*Japhara spp*	1	0	0.000	-8.689	-0.001
34		Kapasia	*Anthocephalus*	9	72	0.002	-6.491	-0.010
35		Karada	*Cleistanthus collinus*	123	15006	0.021	-3.876	-0.080
36		Karanja	*Pongamia pinnata*	2	2	0.000	-7.995	-0.003
37		Kasi	*Bridelia retusa*	42	1722	0.007	-4.951	-0.035
38		Kathapania	*Storbilnthes*	4	12	0.001	-7.302	-0.005
39		Katringa	*Katringa spp*	1	0	0.000	-8.689	-0.001
40		Kauchia	*D. sylvatica*	23	506	0.004	-5.553	-0.022
41		Kendu	*Diospyros*	70	4830	0.012	-4.440	-0.052

42		Khaira	*Acacia catechu*	1	0	0.000	-8.689	-0.001
43		Khakada	*Caeseria tomentosa*	14	182	0.002	-6.050	-0.014
44		Kodal	*Frimiana colorata*	4	12	0.001	-7.302	-0.005
45		Kumbhi	*Careya arborea*	29	812	0.005	-5.321	-0.026
46		Kusuma	*Scleichera oleosa*	59	3422	0.010	-4.611	-0.046
47		Lunuluni	*S. Nigrum*	10	90	0.002	-6.386	-0.011
48	(P.S)	Mahula	*Madhuca indica*	99	9702	0.017	-4.094	-0.068
49		Marua	*V. pannata*	1	0	0.000	-8.689	-0.001
50		Mai	*Lannea*	109	11772	0.018	-3.997	-0.073
51	(P.S)	Mango	*Emblica officinalis*	5	20	0.001	-7.079	-0.006
52		Masania	*Aporusa octndra*	2	2	0.000	-7.995	-0.003
53		Mankada	Diospyros	3	6	0.001	-7.590	-0.004
54		Mundi	*Mitragyna parvifolia*	21	420	0.004	-5.644	-0.020
55		Piasal	*Petrocarpus*	13	156	0.002	-6.124	-0.013
56		Pania	*Pania spp*	2	2	0.000	-7.995	-0.003
57		Pankabin	*Polyalthia cerasoides*	3	6	0.001	-7.590	-0.004
58		Patuli	*Harpulia arborea*	9	72	0.002	-6.491	-0.010
59		Pengu	*Pavetta crassicaulis*	1	0	0.000	-8.689	-0.001
60		Rai	*Dillenia pentagyna*	4	12	0.001	-7.302	-0.005
61		Ranabili	*Cipadessa bacciferra*	1	0	0.000	-8.689	-0.001
62		Sama	*Sama spp*	17	272	0.003	-5.855	-0.017
63		Sahaja	*Terminalia alata*	208	43056	0.035	-3.351	-0.117
64		Sal	*Shorea robusta*	1603	2568006	0.270	-1.309	-0.354
65	(P.S)	Salapa	*Caryota urens*	1	0	0.000	-8.689	-0.001
66	(P.S)	Sarupatri	*Albizia procera*	106	11130	0.018	-4.025	-0.072
67		Satawari	*Asparagus*	1	0	0.000	-8.689	-0.001
68		Sidha	*Lagerstroemia*	28	756	0.005	-5.356	-0.025
69		Sisoo	*D. latifolia*	5	20	0.001	-7.079	-0.006
70		Sirisa	*Albizia procera*	4	12	0.001	-7.302	-0.005
71		Sunari	*Cassia fistula*	6	30	0.001	-6.897	-0.007
72		Sundargundi	*G. xanthochymus*	50	2450	0.008	-4.777	-0.040
73		Teak	*Tectona grandis*	13	156	0.002	-6.124	-0.013
74		Tentuli	*Tamarindus indica*	9	72	0.002	-6.491	-0.010
			Total	3178	2694094			-0.057
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1)				Where				
= 4489364/ (5935*5934) = 0.127473				SUM n(n-1) = 4489364			N = 5935	
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-2.84) = 2.84								

BIO-DIVERSITY INDEX OF NTFP SPECIES (SHRUB) OF MUJAGADA RANGE, GHUMSUR NORTH FOREST DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1		Acchu	*Morinda pubescens*	16	240	0.008	-4.867	-0.037
2	(P.S)	Amla	*Emblica officinalis*	5	20	0.002	-6.030	-0.015
3		Baincha	*Symnosporia montana*	11	110	0.005	-5.241	-0.028
4		Bamboo	*Bambusa bambos*	2	2	0.001	-6.946	-0.007
5		Bamunia	*Bamunia spp.*	1	0	0.000	-7.639	-0.004
6		Bana Dhimiri	*Ficus racemosa*	1	0	0.000	-7.639	-0.004
7		Banamalati	*Aganosma caryophyllata*	1	0	0.000	-7.639	-0.004
8		Benia	*Casearia elliptica*	6	30	0.003	-5.847	-0.017

9		Bhadadia	*Olax scandens*	4	12	0.002	-6.253	-0.012
10		Bhurudukoli	*Gardenia gumiferra*	6	30	0.003	-5.847	-0.017
11		Cashewnut	*Anacardium occidentale*	3	6	0.001	-6.541	-0.009
12		Chhadeigudi	*Vitex penduncularis*	4	12	0.002	-6.253	-0.012
13		Char	*Buchanania lanzan*	3	6	0.001	-6.541	-0.009
14		Dantari	*A. pennata*	4	12	0.002	-6.253	-0.012
15		Gotha	*Z. xylopyrus*	3	6	0.001	-6.541	-0.009
16		Jhatia Kusuma	*Carthamus tinctorius*	1	0	0.000	-7.639	-0.004
17		Jhatika	*Clerodendrum indicum*	10	90	0.005	-5.337	-0.026
18	(P.S)	Kamala Gundi	*Mallotus philippenisis*	1	0	0.000	-7.639	-0.004
19		Kapasia	*Kydia calycina*	3	6	0.001	-6.541	-0.009
20	(P.S)	Karada	*Cleistanthus collinus*	34	1122	0.016	-4.113	-0.067
21		Kauchia	*D. sylvatica*	38	1406	0.018	-4.002	-0.073
22		Keruan	*Holarrhena pubesecns*	24	552	0.012	-4.461	-0.052
23	(P.S)	Kakhada	*Caeseria tomentosa*	57	3192	0.027	-3.596	-0.099
24		Kharakhari	*Elephantopus scaber*	1	0	0.000	-7.639	-0.004
25		Krushnaparni	*Desmodium heterocarpon*	1	0	0.000	-7.639	-0.004
26		Labanisar	*Labanisar spp*	1	0	0.000	-7.639	-0.004
27		Masania	*Aporusa octndra*	2	2	0.001	-6.946	-0.007
28		Mundi	*Mitragyna parvifolia*	4	12	0.002	-6.253	-0.012
29		Narangi	*Citrus aurantium*	1	0	0.000	-7.639	-0.004
30		Nunununi	*S. Nigrum*	4	12	0.002	-6.253	-0.012
31		Pahia	*Pahia spp*	1	0	0.000	-7.639	-0.004
32	(P.S)	Palasa	*Butea monosperma*	3	6	0.001	-6.541	-0.009
33		Palua	*C. angustifolia*	3	6	0.001	-6.541	-0.009
34		Pania	*Pania spp.*	1	0	0.000	-7.639	-0.004
35		Patua	*Patua spp*	2	2	0.001	-6.946	-0.007
36		Patuli	*Harpulia arborea*	3	6	0.001	-6.541	-0.009
37		Pengu	*Pavetta crassicaulis*	2	2	0.001	-6.946	-0.007
38		Ranabili	*Naringi crenulata*	6	30	0.003	-5.847	-0.017
39		Salia Baunsa	*Dendrocalamus strictus*	1	0	0.000	-7.639	-0.004
40	(P.S)	Salparni	*Desmodium tricuetrum*	1	0	0.000	-7.639	-0.004
41		Sinapanhara	*Thysanolaena maxima*	1	0	0.000	-7.639	-0.004
42		Sundargundi	*G. xanthochymus*	17	272	0.008	-4.806	-0.039
				293	7204			-0.690
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 426908/ (2078*2077) = 0.09891				Where				
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-2.79) = 2.79				SUM n(n-1) = 426908			N = 2078	

BIO-DIVERSITY INDEX OF NTFP SPECIES (HERB) OF MUJAGADA RANGE, GHUMSUR NORTH FOREST DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1		Bana Tulasi	*Hyptis suaveolens*	1	0	0.001	-7.600	-
2		Bana Piaja	*Urginea indica*	34	1122	0.017	-4.074	-
3		Bhuin Keruan	*Rauvolfia serpentina*	1	0	0.001	-7.600	-
4	(P.S)	Bhuineem	*Andrographis paniculata*	22	462	0.011	-4.509	-
5		Brahmanajhatia	*Clerodendrum indicum*	1	0	0.001	-7.600	-
6		Gai gohara	*Costus speciosus*	3	6	0.002	-6.502	-
7	(P.S)	Gandhan	*P. latifolia*	22	462	0.011	-4.509	-

8		Gangasiuli	*Nyctanthes arbortristis*	1	0	0.001	-7.600	-
9		Gotho	*Z. xylopyrus*	1	0	0.001	-7.600	-
1		Guluchi	*Chrysopogaon aciculatus*	1	0	0.001	-7.600	-
1	(P.S)	Indarjala	*Holarrhena malaccesis*	8	56	0.004	-5.521	-
1		Jhatika	*Pavonia repanda*	4	12	0.002	-6.214	-
1		Jhagudu	*Xanthium indicum*	1	0	0.001	-7.600	-
1		Kanda	*T.populnea*	1	0	0.001	-7.600	-
1		Kara	*Strychnos nux-vomica*	2	2	0.001	-6.907	-
1		Kaitha	*Feronia limonia*	1	0	0.001	-7.600	-
1		Kapasia	*Kydia calycina*	4	12	0.002	-6.214	-
1		Keruan	*Holarrhena pubesecns*	27	702	0.014	-4.305	-
1		Kharakhari	*Elephantopus scaber*	1	0	0.001	-7.600	-
2		Kolathia	*Tephrosia villosa*	3	6	0.002	-6.502	-
2		Krushnaparni	*Desmodium heterocarpon*	1	0	0.001	-7.600	-
2		Lajakuli	*Mimosa pudica*	1	0	0.001	-7.600	-
2		Lunagundi	*T. tenuissima*	1	0	0.001	-7.600	-
2	(P.S)	Madarnga	*Alternanthera sessilisa*	38	1406	0.019	-3.963	-
2		Mathaguali	*Polygonum plebeium*	4	12	0.002	-6.214	-
2	(P.S)	Mayurchulia	*Elephantopus scaber*	22	462	0.011	-4.509	-
2		Modimodica	*Helicteres isora*	6	30	0.003	-5.809	-
2		Nagairi	*Lantana camara*	2	2	0.001	-6.907	-
2		Nirgundi	*Vitex negundo*	1	0	0.001	-7.600	-
3		Patua	*Patua spp*	3	6	0.002	-6.502	-
3		Pengu	*Abutilon indicum*	5	20	0.003	-5.991	-
3		Pichhuli	*Dianthus chinensis*	2	2	0.001	-6.907	-
3		Pitakalichia	*Diospyros sylvataca*	2	2	0.001	-6.907	-
3		Pokasunga	*Eupatorum odoratum*	31	930	0.016	-4.166	-
3		Sala Parni	*Desmodium tricuetrum*	16	240	0.008	-4.828	-
3		Siju	*Euphorbia antiquorum*	1	0	0.001	-7.600	-
3		Sugandhi	*Hemidesmus indicus*	69	4692	0.035	-3.366	-
3		Talamuli	*Curculingo orchioides*	27	702	0.014	-4.305	-
3		Tela keruna	*Holarrhena pubesecns*	7	42	0.004	-5.654	-
4		Totamula	*Elephantopus scaber*	17	272	0.009	-4.767	-
			Total	395	11662			-
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 240078/ (1999*1998) = 0.0601				Where				
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-3.19) = 3.19				SUM n(n-1) = 240078			N = 1999	

BIO-DIVERSITY INDEX OF NTFP SPECIES (CLIMBER) OF MUJAGADA RANGE, GHUMSUR NORTH FOREST DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1		Attundi	*Combretum decandrum*	2	2	0.001	-6.526	-
2		Bichhuati	*Tragia involucratae*	3	6	0.002	-6.121	-
3		Asadhua	*Capparis zyylanica*	1	0	0.001	-7.220	-
4		Bhadadia	*Olax scandens*	5	20	0.004	-5.610	-
5		Bana Tarada	*Ventilago madraspatana*	1	0	0.001	-7.220	-
6		Banamalati	*Hiptage modablota*	1	0	0.001	-7.220	-
7		Bodaka	*Galactica tenuiflori*	1	0	0.001	-7.220	-
8		Boti	*Vigna umbellata*	5	20	0.004	-5.610	-

9		Bisalyakarani	*Tridax procumbens*	1	0	0.001	-7.220	-
1		Cherenga	*Swertia cihrayita*	2	2	0.001	-6.526	-
1		Dantari	*Accacia pinata*	4	12	0.003	-5.833	-
1	(P.S)	Debiria	*Heteropogun contortus*	16	240	0.012	-4.447	-
1		Dudhi Lai	*Ichnocarpus frutescens*	2	2	0.001	-6.526	-
1	(P.S)	Ekala	*Crossandra infundibuliformis*	33	1056	0.024	-3.723	-
1		Guluchi	*Tinospera cordifolia*	1	0	0.001	-7.220	-
1		Giridi	*C.graveolens*	1	0	0.001	-7.220	-
1		Hanumantia	*Entada rheedii*	12	132	0.009	-4.735	-
1		Kanteikoli	*Ziziphus oenoplia*	1	0	0.001	-7.220	-
1		Kaincha	*Abrus precatorius*	1	0	0.001	-7.220	-
2		Kaputi	*Kaputi spp*	2	2	0.001	-6.526	-
2	(P.S)	Khelua Lai	*Ichnocarpus frutescens*	99	9702	0.072	-2.625	-
2		Khukundi	*Calycopteris floribunda*	108	11556	0.079	-2.538	-
2		Kohala	*P.zeylanica*	2	2	0.001	-6.526	-
2		Kolathia	*T.purpurea*	8	56	0.006	-5.140	-
2		Madhabi Lai	*Hiptage benghalensis*	5	20	0.004	-5.610	-
2		Marada	*Bridelia montana*	14	182	0.010	-4.581	-
2		Mudumudia	*Chlorophytum arundinaceum*	4	12	0.003	-5.833	-
2		Muturi	*Smilax macrophylla*	27	702	0.020	-3.924	-
2		Nirmuli	*Cassytha filiphamis*	3	6	0.002	-6.121	-
3		Palas Lai	*Butea superba*	2	2	0.001	-6.526	-
3		Pani Nahi	*L.eriocarpa*	1	0	0.001	-7.220	-
3		Pichhuli	*V. madraspatna*	38	1406	0.028	-3.582	-
3		Pasaruni	*Paederica foetida*	1	0	0.001	-7.220	-
3		Satabari	*Asparagus racemosus*	31	930	0.023	-3.786	-
			Total	438	26070			-
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 236876/ (1366*1365) = 0.127				Where				
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-2.72) = 2.72				SUM n(n-1) =236876			N = 1366	

BIO-DIVERSITY INDEX OF NTFP SPECIES (TREE) OFGALLERY RANGE,GHUMUSUR NORTH DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1		Asan	*Terminalia alata*	12	132	0.005	-5.344	-
2		Acacia	*Acacia longifolia*	8	56	0.003	-5.750	-
3		Achu	*Morinda tinctoria*	40	1560	0.016	-4.140	-
4	(P.S)	Amla	*Emblica officinalis*	30	870	0.012	-4.428	-
5		Ankula	*Alangium salvifolium*	6	30	0.002	-6.037	-
6	(P.S)	Arjuna	*Terminalia arjuna*	10	90	0.004	-5.527	-
7		Bahada	*Terminalia bellirica*	20	380	0.008	-4.834	-
8		Bara	*Ficus benghalensis*	6	30	0.002	-6.037	-
9		Barada	*Bauhinia purpurea*	3	6	0.001	-6.731	-
1		Baula	*Mimusops elengi*	25	600	0.010	-4.610	-
1	(P.S)	Bela	*Aegle marmelos*	30	870	0.012	-4.428	-
1	(P.S)	Bhalia	*Anacardium occidentale*	14	182	0.006	-5.190	-
1		Bheru	*Chloroxylon swietiana*	15	210	0.006	-5.121	-
1		Chara	*Buchanania lanzan*	158	24806	0.063	-2.767	-
1		Dhamana	*Grewia tiliifolia*	44	1892	0.018	-4.045	-

1		Dhau	*Anogeissus latifolia*	50	2450	0.020	-3.917	-
1		Dhobi	*Dalbergia paniculata*	15	210	0.006	-5.121	-
1		Dimiri	*Ficus bracemosa*	13	156	0.005	-5.264	-
1		Fasi	*Anogeissus acuminata*	20	380	0.008	-4.834	-
2		Halanda	*Adina cardifolia*	42	1722	0.017	-4.092	-
2	(P.S)	Harida	*Terminalia chebula*	6	30	0.002	-6.037	-
2	(P.S)	Jamu	*Syzigium cuminii*	45	1980	0.018	-4.023	-
2		Karada	*Cleistanthus collinus*	125	15500	0.050	-3.001	-
2		Kasi	*Bridelia retusa*	35	1190	0.014	-4.274	-
2		Kataka	*Strychnos potatorum*	14	182	0.006	-5.190	-
2		Kaluchia	*Diospyros sylvatica*	21	420	0.008	-4.785	-
2		Kendu	*Diospyros melanoxylon*	77	5852	0.031	-3.485	-
2		Kumbhi	*Careya arborea*	9	72	0.004	-5.632	-
2		Kusuma	*Schleichera oleosa*	44	1892	0.018	-4.045	-
3	(P.S)	Mahula	*Madhuca indica*	79	6162	0.031	-3.460	-
3	(P.S)	Mango	*Mangifera indica*	6	30	0.002	-6.037	-
3		Mohi	*Lannea coromandlica*	94	8742	0.037	-3.286	-
3		Munaimundi	*Mitragyna parvifolia*	5	20	0.002	-6.220	-
3		P.Sal	*Pterocarpus marsupium*	3	6	0.001	-6.731	-
3		Patuli	*Harpullia arborea*	15	210	0.006	-5.121	-
3		Rai	*Dillenia pentagyna*	24	552	0.010	-4.651	-
3		Rohini	*Soymida febrifuga*	2	2	0.001	-7.136	-
3		Sahaja	*Terminalia tomentosa*	159	25122	0.063	-2.760	-
3	(P.S)	Sal	*Shorea robusta*	917	839972	0.365	-1.008	-
4		Salapa	*Caryota urens*	14	182	0.006	-5.190	-
4		Sarupatari	*Garuga pinnata*	69	4692	0.027	-3.595	-
4		Sidha	*Lagerstroemia parviflora*	40	1560	0.016	-4.140	-
4		Sirisa	*Albizzia lebbeck*	20	380	0.008	-4.834	-
4		Sisoo	*Dalbergia latifolia*	10	90	0.004	-5.527	-
4		Sunari	*Cassia fistula*	6	30	0.002	-6.037	-
4		Sahaja	*Terminalia tomentosa*	25	600	0.010	-4.610	-
4		Sindurgundi	*Scaseolaris*	19	342	0.008	-4.885	-
4		Teak	*Tectona grandis*	35	1190	0.014	-4.274	-
4	(P.S)	Tentela	*Albizzia odoratissima*	22	462	0.009	-4.738	-
5		Usta	*Ficus religiosa*	12	132	0.005	-5.344	-
			Total	2513	954228			-
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 954228/ (2513*2512) = 0.15116				Where		N = 2513		
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-2.83) = 2.83				SUM n(n-1) = 4489364			954228	

BIO-DIVERSITY INDEX OF NTFP SPECIES (SHRUB) OF GALLERY RANGE,GHUMUSUR NORTH DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1		Arakha	*Calotropis gigantia*	54	2862	0.066	-2.712	-
2		Banaharada	*Atylosia cajanifolia*	8	56	0.010	-4.621	-
3		Baunsa	*Dendrocalamus strictus*	16	240	0.020	-3.928	-
4	(P.S)	Baincha	*Flacourtia jangomas*	6	30	0.007	-4.909	-
5		Begunia	*Vitex negundo*	15	210	0.018	-3.993	-
6		Bichhuati	*Tragia involucratae*	172	29412	0.212	-1.553	-

7	(P.S)	Dankari	*Chlerodendron phlomidis*	83	6806	0.102	-2.282	-
8	(P.S)	Dhataki	*Woodfordia fruticosa*	128	16256	0.157	-1.849	-
9		Kakhada	*Caeseria tomentosa*	91	8190	0.112	-2.190	-
10	(P.S)	Keruanha	*Hqlarrhena pubescens*	80	6320	0.098	-2.319	-
11		Khukundi	*Calycopteris floribunda*	20	380	0.025	-3.705	-
12		Kurei	*Hollarrhena antidysentrica*	11	110	0.014	-4.303	-
13	(P.S)	Lajakoli	*Mimosa pudica*	13	156	0.016	-4.136	-
14		Masania	*Litsaea chinensis*	10	90	0.012	-4.398	-
15		Nunununia	*Antidesma acidum*	12	132	0.015	-4.216	-
16		Pokasunga	*Vernonia cinerea*	30	870	0.037	-3.300	-
17		Pita kaulacha	*Glochidion zeylanicum*	15	210	0.018	-3.993	-
18		Pengu	*Celastrus paniculatus*	12	132	0.015	-4.216	-
19		Pichuli	*Ventilago denticulata*	5	20	0.006	-5.091	-
20		Rambeli	*Cipadessa bacciferra*	16	240	0.020	-3.928	-
21	(P.S)	Rasi	*Sesamum indicum*	5	20	0.006	-5.091	-
22		jhatti	*Clerodedendrum indicum*	11	110	0.014	-4.303	-
				813	72852			-
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1)				Where			N = 813	
SHANNON INDEX (H') = -SUM (P*lnP)				SUM n(n-1) = 426908			72852	

BIO-DIVERSITY INDEX OF NTFP SPECIES (HERB) OF GALLERY RANGE,GHUMUSUR NORTH DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1		Apamaranga	*Achyyranthes aspera*	54	2862	0.129	-2.049	-0.264
2		Bajramuli	*Sida acuta*	41	1640	0.098	-2.324	-0.227
3		Balunga	*Oryza rufipogan*	15	210	0.036	-3.330	-0.119
4	(P.S)	BhuiKhajuri	*Phoenix acaulis*	60	3540	0.143	-1.944	-0.278
5	(P.S)	*Bhuineem*	*Andrographis*	42	1722	0.100	-2.300	-0.231
6		Bidanga	*Emblica robusta*	10	90	0.024	-3.735	-0.089
7		Bisalyakarani	*Tridax procumbens*	21	420	0.050	-2.993	-0.150
8		Hemakakari	*Bryophyllum pinatum*	25	600	0.060	-2.819	-0.168
9		Khirakoli	*Carissa spinarum*	16	240	0.038	-3.265	-0.125
1		Kolathia	*Tephrosia villosa*	58	3306	0.138	-1.977	-0.274
1	(P.S)	Kapasia	*Kydia calycina*	40	1560	0.095	-2.349	-0.224
1		Muthughas	*Polygonum plebeium*	20	380	0.048	-3.042	-0.145
1		Thotudi	*Firmiana indica*	12	132	0.029	-3.553	-0.102
1		Tanga Ghas	*Saccharum spontaneum*	5	20	0.012	-4.428	-0.053
			Total	419	16722			-2.449
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 16722/ (419*418) = 0.09547				Where			N = 419	
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-2.44) = 2.44				SUM n(n-1) = 240078			16722	

BIO-DIVERSITY INDEX OF NTFP SPECIES (CLIMBER) OF GALLERY RANGE,GHUMUSUR NORTH DIVISION								
Sl. No.	Prioritized Species (P.S)	Local Name	Botanical Name	Total No. of Trees in Sample Plot (n)	n(n-1)	P=(n/N)	lnP	P*lnP
1		Atundi	*Combretum decandrum*	84	6972	0.135	-2.005	-0.270
2		Aparajiata	*Clitoria ternatea*	11	110	0.018	-4.038	-0.071
3		Asadhua	*Capparis zyylanica*	2	2	0.003	-5.743	-0.018
4		Baduli Lai	*Pentapetes phoenicea*	16	240	0.026	-3.664	-0.094
5		BanaKolatha	*Galactica tenuiflori*	2	2	0.003	-5.743	-0.018
6		Bichhuati	*Tragia involucratae*	28	756	0.045	-3.104	-0.139
7		Dadhia Lai	*Ichnocarpus frutescens*	1	0	0.002	-6.436	-0.010
8	(P.S)	Dantari	*Accacia pinata*	53	2756	0.085	-2.466	-0.209
9		Gila	*Caesalpinea bonduc*	38	1406	0.061	-2.799	-0.170
1		Kanteikoli	*Ziziphus oenoplia*	24	552	0.038	-3.258	-0.125
1		Malati	*Agonosma caryophyllata*	2	2	0.003	-5.743	-0.018
1		Muturi	*Smilax macrophylla*	53	2756	0.085	-2.466	-0.209
1		Nirmuli	*Cassytha filiphamis*	2	2	0.003	-5.743	-0.018
1	(P.S)	Satabari	*Asparagus racemosus*	82	6642	0.131	-2.029	-0.267
1		Siali	*Bauhinia vahillii*	64	4032	0.103	-2.277	-0.234
1	(P.S)	Sugandhi	*Hemidesmus indicus*	140	19460	0.224	-1.495	-0.335
1		Takua	*Schefflera venuosa*	22	462	0.035	-3.345	-0.118
			Total	624	46152			-2.326
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 46152/ (624*623) = 0.1187				Where		N = 624		
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-2.32) = 2.32				SUM n(n-1) =236876		46152		

BIO-DIVERSITY INDEX OF NTFP SPECIES (TREE) OF TARASINGI RANGE, GHUMUSUR NORTH DIVISION								
Sl. No.	Prioritized Species (P.S)	Local Name	Botanical Name	Total No. of Trees in Sample Plot (n)	n(n-1)	P=(n/N)	lnP	P*lnP
1		Aachu	*Morinda pubescens*	1	0	0.001	-6.522	-0.010
2	(P.S)	Amba	*Mangifera idica*	4	12	0.006	-5.136	-0.030
3		Arjun	*Terminalia belerica*	2	2	0.003	-5.829	-0.017
4		Asana	*Terminalia alata*	8	56	0.012	-4.443	-0.052
5		Baila	*Lablab Purpureus*	4	12	0.006	-5.136	-0.030
6		Behata	*Aegle marmelos*	1	0	0.001	-6.522	-0.010
7		Bela	*Vitex peduncularis*	9	72	0.013	-4.325	-0.057
8		Chadheigudi	*Buchanania lanzan*	1	0	0.001	-6.522	-0.010
9	(P.S)	Chara	*Buchanania lanzan*	34	1122	0.050	-2.996	-0.150
1		D.Mohi	*Lennia spp.*	9	72	0.013	-4.325	-0.057
1		Dhaman	*Grewia tiliaefolia*	3	6	0.004	-5.423	-0.024
1		Dhau	*Anogeissus latifola*	6	30	0.009	-4.730	-0.042
1		Dhobi	*Dalbergia paniculata*	6	30	0.009	-4.730	-0.042
1	(P.S)	Dhou	*Anogeissus latifola*	6	30	0.009	-4.730	-0.042
1		Fasi	*Anogeissus acuminata*	2	2	0.003	-5.829	-0.017
1		Gambhari	*Gmelina arborea*	3	6	0.004	-5.423	-0.024
1		Giringa	*Pterospermum*	1	0	0.001	-6.522	-0.010
1		Gundi	*Melotos phillipinensis*	6	30	0.009	-4.730	-0.042
1	(P.S)	Halanda	*Adina cordifolia*	28	756	0.041	-3.190	-0.131

2		Hinjala	*Barringgtonia*	10	90	0.015	-4.220	-0.062
2		Jama	*Syzygium cumini*	24	552	0.035	-3.344	-0.118
2		K.Gundi	*Mallotus philippinensis*	1	0	0.001	-6.522	-0.010
2		Kalchua	*Glochidiion zeylanicum*	1	0	0.001	-6.522	-0.010
2	(P.S)	Karada	*Cleistanthus colliuns*	32	992	0.047	-3.056	-0.144
2	(P.S)	Karanja	*Pongamia pinnata*	1	0	0.001	-6.522	-0.010
2		Kasi	*Bridelia Retusa*	11	110	0.016	-4.124	-0.067
2		Kauchia	*Kauchia spp.*	2	2	0.003	-5.829	-0.017
2		Kendu	*Diospyros melonxylon*	25	600	0.037	-3.303	-0.121
2		Khaira	*Acacia catechu*	3	6	0.004	-5.423	-0.024
3		Kumbhi	*Careya arborea*	1	0	0.001	-6.522	-0.010
3		Kusum	*Scleichera oleosa*	15	210	0.022	-3.814	-0.084
3		Luniluni	*Luniluni spp.*	1	0	0.001	-6.522	-0.010
3		Mundumundi	*Mitragyna parvifolia*	4	12	0.006	-5.136	-0.030
3	(P.S)	Mahula	*Madhuca indica*	39	1482	0.057	-2.859	-0.164
3		Mohi	*Lannea coromandelica*	5	20	0.007	-4.913	-0.036
3		Neem	*Azadirachta indica*	1	0	0.001	-6.522	-0.010
3	(P.S)	P.Sal	*Pterocarpus marsupium*	5	20	0.007	-4.913	-0.036
3	(P.S)	Patuli	*Lagirstomia pravifora*	15	210	0.022	-3.814	-0.084
3		Rai	*Dilllenia Pentagyna*	12	132	0.018	-4.037	-0.071
4		S.Gundi	*Melotos phillipinensis*	8	56	0.012	-4.443	-0.052
4		S.Mohi	*Lannea coromandelica*	21	420	0.031	-3.478	-0.107
4		S.Mundi	*Melotos phillipinensis*	3	6	0.004	-5.423	-0.024
4	(P.S)	Sahaj	*Terminalia tememtosa*	46	2070	0.068	-2.693	-0.182
4	(P.S)	Sal	*Shorea robusta*	198	39006	0.291	-1.234	-0.359
4		Sam	*Soyamiga febriga*	1	0	0.001	-6.522	-0.010
4		Sirisa	*Albizzia procera*	7	42	0.010	-4.576	-0.047
4		Sisoo	*Dalbergia sisoo*	1	0	0.001	-6.522	-0.010
4		Sunari	*Cassia fistula*	14	182	0.021	-3.883	-0.080
4	(P.S)	Teak	*Tectona grandis*	22	462	0.032	-3.431	-0.111
5		Tentala	*Tamarindus indica*	10	90	0.015	-4.220	-0.062
5		Veru	*Chloroxylon swietenia*	7	42	0.010	-4.576	-0.047
			Total	680	49052			-3.004
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-2.84) = 2.84				Where		N = 5935		
				SUM n(n-1) = 4489364				

BIO-DIVERSITY INDEX OF NTFP SPECIES (SHURB) OF TARASINGI RANGE, GHUMUSUR NORTH DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1		Aakala	*Ekala spp.*	2	2	0.003	-5.934	-0.016
2		Aatmdi	*Combretum decandrum*	2	2	0.003	-5.934	-0.016
3		Akanabindhi	*Cissampelos pareira*	4	12	0.005	-5.240	-0.028
4	(P.S)	Amla	*Emlica officinalis*	1	0	0.001	-6.627	-0.009
5		Ankula	*Alangium salvifolium*	1	0	0.001	-6.627	-0.009
6	(P.S)	Aruguna	*Cicas circinalis*	62	3782	0.082	-2.500	-0.205
7		Baila	*Lablab Purpureus*	6	30	0.008	-4.835	-0.038
8	(P.S)	Bamboo	*Dendrocalamus spp.*	17	272	0.023	-3.794	-0.085
9		Ban Koli	*Ziziphus nummularia*	1	0	0.001	-6.627	-0.009
10		Bana Kadali	*Musa supraba*	2	2	0.003	-5.934	-0.016
11		Bana Piaja	*Allium sativum*	1	0	0.001	-6.627	-0.009
12		Barkoli	*Ziziphus moritiana*	4	12	0.005	-5.240	-0.028
13		Bella	*Aaegle marmelos*	1	0	0.001	-6.627	-0.009
14		Bena	*Bothriochola bladhii*	27	702	0.036	-3.331	-0.119
15		Bhehenta	*Aegle marmelos*	1	0	0.001	-6.627	-0.009
16		Bhuin Kernuha	*Ipomea maritiana*	1	0	0.001	-6.627	-0.009
17	(P.S)	Bhumi Nimba	*Andrograph is paniculata*	54	2862	0.072	-2.638	-0.189
18	(P.S)	Brahmi	*Thamlus Bacopa*	1	0	0.001	-6.627	-0.009
19		Brahnanjhatia	*Brahnanjhatia spp.*	1	0	0.001	-6.627	-0.009
20		Braja Mali	*Melingtonia spp.*	26	650	0.034	-3.369	-0.116
21		Channa	*Imperata arundinacea*	14	182	0.019	-3.988	-0.074
22	(P.S)	Danturi	*Acacia pinnata*	8	56	0.011	-4.547	-0.048
23		Dhatki	*Woodfordia fruticosa*	1	0	0.001	-6.627	-0.009
24		Dhatura	*Datura stramomium*	1	0	0.001	-6.627	-0.009
25		Dolasingha	*Canthiumdicoccum*	1	0	0.001	-6.627	-0.009
26		Gila	*Caesalpina sepiara*	10	90	0.013	-4.324	-0.057
27	(P.S)	Haumaricha	*Suaeda maritima*	15	210	0.020	-3.919	-0.078
28		Indrajall	*Holarrhena malaccesis*	3	6	0.004	-5.528	-0.022
29		Jhatiki	*Jhataki Species*	2	2	0.003	-5.934	-0.016
30	(P.S)	K.Kerhuan	*Holarrhena antidysentric spp.*	18	306	0.024	-3.736	-0.089
31		Kaincha	*Abrus precatorius*	1	0	0.001	-6.627	-0.009
32		Kaitha (Wood apple)	*Limonia Acidissima*	1	0	0.001	-6.627	-0.009
33		Kalchua	*Glochidiion zeylanicum*	1	0	0.001	-6.627	-0.009
34		Kanteikoli	*Firmiana indica / ziziphus oenoplia*	4	12	0.005	-5.240	-0.028

35		Karada	*Cleistanthus colliuns*	9	72	0.012	-4.429	-0.053
36		Kauchia	*kalachia spp*	1	0	0.001	-6.627	-0.009
37		Kendu	*Diospyros melonxylon*	1	0	0.001	-6.627	-0.009
38		Kerhuan	*Holarrhena antidysentric*	25	600	0.033	-3.408	-0.113
39	(P.S)	Khajuri	*Phoenix sylvestris*	17	272	0.023	-3.794	-0.085
40		Khakada	*Casearia elliptica*	6	30	0.008	-4.835	-0.038
41		Khukundi	*Khukundia spp.*	11	110	0.015	-4.229	-0.062
42	(P.S)	KilaKerhuan	*Kelakernhu spp.*	13	156	0.017	-4.062	-0.070
43		Krushnaparni	*Desmondium gangeticum*	6	30	0.008	-4.835	-0.038
44		Kuji Karada	*Cleistanthus collinus*	1	0	0.001	-6.627	-0.009
45		Kunbhi	*Caria arrbroia*	1	0	0.001	-6.627	-0.009
46		Kurei	*Holorrhina antidysetrica*	1	0	0.001	-6.627	-0.009
47		Marada	*Milletia auriculata*	3	6	0.004	-5.528	-0.022
48		Masania	*Aporusa octandra*	2	2	0.003	-5.934	-0.016
49		Mayurachulia	*Elephantopus scaber*	1	0	0.001	-6.627	-0.009
50		Mitika	*Mitika spp.*	2	2	0.003	-5.934	-0.016
51		Mundamundali	*Helecteres isora*	1	0	0.001	-6.627	-0.009
52		Mundumundi	*Mitragaina praviflora*	3	6	0.004	-5.528	-0.022
53		Muturi	*Smilax macrophylla*	9	72	0.012	-4.429	-0.053
54		Palasa	*Butea monosperma*	3	6	0.004	-5.528	-0.022
55		Panaairi	*Ichnocarpus frutiscens*	7	42	0.009	-4.681	-0.043
56		Panturi	*Lagerstroemia reginae*	1	0	0.001	-6.627	-0.009
57	(P.S)	Patal Goruda	*Rawulifa sarpentina*	12	132	0.016	-4.142	-0.066
58		Patua	*Catunaregam*	2	2	0.003	-5.934	-0.016
59		Phenphena	*Oroxylum indicum*	5	20	0.007	-5.017	-0.033
60		Pita Kerhuan	*Hiptage antidysenterica auct*	1	0	0.001	-6.627	-0.009
61		Pokasunga	*Ageratum conyzoides*	91	8190	0.121	-2.116	-0.255
62		Ranabili spp.	*Naringi Crenulata*	25	600	0.033	-3.408	-0.113
63		S.Mohi	*Lannea coromandelica*	1	0	0.001	-6.627	-0.009
64		Sahaja	*Terminalia tememtosa*	3	6	0.004	-5.528	-0.022
65		Sal	*Shorea robusta*	4	12	0.005	-5.240	-0.028
66		Salaparni	*Desmondium gangeticum*	1	0	0.001	-6.627	-0.009
67		Salpani	*Desmondium gangeticum*	20	380	0.026	-3.631	-0.096
68	(P.S)	Satabari	*Aparagus racemosus*	88	7656	0.117	-2.149	-0.251
69	(P.S)	Siali	*Boswellia serrata*	1	0	0.001	-6.627	-0.009
70		Sialilai	*Bauhinia vahlii*	1	0	0.001	-6.627	-0.009
71		Sugandhi	*Hemiduscus spp.*	69	4692	0.091	-2.393	-0.219
72		Tihudi	*Operculina turpethum*	1	0	0.001	-6.627	-0.009

73		Tota Chera	*Elephantopus scaber*	10	90	0.013	-4.324	-0.057
74		Thalakudi	*Centella asiatica*	1	0	0.001	-6.627	-0.009
			Total	755				-3.339
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 4489364/ (5935*5934) = 0.127473				Where		N = 2078		
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-2.79) = 2.79				SUM n(n-1) = 426908				

BIO-DIVERSITY INDEX OF NTFP SPECIES (HERB) OF TARASINGI RANGE, GHUMUSUR NORTH DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1		Akanabindhi	*Cissampelos pareira*	1	0	0.001	-6.560	-0.009
2		Amba	*Mangifera indica*	1	0	0.001	-6.560	-0.009
3		Ambada	*Spondias pinnata*	2	2	0.003	-5.866	-0.017
4		Amla	*Emblica officinalis*	35	1190	0.050	-3.004	-0.149
5		Ankula	*Alagjium salvifolium*	1	0	0.001	-6.560	-0.009
6	(P.S)	Araguna	*Cicas circinalis*	8	56	0.011	-4.480	-0.051
7		Arjuna	*Terminalia arjuna*	1	0	0.001	-6.560	-0.009
8	(P.S)	Asana	*Terminalia tomentosa*	1	0	0.001	-6.560	-0.009
9		Bahada	*Terminalia alata*	1	0	0.001	-6.560	-0.009
1		Baila	*Lablab Purpureus*	19	342	0.027	-3.615	-0.097
1		Bamboo	*Dendrocalamus strictus*	26	650	0.037	-3.302	-0.122
1		Bana piaja	*Allium sativum*	1	0	0.001	-6.560	-0.009
1		Banakadali	*Musa supraba*	1	0	0.001	-6.560	-0.009
1		Banasorisa	*Cleom viscosa*	1	0	0.001	-6.560	-0.009
1		Bania	*Bothriochola bladhii*	1	0	0.001	-6.560	-0.009
1		Barakoli	*Zyziphus jujuba*	3	6	0.004	-5.461	-0.023
1		Barbakalia (Dhobi)	*Dalbergia paniculata*	1	0	0.001	-6.560	-0.009
1	(P.S)	Bella	*Aaegle marmelos*	14	182	0.020	-3.921	-0.078
1		Bhalia	*Semicarpus annacidium*	1	0	0.001	-6.560	-0.009
2		Bhumi Kerhuan	*Rauvolfia serpentina*	1	0	0.001	-6.560	-0.009
2		Bhumi Nimba	*Androghaphis*	6	30	0.008	-4.768	-0.041
2		Brahami	*Thamlus Bacopa*	1	0	0.001	-6.560	-0.009
2		Braja Malli	*Melingtonia spp.*	1	0	0.001	-6.560	-0.009
2		Channa	*Imperata arundinacea*	1	0	0.001	-6.560	-0.009
2	(P.S)	Chara	*Buchania lanzan*	60	3540	0.085	-2.465	-0.210
2		D.Mohi	*Lennia spp.*	11	110	0.016	-4.162	-0.065
2		Danturi	*Acacia pinnata*	1	0	0.001	-6.560	-0.009
2		Dhaman	*Grewia tiliaefolia*	9	72	0.013	-4.362	-0.056
2	(P.S)	Dhau	*Annogeissuss latifolia*	15	210	0.021	-3.852	-0.082
3		Dhobi	*Dalbergia paniculata*	2	2	0.003	-5.866	-0.017
3		Fasi	*Anogeissus accuminata*	1	0	0.001	-6.560	-0.009
3		Gambhari	*Gmelina arborea*	5	20	0.007	-4.950	-0.035
3		Gotaa	*Ziayphus glabrema*	1	0	0.001	-6.560	-0.009
3		Gundi	*Suaeda maritima*	4	12	0.006	-5.173	-0.029
3		Halanda	*Haldinia cordifolio*	11	110	0.016	-4.162	-0.065
3	(P.S)	Harida	*Terminilia chebula*	17	272	0.024	-3.726	-0.090
3		Haumaricha	*Suaeda maritima*	1	0	0.001	-6.560	-0.009
3		Hentala	*Phoenix paluodasa*	1	0	0.001	-6.560	-0.009
3		Hinjala	*Barringgtonia*	6	30	0.008	-4.768	-0.041

4		Jahtika	*jajhatika spp*	1	0	0.001	-6.560	-0.009
4		Jamu	*Syzygium cumini*	12	132	0.017	-4.075	-0.069
4		Jhati	*jhatin spp*	2	2	0.003	-5.866	-0.017
4		Jhatika	*Clerodenrum indicum*	2	2	0.003	-5.866	-0.017
4	(P.S)	K.Keruan	*Holarrhena*	5	20	0.007	-4.950	-0.035
4		Kachila	*Kachila spp.*	1	0	0.001	-6.560	-0.009
4		Kaitha	*Wood apple spp.*	2	2	0.003	-5.866	-0.017
4		Kalchua	*Glochidion*	2	2	0.003	-5.866	-0.017
4	(P.S)	Kanteikoli	*Firmiana indica /*	1	0	0.001	-6.560	-0.009
4		Karada	*Cleistanthus colliuns*	22	462	0.031	-3.469	-0.108
5		Karanja	*Pongamia pinnata*	2	2	0.003	-5.866	-0.017
5		Kasi	*Bridelia retusa*	5	20	0.007	-4.950	-0.035
5		Kauchia	*kalachia spp*	5	20	0.007	-4.950	-0.035
5		Kerunha	*Holarrhena*	4	12	0.006	-5.173	-0.029
5		Khajuri	*Phoenix sylvestris*	6	30	0.008	-4.768	-0.041
5		Khakeda	*Casearia elliptica*	6	30	0.008	-4.768	-0.041
5		Kilakeruan	*Kelakernhu spp.*	1	0	0.001	-6.560	-0.009
5		Krushnaparni	*Desmondium*	3	6	0.004	-5.461	-0.023
5		Kumbhi	*Careya arborea*	3	6	0.004	-5.461	-0.023
5		Kusum	*Schleichera olesa*	29	812	0.041	-3.192	-0.131
6	(P.S)	Mahula	*Madhuca indica*	57	3192	0.081	-2.517	-0.203
6		Masania	*Aporusa octandra*	1	0	0.001	-6.560	-0.009
6		Mayurachulia	*Elephantopus scaber*	1	0	0.001	-6.560	-0.009
6		Mohi	*Lannea coromandelica*	4	12	0.006	-5.173	-0.029
6		Muchukunda	*Muchukunda spp.*	2	2	0.003	-5.866	-0.017
6		Neem	*Azadirctha indica*	1	0	0.001	-6.560	-0.009
6		P.Sal	*Ptercarpus marsupium*	2	2	0.003	-5.866	-0.017
6		Panaaire	*Ichnocarpus frutiscens*	1	0	0.001	-6.560	-0.009
6		Patali	*Barieria cristata*	2	2	0.003	-5.866	-0.017
6		Patua	*Catunaregam*	3	6	0.004	-5.461	-0.023
7		Patuli	*Harapullia arborea*	18	306	0.025	-3.669	-0.094
7	(P.S)	Pokasunga	*Ageratum conyzoides*	4	12	0.006	-5.173	-0.029
7		Rai	*Dilllenia Pentagyna*	10	90	0.014	-4.257	-0.060
7		Ranabili	*Naringi Crenulata*	3	6	0.004	-5.461	-0.023
7		S.Gundi	*S.Gundi spp.*	8	56	0.011	-4.480	-0.051
7		S.Mohi	*Lannea coromandelica*	10	90	0.014	-4.257	-0.060
7		Sahada	*Strebulus asper*	2	2	0.003	-5.866	-0.017
7	(P.S)	Sahaja	*Terminalia tememtosa*	38	1406	0.054	-2.922	-0.157
7		Sal	*Shorea robusta*	92	8372	0.130	-2.038	-0.266
7	(P.S)	Salparni	*Desmondium*	9	72	0.013	-4.362	-0.056
8	(P.S)	Satabari	*Aparagus racemosus*	19	342	0.027	-3.615	-0.097
8		Sidha	*Largerstromia*	1	0	0.001	-6.560	-0.009
8		Sirisa	*Albizzia procera*	3	6	0.004	-5.461	-0.023
8		Sisoo	*Dalbergis spp.*	6	30	0.008	-4.768	-0.041
8	(P.S)	Sugandhi	*Ocimum spp*	7	42	0.010	-4.614	-0.046
8		Sunari	*Cassia fistula.*	14	182	0.020	-3.921	-0.078
			Total	706	22626			-3.599
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 240078/ (1999*1998) = 0.0601				Where		N = 1999		
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-3.19) = 3.19				SUM n(n-1) = 240078				

BIO-DIVERSITY INDEX OF NTFP SPECIES (CLIMBER) OF TARASINGI RANGE, GHUMUSUR NORTH DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/ N)**	**lnP**	**P*lnP**
1	(P.S)	Aatundi	*Combretum decandrum*	43	1806	0.031	-3.458	-0.109
2		Ankula	*Alangium salvifolium*	4	12	0.003	-5.833	-0.017
3		Badagila (Gila)	*Caesalpina sepiara*	15	210	0.011	-4.512	-0.050
4		Barakoli	*Ziziphus moritiana*	1	0	0.001	-7.220	-0.005
5		Behenti lai	*Behenti lai spp.*	1	0	0.001	-7.220	-0.005
6		Banakoli	*Ziziphus moritiana*	1	0	0.001	-7.220	-0.005
7	(P.S)	Bena	*Bothriochola bladhii*	2	2	0.001	-6.526	-0.010
8		Chanchunia	*Thysanolaena maxima*	5	20	0.004	-5.610	-0.021
9		Chemidi	*Chemidi spp.*	15	210	0.011	-4.512	-0.050
10		Chhana	*Imperata arundinacea*	1	0	0.001	-7.220	-0.005
11		Danturi	*Acacia pinnata*	35	1190	0.026	-3.664	-0.094
12		Dudhicher	*Dudhicher spp.*	1	0	0.001	-7.220	-0.005
13		Dudhi lai	*Ichnocarpus frntescens*	15	210	0.011	-4.512	-0.050
14		Ekala	*Ekala spp.*	49	2352	0.036	-3.328	-0.119
15	(P.S)	Gila	*Caesalpinia separia*	29	812	0.021	-3.852	-0.082
16	(P.S)	Indrajala	*Holarrhena malaccesis*	47	2162	0.034	-3.369	-0.116
17		K.Keruanha	*Holarrhena antidysentric spp.*	1	0	0.001	-7.220	-0.005
18		Kaincha	*Abrus precatorius*	1	0	0.001	-7.220	-0.005
19		Kanteikoli	*Firmiana indica / ziziphus oenoplia*	7	42	0.005	-5.274	-0.027
20		Khelua lai	*Khelua lai spp.*	5	20	0.004	-5.610	-0.021
21	(P.S)	Khukundia	*Calycopterisfloribunda*	67	4422	0.049	-3.015	-0.148
22		Kolathia	*Tephrosia purpurea*	2	2	0.001	-6.526	-0.010
23		Laibahada	*Laibahada spp.*	1	0	0.001	-7.220	-0.005
24		Lata Palas	*Butea supraba*	1	0	0.001	-7.220	-0.005
25		Matha	*Ctoerus rotudus*	1	0	0.001	-7.220	-0.005
26		Modaphala	*Modaphala spp.*	2	2	0.001	-6.526	-0.010
27		Muturi	*Smilax zeylanica*	63	3906	0.046	-3.077	-0.142
28	(P.S)	Palasa	*Butea monosperma*	124	15252	0.091	-2.399	-0.218
29		Red Pijuli	*Psidium guava*	2	2	0.001	-6.526	-0.010
30		Rekala	*Rekala spp.*	37	1332	0.027	-3.609	-0.098
31		Satabari	*Asparagus recimosus*	6	30	0.004	-5.428	-0.024
32	(P.S)	Siali	*Bauhinia vahli*	82	6642	0.060	-2.813	-0.169
33		Sugandhi	*Ocimum spp*	1	0	0.001	-7.220	-0.005
			Total	667	40638			-1.648
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 236876/ (1366*1365) = 0.127				Where		N = 1366		

SHANNON INDEX (H') = -SUM (P*lnP) =-*(-2.72) = 2.72	SUM n(n-1) =236876		

BIO-DIVERSITY INDEX OF NTFP SPECIES (TREE) OF CENTRAL RANGE, GHUMUSUR NORTH DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1		Accacia	*Acacia longifolia*	31	930	0.002	-6.366	-0.011
2		Achu	*Morinda tinctoria*	813	660156	0.045	-3.099	-0.140
3		Barada	*Terminalia belerica*	4	12	0.000	-8.413	-0.002
4		Ankula	*Alangium salvifolium*	76	5700	0.004	-5.469	-0.023
5	(P.S)	Araguna	*Cycas circinalis*	72	5112	0.004	-5.523	-0.022
6	(P.S)	Bahada	*Tbellirica*	66	4290	0.004	-5.610	-0.021
7		Bara	*Ficus bengalensis*	29	812	0.002	-6.432	-0.010
8		Bela	*Aegle marmelos*	116	13340	0.006	-5.046	-0.032
9	(P.S)	Bhaila	*Anacardium occidentale*	191	36290	0.011	-4.547	-0.048
10		Bheru	*Chloroxylon swietiana*	19	342	0.001	-6.855	-0.007
11	(P.S)	Chara	*Buchanania lanzan*	1673	2797256	0.093	-2.377	-0.221
12		Dhamana	*Gtiliifolia*	25	600	0.001	-6.581	-0.009
13		Dhau	*Anogeissus latifolia*	383	146306	0.021	-3.852	-0.082
14		Dhobi	*Dalbergia paniculata*	311	96410	0.017	-4.060	-0.070
15		Fasi	*Anogeissus acuminata*	39	1482	0.002	-6.136	-0.013
16		Gotha	*Zxylopyrus*	136	18360	0.008	-4.887	-0.037
17		Guachipa	*Ehretia laevis*	18	306	0.001	-6.909	-0.007
18		Halanda	*Adina cardifolia*	106	11130	0.006	-5.136	-0.030
19	(P.S)	Harada	*Terminalia chebula*	134	17822	0.007	-4.902	-0.036
20	(P.S)	Jama	*Syzigium cuminii*	136	18360	0.008	-4.887	-0.037
21		Jau	*Sorghum vulgare*	34	1122	0.002	-6.273	-0.012
22	(P.S)	Karada	*Cleistanthus collinus*	441	194040	0.024	-3.711	-0.091
23		Kasi	*Bridelia retusa*	327	106602	0.018	-4.010	-0.073
24		Kataka	*Spotatorum*	17	272	0.001	-6.966	-0.007
25	(P.S)	Kendu	*Diospyros melanoxylon*	1099	1206702	0.061	-2.798	-0.171
26	(P.S)	Khaira	*Acacia catechu*	36	1260	0.002	-6.216	-0.012
27		Khelua	*Ichnocarpus frtescens*	13	156	0.001	-7.235	-0.005
28	(P.S)	Kumbhi	*Careya arborea*	301	90300	0.017	-4.093	-0.068
29	(P.S)	Kusuma	*Schleichera oleosa*	64	4032	0.004	-5.641	-0.020
30	(P.S)	Mahuala	*Madhuca indica*	512	261632	0.028	-3.561	-0.101
31	(P.S)	Mango	*Mangifera indica*	32	992	0.002	-6.334	-0.011
32		Mohi	*Lannea coromandlica*	1274	1621802	0.071	-2.650	-0.187

33		Munaimundi	*Mitragyna parvifolia*	39	1482	0.002	-6.136	-0.013
34	(P.S)	Neem	*Azadirachta indica*	176	30800	0.010	-4.629	-0.045
35		Nilagiri	*Eglobulus*	21	420	0.001	-6.755	-0.008
36	(P.S)	Piasal	*Pterocarpus marsupium*	352	123552	0.020	-3.936	-0.077
37		Rai	*Dillenia pentagyna*	25	600	0.001	-6.581	-0.009
38		Sahaja	*Terminalia tomentosa*	722	520562	0.040	-3.218	-0.129
39	(P.S)	Sal	*Shorea robusta*	7063	49878906	0.392	-0.937	-0.367
40		Sidha	*Lagerstroemia parviflora*	142	20022	0.008	-4.844	-0.038
41		Siduragundi	*Scaseolaris*	185	34040	0.010	-4.579	-0.047
42		Sirisa	*Albizzia lebbeck*	158	24806	0.009	-4.737	-0.042
43	(P.S)	Sisoo	*Dalbergia latifolia*	20	380	0.001	-6.804	-0.008
44		Sunari	*Casia fistula*	111	12210	0.006	-5.090	-0.031
45		Teak	*Tectona grandis*	382	145542	0.021	-3.854	-0.082
46		Tentala	*Albizzia odoratissima*	104	10712	0.006	-5.155	-0.030
			Total	18028	58127962			-2.542
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 58127962/ (18028* 18027) = 0.17886035				Where		N = 18028		
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-2.542) = 2.542				SUM n(n-1) = 4489364			58127962	

BIO-DIVERSITY INDEX OF NTFP SPECIES (SHRUB) OF CENTRAL RANGE, GHUMUSUR NORTH DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1		Atundagrass	*Croxburghii spreng*	16	240	0.026	-3.660	-0.094
2	(P.S)	Arakha	*Calotropis gigantia*	34	1122	0.055	-2.907	-0.159
3		Banakhajuri	*Phoenix acaulis*	60	3540	0.096	-2.339	-0.226
4		Banakolathia	*Tephrosia villosa*	45	1980	0.072	-2.626	-0.190
5	(P.S)	Baunsa	*Dendrocalamus strictus*	16	240	0.026	-3.660	-0.094
6	(P.S)	Begunia	*Vitex negundo*	15	210	0.024	-3.725	-0.090
7		Bichhuati	*Tragia involucratae*	72	5112	0.116	-2.156	-0.250
8	(P.S)	Baila	*Lablab purpureus*	25	600	0.040	-3.214	-0.129
9		Chadheigodi	*Vitex peduncularis*	9	72	0.014	-4.236	-0.061
1	(P.S)	Danturi	*Accacia pinata*	22	462	0.035	-3.342	-0.118
1	(P.S)	Dhataki	*Woodfordia fruticosa*	14	182	0.023	-3.794	-0.085
1		Jhajanga	*Breynia vitis-idaea*	14	182	0.023	-3.794	-0.085
1		Jungle Koli	*Ziziphus nummularia*	15	210	0.024	-3.725	-0.090
1	(P.S)	Kantabamboocl	*Bambusa bambos*	5	20	0.008	-4.824	-0.039
1		Khukundi	*Calycopteris floribunda*	13	156	0.021	-3.868	-0.081
1	(P.S)	Kurei	*Hollarrhena*	35	1190	0.056	-2.878	-0.162
1		Lajakoli	*Mimosa pudica*	17	272	0.027	-3.600	-0.098
1	(P.S)	Musakani	*Cocculus hirsutus*	14	182	0.023	-3.794	-0.085
1	(P.S)	NagAiri	*Lantana camara*	32	992	0.051	-2.967	-0.153
2		Nunununia	*Antidesma acidum*	68	4556	0.109	-2.213	-0.242
2	(P.S)	Pokasunga	*Vernonia cinerea*	65	4160	0.105	-2.259	-0.236
2		Rambeli	*Cipadessa bacciferra*	16	240	0.026	-3.660	-0.094

				622	25920			-2.862
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 25920/ (622*621) = 0.0671				Where			N = 622	
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-2.862) = 2.862				SUM n(n-1) = 426908			25920	

BIO-DIVERSITY INDEX OF NTFP SPECIES (HERB) OFCENTRAL RANGE, GHUMUSUR NORTH DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1	(P.S)	Apamaranga	*Achyyranthes aspera*	56	3080	0.137	-1.991	-0.272
2	(P.S)	Bajramuli	*Sida acuta*	30	870	0.073	-2.615	-0.191
3	(P.S)	Baincha Koli	*Flacourtia jangomas*	10	90	0.024	-3.714	-0.091
4		Balunga	*Oryza rufipogan*	17	272	0.041	-3.183	-0.132
5	(P.S)	Bana Piaja	*Urginea indica*	8	56	0.020	-3.937	-0.077
6		Banamadanga	*Enydra fluctuans*	2	2	0.005	-5.323	-0.026
7		Baunsa patari	*Saccharum bengalensis*	8	56	0.020	-3.937	-0.077
8		BhuiKhajuri	*Phoenix acaulis*	89	7832	0.217	-1.528	-0.332
9	(P.S)	Bhuineem	*Andrographis*	45	1980	0.110	-2.209	-0.243
1		Bisalyakarani	*Tridax procumbens*	21	420	0.051	-2.972	-0.152
1		Chakundi	*Cassia tora*	45	1980	0.110	-2.209	-0.243
1	(P.S)	Himkakari	*Kalanchoe pinnata*	24	552	0.059	-2.838	-0.166
1	(P.S)	Haumaricha	*Entada rheedil*	24	552	0.059	-2.838	-0.166
1	(P.S)	Pengu	*Celastrus paniculata*	15	210	0.037	-3.308	-0.121
1		Thotudi	*Firmiana indica*	16	240	0.039	-3.244	-0.127
			Total	410	18192			-2.414
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 18192/ (410*409) = 0.1084				Where			N = 410	
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-2.414) = 2.414				SUM n(n-1) = 240078			18192	

BIO-DIVERSITY INDEX OF NTFP SPECIES (CLIMBER) OFCENTRAL RANGE, GHUMUSUR NORTH DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1		Atundi	*Combretum decandrum*	85	7140	0.157	-1.849	-0.291
2	(P.S)	Aparajiata	*Clitoria ternatea*	11	110	0.020	-3.894	-0.079
3	(P.S)	Asadhua	*Capparis zyylanica*	2	2	0.004	-5.598	-0.021
4	(P.S)	Baidanka	*Mucuna puriens*	35	1190	0.065	-2.736	-0.177
5		BanaKolatha	*Galactica tenuiflori*	2	2	0.004	-5.598	-0.021
6	(P.S)	Bichhuati	*Tragia involucratae*	28	756	0.052	-2.959	-0.153
7		Dantari	*Accacia pinata*	45	1980	0.083	-2.485	-0.207
8	(P.S)	Kanteikoli	*Ziziphus oenoplia*	24	552	0.044	-3.114	-0.138
9		Mardala	*Bridelia montana*	3	6	0.006	-5.193	-0.029
1	(P.S)	Muturi	*Smilax macrophylla*	53	2756	0.098	-2.321	-0.228
1		Nirmuli	*Cassytha filiphamis*	2	2	0.004	-5.598	-0.021
1		Panchaanguli	*Gloriosa superba*	1	0	0.002	-6.292	-0.012
1		Pitakanda	*Dioscorea bulbifera*	17	272	0.031	-3.458	-0.109

1	(P.S)	Satabari	*Asparagus racemosus*	135	18090	0.250	-1.386	-0.347
1	(P.S)	Siali	*Bauhinia vahillii*	65	4160	0.120	-2.117	-0.255
1		Malati Phula	*Aganosma*	20	380	0.037	-3.296	-0.122
1	(P.S)	Sugandhi	*Hemidesmus indicus*	12	132	0.022	-3.807	-0.085
			Total	540	37530			-2.294
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 37530/ (540*539) = 0.1289				Where			N = 540	
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-2.294) = 2.294				SUM n(n-1) =236876			37530	

BIO-DIVERSITY INDEX OF NTFP SPECIES (TREE) OF J.N.PRASAD RANGE, GHUMSUR NORTH FOREST DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1		Acchu	*Morinda pubescens*	3	6	0.001	-7.590	-0.004
2	(P.S)	Amla	*Emblica officinalis*	3	6	0.001	-7.590	-0.004
3		Ankula	*Alangium lamarckii*	4	12	0.001	-7.302	-0.005
4	(P.S)	Bahada	*Terminalia belerica*	2	2	0.000	-7.995	-0.003
5	(P.S)	Baila	*Lablab purpureus*	5	20	0.001	-7.079	-0.006
6		Bandhana	*Ougeinia oojeinensis*	2	2	0.000	-7.995	-0.003
7	(P.S)	Bela	*Aegle marmelos*	34	1122	0.006	-5.162	-0.030
8	(P.S)	Bhallia	*Semecarpus anacardium*	11	110	0.002	-6.291	-0.012
9		Bura	*Bombaxciba*	4	12	0.001	-7.302	-0.005
10	(P.S)	Char	*Buchanania lanzan*	60	3540	0.010	-4.594	-0.046
11	(P.S)	Dhaman	*Grewia tiliaefolia*	8	56	0.001	-6.609	-0.009
12		Dhau	*Anogeissus latifola*	30	870	0.005	-5.287	-0.027
13		Dhobi	*Anogeises accumulata*	27	702	0.005	-5.393	-0.025
14		Dimiri	*Ficus racemosa*	4	12	0.001	-7.302	-0.005
15		Gambhari	*Gmelina arborea*	2	2	0.000	-7.995	-0.003
16		Genduli	*Sterculia urens*	2	2	0.000	-7.995	-0.003
17		Gotha	*Ziziphus xylopyrus*	2	2	0.000	-7.995	-0.003
18		Gundi	*Melotos phillipinensis*	8	56	0.001	-6.609	-0.009
19		Halanda	*Adina cordifolia*	9	72	0.002	-6.491	-0.010
20	(P.S)	Jammu	*Syzygium cumini*	4	12	0.001	-7.302	-0.005
21		Jari	*Ficus amplissima*	1	0	0.000	-8.689	-0.001
22		Kaniari	*Thevetia nerifolia*	3	6	0.001	-7.590	-0.004
23		Kara	*Sterculia nuxvomica*	5	20	0.001	-7.079	-0.006
24		Karada	*Cleistanthus collinus*	71	4970	0.012	-4.426	-0.053
25		Kasi	*Bridelia retusa*	10	90	0.002	-6.386	-0.011
26		Kauchia	*Clochidion lanceolarium*	29	812	0.005	-5.321	-0.026
27		Kendu	*Diospyros melanoxylon*	27	702	0.005	-5.393	-0.025
28		Keruha	*Holarrhena pubescens*	2	2	0.000	-7.995	-0.003
29		Khakada	*Casearia elliptica*	6	30	0.001	-6.897	-0.007
30		Kumbhi	*Careya arborea*	11	110	0.002	-6.291	-0.012
31	(P.S)	Kusuma	*Scleichera oleosa*	14	182	0.002	-6.050	-0.014
32	(P.S)	Mahula	*Madhuca indica*	40	1560	0.007	-5.000	-0.034
33		Moi	*Lannea coromondelica*	48	2256	0.008	-4.817	-0.039
34		Mundamundi	*Mitragina Parviflora*	2	2	0.000	-7.995	-0.003
35		Narangi	*Citrus aurantium*	3	6	0.001	-7.590	-0.004
36		Neem	*Azadirachta indica*	3	6	0.001	-7.590	-0.004
37		Paladhua	*Erythrina Indica*	4	12	0.001	-7.302	-0.005
38		Patali	*Torocarpus*	7	42	0.001	-6.743	-0.008

39		Pipal	*Ficus religiosa*	11	110	0.002	-6.291	-0.012
40		Phasi	*Anogeissus acuminata*	6	30	0.001	-6.897	-0.007
41		Piasal	*Pterocarpus marsupium*	10	90	0.002	-6.386	-0.011
42		Rai	*Dillenia pentagyna*	4	12	0.001	-7.302	-0.005
43		Sahaj	*Torminalia tomentosa*	28	756	0.005	-5.356	-0.025
44		Sal	*Shorea robusta*	89	7832	0.015	-4.200	-0.063
45		Sidha	*Lagerstroemia parviflora*	5	20	0.001	-7.079	-0.006
46		Sirisa	*Albizia procera*	9	72	0.002	-6.491	-0.010
47		Sisu	*Dalbegia latifolia*	3	6	0.001	-7.590	-0.004
48		Suama	*Soyamida Febrifuga*	3	6	0.001	-7.590	-0.004
49		Sunari	*Cassia fistula*	10	90	0.002	-6.386	-0.011
50		Sundarmundi	*Melotos phillipinensis*	13	156	0.002	-6.124	-0.013
51		Teak	*Tectona grandis*	6	30	0.001	-6.897	-0.007
52		Tentela	*Albizia procera*	277	76452	0.047	-3.065	-0.143
53		Usta	*Ficus religiosa*	5	20	0.001	-7.079	-0.006
54		Veru	*Chloroxylonswietenia*	10	90	0.002	-6.386	-0.011
			Total	999	103198			-0.807
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 103198/ (999*998) = 0.103508				Where			N = 999	
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-0.807) = 0.807				SUM n(n-1) = 103198				

BIO-DIVERSITY INDEX OF NTFP SPECIES (SHRUB) OF J.N.PRASAD RANGE, GHUMSUR NORTH FOREST DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1	(P.S)	Amla	*Emblica officinalis*	4	12	0.002	-6.253	-0.012
2		Ankula	*Alangium lamarckii*	10	90	0.005	-5.337	-0.026
3	(P.S)	Araguna	*Cicas circinalis*	39	1482	0.019	-3.976	-0.075
4		Bambo	*Dendrocalamus strictus*	46	2070	0.022	-3.811	-0.084
5		Banatulasi	*Ocimum gratissimum*	21	420	0.010	-4.595	-0.046
6		Bela	*Aegle marmelos*	1	0	0.000	-7.639	-0.004
7		Bhuinimba	*Cipadessa bacciferra*	1	0	0.000	-7.639	-0.004
8		Char	*Buchanania lanzan*	3	6	0.001	-6.541	-0.009
9		Chepti	*Evolvus alseonides*	1	0	0.000	-7.639	-0.004
10	(P.S)	Dantari	*Chlerodendron phlomidis*	7	42	0.003	-5.693	-0.019
11	(P.S)	Gila	*Caesalpinia dandue*	1	0	0.000	-7.639	-0.004
12		Gotha	*Ziziphus xylopyrus*	2	2	0.001	-6.946	-0.007
13		Jam	*Syzygium cumini*	4	12	0.002	-6.253	-0.012
14		Kaniar	*Thevetia nerifolia*	1	0	0.000	-7.639	-0.004
15		Karaba	*Dioscorea pentaphylla*	9	72	0.004	-5.442	-0.024
16		Kendu	*Diospyros*	4	12	0.002	-6.253	-0.012
17	(P.S)	Khajuri	*Phoenix Sylvestris*	44	1892	0.021	-3.855	-0.082
18	(P.S)	Khirakerun	*Holarrhena*	1	0	0.000	-7.639	-0.004
19	(P.S)	Khukundi	*Calycopteoisfloribunda*	3	6	0.001	-6.541	-0.009
20		Khakada	*Caeseria tomentosa*	2	2	0.001	-6.946	-0.007
21		Kusuma	*Schleichera olesa*	1	0	0.000	-7.639	-0.004
22		Moda	*Helicteres isora*	4	12	0.002	-6.253	-0.012
23		Muturi	*Smilax zeylanica*	7	42	0.003	-5.693	-0.019
24		Patua	*Catunaregam*	1	0	0.000	-7.639	-0.004
25		Pipal	*Ficus religiosa*	1	0	0.000	-7.639	-0.004

26		Pokasunga	*Vernonia cinerea*	25	600	0.012	-4.420	-0.053
27		Ramaphala	*Annona reticulata*	8	56	0.004	-5.560	-0.021
28		Rohini	*Soymidi fabrifuga*	13	156	0.006	-5.074	-0.032
29		Sal	*Shorea robusta*	1	0	0.000	-7.639	-0.004
30		Salap	*Caryota urens*	10	90	0.005	-5.337	-0.026
31		Salia	*Boswellia serrata*	2	2	0.001	-6.946	-0.007
32		Satabari	*Asparagus racemosus*	1	0	0.000	-7.639	-0.004
33		Sitaphala	*Annona Squamosa*	14	182	0.007	-5.000	-0.034
34		Sugandhi	*Hemidesmus indicus*	6	30	0.003	-5.847	-0.017
35		Telakenuha	*Ixora parviflora*	9	72	0.004	-5.442	-0.024
36		Uturuli	*Pergularia extensa*	3	6	0.001	-6.541	-0.009
				310	7368			-0.718
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 7368/ (310*309) = 0.076918				Where			N = 310	
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-0.718) = 0.718				SUM n(n-1) = 7368				

BIO-DIVERSITY INDEX OF NTFP SPECIES (HERB) OF J.N.PRASAD RANGE, GHUMSUR NORTH FOREST DIVISION

Sl. No.	Prioritized Species (P.S)	Local Name	Botanical Name	Total No. of Trees in Sample Plot (n)	n(n-1)	P=(n/N)	lnP	P*lnP
1		Amla	*Emblica officinalis*	1	0	0.001	-7.600	-0.004
2	(P.S)	Araguna	*Cicas circinalis*	9	72	0.005	-5.403	-0.024
3	(P.S)	Banatulasi	*Ocimum gratissimum*	1	0	0.001	-7.600	-0.004
4		Bana Bamboo	*Dendrocalamus strictus*	1	0	0.001	-7.600	-0.004
5		Bana Kandula	*Atylosia cajanifolia*	4	12	0.002	-6.214	-0.012
6		Bana kolatha	*Galactica tenuiflori*	10	90	0.005	-5.298	-0.027
7		Bana Piaja	*Urginea indica*	8	56	0.004	-5.521	-0.022
8	(P.S)	Banamali	*Jasminum arborescens*	2	2	0.001	-6.907	-0.007
9		Banaphula	*Mirabilas jalapa*	1	0	0.001	-7.600	-0.004
10		Bhuin nima	*Andrographis*	10	90	0.005	-5.298	-0.027
11		Binchifula	*Sida rhombifolia*	1	0	0.001	-7.600	-0.004
12		Bisalyakarani	*Tridax procumbens*	4	12	0.002	-6.214	-0.012
13		Buduli	*pentapetes phoenicea*	16	240	0.008	-4.828	-0.039
14		Char	*Buchanania lanzan*	3	6	0.002	-6.502	-0.010
15		Dubaghasa	*Cynodon dactylon*	1	0	0.001	-7.600	-0.004
16		Gandhana	*Premna calycina*	2	2	0.001	-6.907	-0.007
17		Haumarich	*Suaeda maritima*	15	210	0.008	-4.892	-0.037
18	(P.S)	Indarjala	*Holarrhena malaccesis*	3	6	0.002	-6.502	-0.010
19		Jhatika	*Clerodendrum indicum*	4	12	0.002	-6.214	-0.012
20		Kanta Babula	*bambusa arundinacea*	1	0	0.001	-7.600	-0.004
21		Kendu	*Diospyros melanoxylon*	2	2	0.001	-6.907	-0.007
22		Keruha	*Holarrhena pubescens*	3	6	0.002	-6.502	-0.010
23		KhiraKanchan	*Euphorbia fusiformis*	7	42	0.004	-5.654	-0.020
24		Kamini	*Murraya paniculata*	2	2	0.001	-6.907	-0.007
25		Kolathia	*Tephrosia villosa*	1	0	0.001	-7.600	-0.004
26		Kuradhia	*Desmodium heterophyllum*	3	6	0.002	-6.502	-0.010
27		Landa babula	*Ocimum spp.*	1	0	0.001	-7.600	-0.004
28		Mayurchulia	*Elephantopus scaber*	27	702	0.014	-4.305	-0.058

29		moda	*Helicteres isora*	12	132	0.006	-5.115	-0.031
30		Moi	*Lannea coromandelica*	1	0	0.001	-7.600	-0.004
31	(P.S)	Patal Garuda	*Dianthus chinensis*	4	12	0.002	-6.214	-0.012
32		Phulachanchuni	*Thysanolaena maxima*	10	90	0.005	-5.298	-0.027
33		piasal	*Pterocarpus marsupium*	1	0	0.001	-7.600	-0.004
34		Pokasunga	*Pogostemon benghalensis*	1	0	0.001	-7.600	-0.004
35		Ramkedar	*Kaempferia galanga*	5	20	0.003	-5.991	-0.015
36		Rohini	*Soymidi fabrifuga*	5	20	0.003	-5.991	-0.015
37		Rani Dantakathi	*Flemingia chappar*	5	20	0.003	-5.991	-0.015
38		salapa	*Caryota urens*	2	2	0.001	-6.907	-0.007
39		satabari	*Asparagus racemosus*	14	182	0.007	-4.961	-0.035
40		Talamuli	*Curculingo orchioides*	21	420	0.011	-4.556	-0.048
41		veru	*Chloroxylonswietenia*	13	156	0.007	-5.035	-0.033
			Total	237	2624			-0.639
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 2624/ (237*236) = 0.046914				Where			N = 237	
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-0.639) = 0.639				SUM n(n-1) = 2624				

BIO-DIVERSITY INDEX OF NTFP SPECIES (CLIMBER) OF J.N.PRASAD RANGE, GHUMSUR NORTH FOREST DIVISION								
Sl. No.	**Prioritized Species (P.S)**	**Local Name**	**Botanical Name**	**Total No. of Trees in Sample Plot (n)**	**n(n-1)**	**P=(n/N)**	**lnP**	**P*lnP**
1	(P.S)	Atundi	*Combretum decandrum*	6	30	0.004	-5.428	-0.024
2		Baidanka	*Mucuna puriens*	4	12	0.003	-5.833	-0.017
3		Bichuati	*Tragia involucratae*	2	2	0.001	-6.526	-0.010
4		Begunia	*Vitex nugenda*	1	0	0.001	-7.220	-0.005
5		Dantari	*Accacia pinata*	16	240	0.012	-4.447	-0.052
6		Dhaman	*Grewia tillaefolia*	2	2	0.001	-6.526	-0.010
7		Dudhilai	*Ichnocarpus frutescens*	2	2	0.001	-6.526	-0.010
8		Gopakenha	*Hemarthria compressa*	17	272	0.012	-4.386	-0.055
9		Kaincha	*Abrus precatorius*	6	30	0.004	-5.428	-0.024
1		Karaba	*Dioscorea pentaphylla*	1	0	0.001	-7.220	-0.005
1		Khalua Lai	*Aristolochia indica*	47	2162	0.034	-3.369	-0.116
1		Khira	*Euphorbia fusiformis*	2	2	0.001	-6.526	-0.010
1	(P.S)	Khukundi	*Calycopteoisfloribunda*	56	3080	0.041	-3.194	-0.131
1		Kolathia	*Tephrosia villosa*	3	6	0.002	-6.121	-0.013
1		Maradalai	*Bridelia montana*	12	132	0.009	-4.735	-0.042
1		Marichia	*Capsicum spp.*	2	2	0.001	-6.526	-0.010
1	(P.S)	Muturi	*Smilax macrophylla*	23	506	0.017	-4.084	-0.069
1	(P.S)	Palasa lai	*Butea superba*	10	90	0.007	-4.917	-0.036
1		Pana-airi	*Iartemisia nilagirica*	15	210	0.011	-4.512	-0.050
2		Pasaruni	*Paederica foetida*	1	0	0.001	-7.220	-0.005
2		Pichhuli	*Venfilago calyulata*	6	30	0.004	-5.428	-0.024
2		Pithala	*Dioscorea oppositifolia*	5	20	0.004	-5.610	-0.021
2		Sal	*Shorea robusta*	1	0	0.001	-7.220	-0.005
2	(P.S)	Salia	*Dendroculamus strictus*	4	12	0.003	-5.833	-0.017
2		Satabari	*Asparagus racemosus*	13	156	0.010	-4.655	-0.044

2		Siali	*Bauhinia vahillii*	45	1980	0.033	-3.413	-0.112
2		Sugandhi	*Hemidesmus indicus*	51	2550	0.037	-3.288	-0.123
2		Uturuli	*Pergularia extensa*	22	462	0.016	-4.129	-0.066
			Total	375	11990			-1.104
SIMPSON'S INDEX (D) = SUM n(n-1)/ N(N-1) = 11990/ (375*374) = 0.085490				Where			N = 375	
SHANNON INDEX (H') = -SUM (P*lnP) =-*(-1.104) = 1.104				SUM n(n-1) =11990				

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FOREST & ENVIRONMENT DEPARTMENT

RESOLUTION

The 9th September, 2011

Sub: Joint Forest Management Resolution, 2011

1. Introduction:

Forests are one of the complex eco-systems of our planet. The role of forests in conservation of environment and economic prosperity of mankind is well established. Economic growth and environment protection are inextricably linked. For surviving on the earth human beings will have to live in harmony with nature. The need for conservation of environment and protection of forests and wildlife has been enshrined in our Constitution. Orissa has 61018 Sq. kms of forest area which is 39.18% of the geographical area of the State. The existing forest cover of 31.38 % of its geographical area plays a very significant role in the socio-economic and cultural life of the people of the State. However, over the past few decades, the forests of Orissa are under heavy biotic pressure. The rich bio-diversity of the State faces the risk of depletion. Man-animal conflict is on the rise. Hence, conservation and development of the forest eco-systems of Orissa is a priority of the State Government. The National Forest Policy, 1988 envisaged co-operation of the people in conservation and development of forests. In keeping with this policy Government of Orissa adopted the Joint Forest Management (JFM) approach and sought community participation for protection, regeneration and management of the forest wealth. JFM has not only been a tool for forest regeneration, but also a means of employment generation and social empowerment of the forest-fringe dwellers. The State Government enacted the Orissa Village Forest Rules, 1985 which envisaged preparation of a Management Plan for every village forest and sought co-operation of the community in protection of these forest s. In 1988, the State Government passed a resolution to formally introduce a Scheme of Protection of peripheral Reserve Forest areas with participation of the adjoining villagers by forming a Village Level Forest Protection Committee. The scope of this resolution was enlarged in 1990 to include the Protected Forests. To make the forest-people interface more effective, the Government of Orissa in Forest & Environment Department issued a Resolution dated 3.7.1993. This resolution dealt, in a fairly exhaustive manner, the involvement of all local communities in protection of adjoining forests, formation of Van

Samrakshyana Samiti (V.S.S.), duties and responsibilities of the V.S.S. and their Executive Committees and the role of Forest Department and Gram Panchayats, preparation of Joint Forest Management plans, usufruct benefits for the V.S.S. and provisions of MoU etc. Since these Resolutions in the past did not cover the Mangrove Wetlands and the Protected Areas (PA) of the State, i.e. National parks and Sanctuaries, and participatory modes of management are needed there too, the 2008 Resolution was issued to extend the participatory approach to all types of forests. Eco-development was adopted as a strategy in order to improve the livelihood of local people and thereby secure their support for conservation.

Participatory Forest Management in JFM mode is an evolving concept encompassing ecological socio-cultural and economic dimensions. People have played an important role in protection and regeneration of forests all over the state of Orissa. Villagers have either formed V.S.Ss as per JFM Resolution or Community Forest Management Groups outside the existing JFM framework. It is desirable that associations of people, whether formed under Government resolutions, or by peoples' own initiative, with the forest conservation as the principal and core objective, are allowed to function smoothly.

Panchayat Extension to Scheduled Area (PESA) Act, 1996, which is applicable to scheduled areas, lays down as follows: "Every Gram Sabha shall be competent to safeguard and preserve the traditions and customs of the people, their cultural identity, community resources and the customary mode of dispute resolution; Every Gram Sabha shall approve the plans, programmes and projects for social and economic development before such plans, programmes and projects are taken up for implementation by the Panchayat at the village level and be responsible for the identification or selection of persons as beneficiaries under the poverty alleviation and other programmes." This Act vests the ownership of Minor Forest Produce (MFP) on Gram Panchayats in Scheduled areas. The decision of Government of Orissa to do away with the monopolies in collection and trading in 69 items of MFP is in consonance with the spirit of PESA Act. The community forest resource has been defined under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (popularly known as Forest Rights Act). As per the said Act, community forest resource means customary common forest land within the traditional and customary boundary of the village and seasonal use of the landscape in case of pastoral communities etc. The Minor forest produce has been defined under the Forest Rights Act which includes all non-timber forest produce of plant origin such as bamboo, brushwood, stumps, cane, tassar, cocoons, honey, wax, lac, tendu or kenduleaf, medicinal plants and herbs, roots, tubers and the like. It may be mentioned here that in case of Kendu Leaf, the current policy of Government is to discharge certain responsibilities with a view to protecting the livelihood of forest-dependent communities while providing management inputs to facilitate a scale of operation required for adequate value realization and sustainable management process.

Under the Forest Rights Act, the Gram Sabha is to initiate the process of determining the individual and community forest right. Therefore the enactment of FRA provides an opportunity not only to strengthen the existing Participatory Forest conservation and management initiatives but to promote such initiatives in the areas which are devoid of such institutional arrangements. With the changing scenario of Forest Management, increasing awareness among people and experiences gained from the past management practices; it is now felt necessary that the resolution on Joint Forest Management, 2008 is revised.

2. Selection of Area:

(i) The forests of the State to be covered under this Resolution shall be grouped into the following two categories:

(a) Reserved Forests, Protected forests, Village forests, Revenue forests etc. not covered under Protected Areas.

(b) Protected Areas (National Park and Sanctuaries) excluding Core Areas, and Mangrove Wetlands.

The Committee constituted for the first category of forests will be known as Vana Surakshya Samiti (VSS) while the Committee constituted for the second category will be known as Eco-development Committee (EDC).

(ii) While deciding the extent of area to be assigned, the Palli Sabha shall consult the Forest Range Officer concerned and take into account the area customarily being protected and used by the community, the number of adjacent villages, their claims, if any, and users' regime. In case a group of villages decide to constitute one VSS jointly, they may do so. The local Forester will provide the technical input and facilitate the process of identification of the forest area to be managed by the committee.

(iii) In case any change is required in the extent of forest area assigned to the existing VSS formed under the JFM Resolution, 2008, the same can be done in consultation with the village community and the local forest department officials not below the rank of a Forest Range Officer.

3. Constitution of VSS/EDC:

(i) Ordinarily there will be one VSS/EDC for a single village. One VSS may also cover more than one village or there may be more than one committee in a village especially large in size. Other Forest Protection groups, if any would also be covered under this Resolution.

(ii) All adults of the village will be the members of the VSS/EDC. They may pay an enrolment fee determined by the General Body (GB) of VSS/EDC.

*(iii)*The Palli Sabha shall send its Resolution to the Range Officer concerned regarding constitution of VSS / EDC for his record and communication to the DFO concerned for registration at the Division level.

4. Constitution of the Executive Committee (EC):

(i) The Palli Sabha shall elect the Chairperson, the Vice-Chairperson, the Secretary and the Treasurer and a minimum of other 11 (eleven) members to constitute the Executive Committee. At least 50% of the members of the EC shall be women. The number of SC & ST members in the

Executive Body shall be in proportion to their membership in VSS / EDC. There should also be representation from the group of community, who do not have any livelihood support other than depending on the forests.

(ii) Either the Chairperson or Vice-Chairperson shall be a woman.

(iii) The composition of the EC shall be as follows:

1.	*Chairperson*	*1*	*Elected Member*
2.	*Vice-Chairperson*	*1*	*Elected Member*
3.	*Secretary*	*1*	*Elected Member*
4.	*Treasurer*	*1*	*Elected Member*
5.	*Ward Member (s) concerned*		*Ex Officio Member (s)*
6.	*Members*	*11*	*Elected Members*
7.	*Local Forest Guard*	*1*	*Ex Officio Member*

(c) The quorum for any meeting of the EC shall be 50% of its membership, out of which at least one-third shall be women.

6. Duties and responsibilities of VSS / EDC:

(i) The members of the VSS / EDC shall individually and collectively protect the forest, wildlife and biodiversity.

(ii) The VSS / EDC shall put in necessary efforts so that adjoining catchments area, water resources and other ecologically sensitive areas are protected.

(iii) The VSS/ EDC shall place adequate emphasis on plantation of indigenous medicinal and NTFP species in the forests as well as outside the forest area adjoining the village.

(iv) The VSS / EDC shall ensure that the decisions taken in the Palli Sabha to regulate access to community forest resources and stop any activity which adversely affects the wildlife, forests and the biodiversity, are complied with.

(v) The General Body of the VSS /EDC shall have the powers to remove and/or substitute any elected member of the EC by a two third majority of the members if the concerned member does not discharge his/her duties satisfactorily.

7. Duties and responsibilities of the Executive Committee (EC):

(i) The EC shall carry out the day-to-day business of the VSS / EDC as per provisions of the Resolution. The EC shall prepare the Micro Plan and Annual Work Plan for the assigned forest area and integrate other developmental activities outside the forest area associated with the forest based livelihood system and get it approved by the VSS / EDC after technical scrutiny by the Forest Range Officer concerned. The EC shall be responsible for managing and implementing the Micro Plan and Annual Plan and other decisions of the General Body of VSS / EDC.

(ii) The EC shall be responsible for protection of the forests assigned to the VSS / EDC and extend their assistance to the Forest Department for apprehending the offenders who commit forest offences. If the members of the VSS / EDC play a significant role in detection of

forest offence and seizure of the forest produce within their village limits, they will be entitled for a fixed percentage of the value of the forest produce (except in case of WL Trophies) so seized as per procedure laid down in Para. - 11(iii).

(iii) The EC in consultation with the GB shall evolve methodology on all issues relating to membership, conflict resolution, prevention of encroachment, exercise of customary rights and use of the permissible forest resources such as NTFP including Bamboo.

(iv) The EC shall be responsible to account for and manage the funds and other resources received from the Government, other agencies and funds internally generated, if any. For this purpose a joint account called VSS account/EDC account shall be opened in any commercial, rural or Co-operative Bank recognised by the RBI or in any post office, which shall be operated, jointly by the Secretary and the Treasurer of the VSS / EDC. Utilisation Certificate relating to the expenditure incurred shall be jointly signed by the Chairperson and the Secretary and submitted to the authorities concerned.

(v) The EC shall be responsible for managing funds received by VSS / EDC by maintaining and operating VSS / EDC account as per the procedure detailed in Annexure A.

(vi) The EC shall try to establish marketing linkage for various NTFP items and other micro-enterprise products for securing better returns for the members. The Forest Department will provide necessary support in this regard.

(vii) Annual account of VSS / EDC shall be placed before the GB for its approval.

8. Role of Palli Sabha:

As per the 73rd Amendment of the Constitution, certain powers and responsibilities have been vested on the PRIs. Therefore it is necessary to define the relationship between village level institution like VSS / EDC and the PRI and establish a linkage with the Palli Sabha.

(i) Regarding protection and conservation of forest, wildlife and environment, the EC shall work as a Sub-Committee of Palli Sabha.

(ii) If the work of the EC of any VSS / EDC is found to be detrimental to forest conservation and against the larger and long term interests of the people, the VSS / EDC may recommend for dissolving and reconstituting the EC. The Palli Sabha, on receipt of such recommendation may enquire into the matter and forward its findings to the Divisional Forest Officer for necessary action. The Divisional Forest Officer, after examining the merit will dissolve the EC and advise the GB of VSS / EDC for its reconstitution. Such dissolution will be formally placed by the DFO before the District Level Steering Committee in its next meeting for information.

9. Role of the Forest Department:

(i) To register the VSS / EDCs and maintain close liaison with them.

(ii) To support the VSS / EDCs in identifying and apprehending the forest offender(s).

(iii) To take action as per law in cases where VSS / EDC members have handed over the offender(s) and forest produce involved in the offence.

(iv) To assist in capacity building of VSS / EDC members on different aspects of forest management, planning, silviculture, nursery technology, forest laws, accounting, book keeping, micro-enterprise development, value addition and processing of NTFPs etc.

(v) To provide technical help to the VSS / EDCs in preparation and implementation of the Micro plan/ annual work programme.

(vi) To invite suggestion from the VSS / EDCs while preparing the Working Plan / Management Plan of the concerned Forest Area / Protected Area.

(vii) To sign Memorandum of Understanding with the VSS / EDCs and ensure

sharing of benefit as per norms in vogue.

(viii) To establish co-ordination with other departments/agencies for successful implementation of the micro plans and related area development programmes.

(ix) To facilitate the process of discharging the duties and resolving the conflicts by

the ECs.

10. Micro Plan:

(i) After constitution of the EC, as soon as possible, a Micro Plan shall be prepared by the members of the Committee through a participatory process involving VSS Members and with the technical input provided by the field officers of the Forest Department.

(ii) The Micro Plan shall be prepared for conservation and sustainable management of the assigned forests while integrating other developmental activities outside the forest area associated with the forest based livelihood system, with participation and involvement of line departments, wherever necessary.

(iii) The Micro Plan will primarily prescribe afforestation with priority for plantation of indigenous medicinal and NTFP species, soil and moisture conservation measures and activities to be undertaken for livelihood support of the forest dependent communities. It may also incorporate formation of SHGs and micro-enterprises that could be undertaken based on locally available resources and may include activities such as:– eco-tourism, farm forestry, Agro forestry, Silvi-pasture development, promotion of fuel-efficient devices, animal husbandry, pisciculture, bee keeping, mushroom cultivation, tassar/lac cultivation etc.

(iv) The Micro Plan shall indicate the choice of species in different plantation schemes and models. It shall contain a detailed silvicultural operations plan, which shall be consistent with the prescriptions of the overall working plan covering the area or the Wildlife Management Plan of the Protected Area.

(v) The Micro Plan so prepared shall be in consonance with the existing laws of

the land.

(vi) The Micro Plan shall also detail out the various NTFP items that can be collected. This shall be done with due regard to the carrying capacity, productivity and biodiversity of the local eco-system.

(vii) The draft Micro Plan prepared by the EC, will be scrutinized by the Forest Range Officer from the technical, financial and legal point of view. After that the same shall be placed before the GB for deliberation and approval.

11. Usufruct sharing:

(i) The VSS / EDC shall be entitled to the usufructuary benefits from the assigned forests as under:—

(a) Usufructs like fallen leaves, fodder grasses, thatch grass, broom grass, fencing materials, brushwood, fallen lops, tops and twigs to be used as fuel shall be available to the members free of cost.

(b) All intermediate yields in the shape of small wood, poles, firewood etc as may be obtained as a result of silvicultural operations and bamboo harvested in VSS / EDC assigned area shall be made available to the VSS / EDC members in a manner as may be decided by EC. If sold at a price, the funds so obtained shall be deposited in the VSS / EDC account.

(c) In case of Kendu leaves and specified forest produce other than bamboo, if any, the VSS will have the right to collect the same from the assigned forest but these items will be disposed of as per the prevailing provisions of Government and practices.

(d) While maintaining the forest cover in perpetuity, if any major harvest or final felling occurs in the assigned forest, the same shall be taken up by the forest department as per the prescription of the working plan/ duly approved micro plan. In case of natural calamities, harvesting of wind-fallen trees shall be treated as final harvest. Priority will be given to the members of the VSS /EDC for salvaging and harvesting work. Valuation of the produce so obtained shall be done and information shared with the VSS /EDC and the produce will be sold / disposed of by the forest department or by agents of the forest department. The VSS / EDC will receive 50% share of the sale price after deduction of proportionate harvesting cost and this will be deposited in the "VSS account". The VSS may also opt for 50% of the forest produce so harvested if it is for their *bonafide* domestic use and they agree to pay the proportionate cost of harvesting.

(e) In case of village woodlots created and maintained by the VSS / EDC on non forest land, all usufructs including interim and rotational harvests shall go to the VSS / EDC.

(f) In the event of a natural calamity occurring in the village there may be a demand for house building materials and other forest produce from the assigned forest. In such cases, the VSS / EDC may go for harvesting the required quantity of timber or other forest produce as a deviation to the Micro Plan, with due approval of the Divisional Forest Officer concerned.

(ii) The EC shall be responsible for the distribution of the usufructuary benefits equitably among the members of the VSS. Need of the group or community, who do not have any livelihood support other than depending on the forests, should be specially considered.

(iii) In cases where member/ a group of members of the VSS /EDC play a major role in the collection of intelligence, detection and seizure of illegal forest produce in transit the concerned VSS/EDC shall be entitled to the prescribed percentage of the sale price of the forest produce as per

Rule 4 (3) of the Orissa Rewards for Detection of Forest Offences Rules, 2004. Such amount shall be deposited by the DFO in the "VSS account/EDC account" after disposal of the seized produce following due procedure of law.

12. Transit of harvested forest product:

All forest produce requiring permits for transit as per provisions of Orissa Timber and Other Produce Transit Rules, 1980 shall be removed from the assigned forest area in accordance with a permit to be issued jointly by the President and the Secretary in the prescribed format (Form-4). The permit shall be valid only within the limits of the area to which the VSS members belong. A record will be maintained to this effect by the VSS / EDC and the Secretary will keep the local Forest Range Officer informed of the same on a quarterly basis. In case of transportation outside the above limit, the permit will be issued by the competent forest officer on receipt of application from VSS / EDC.

13. Conflict Resolution:

(i) In case of intra village conflict in matters of implementation of Joint Forest Management, the Executive Committee of the VSS/ EDC shall endeavour to amicably resolve the conflict. If it fails to resolve the conflict, it shall bring the same to the notice of the Palli Sabha and try to sort out the issue. If the conflict still remains, the same would be referred to the Sub Divisional Level Steering Committee formed in the line of the SDLC under FRA, 2006 and their decisions would be final.

(ii) In case of inter village conflict; the same would be referred to the Sub Divisional Level Steering Committee and their decisions would be final.

14. Memorandum of Understanding (MoU):

(i) To ensure smooth working relationship between the Forest Department and the

VSS /EDC and also to bring in a sense of ownership, empowerment and accountability a MoU shall be signed between the FD and VSS / EDC delineating the duties and responsibilities of the parties concerned.

(ii) The Chairperson of the VSS will sign the MoU on behalf of the VSS while the Range Officer concerned will sign the same on behalf of Forest Department. Other members at the EC will also be signatory to the MoU as witness while the concerned local forest officials such as:— the Forester and Forest Guard will sign the MoU as witness.

(iii) The MoU shall be in the prescribed form (Form-5).

15. Steering Committee:

(i) There shall be Steering Committees at the Sub Division Level, District Level and at the State Level.

(ii) Sub Division Level Steering Committee (SDLC): This committee shall comprise of the following members:—

(a) Sub Collector	:	Chairperson
(b) Assistant Conservator of Forests	:	Member Convener
(c) An Officer of the Tribal Welfare Department	:	Member

in-charge of the Sub-Division

(d) Sub Divisional Police Officer (SDPO) : Member

(e) Forest Ranger concerned : Member

(f) Tahashildar concerned : Member

(g) Chairperson of the Panchayat Samiti concerned : Member

(h) Zilla Parishad member : Member

(i) Two Chairpersons/Vice-Chairpersons of VSS/EDC (to be nominated by the DFO) : Member

(iii) The SDLC will be responsible to resolve all cases of intra village and inter village conflicts as referred to them in regards to smooth functioning of VSS / EDC.

(iv) The SDLC will meet at least once in every quarter and shall facilitate functioning of the VSS / EDC and provide necessary support and guidance to them.

(v) The SDLC will facilitate the VSS / EDC for protection and sustainable management of forests, forest based livelihood and holistic development of the villages.

(vi) The SDLC may invite the representatives of the committees concerned and other such peoples' representatives, reputed persons / organizations working in the field of forest management to their meetings as per requirement.

(vii) District Level Steering Committee (DLSC): This committee shall comprise of the following members:—		
(a) District Collector	:	Chairperson
(b) Divisional Forest Officers	:	Member
(Territorial and Wildlife)		
(c) ADM dealing with land matters	:	Member
(d) Deputy Director (Agriculture)	:	Member
(e) Chief District Veterinary Officer	:	Member
(f) PD, DRDA	:	Member
(g) PA, ITDA	:	Member
(h) District Welfare Officer	:	Member
(i) Deputy Director Horticulture	:	Member
(j) Soil Conservation Officer	:	Member
(k) 5 VSS (Chairperson/ Vice-Chairperson	:	Member
(at least 2 women) (to be nominated by		
the DFO)		

(viii) The DFO concerned having the jurisdiction over the district headquarters will be the Member Convener of the meetings of DLSC.

(ix) The tenure of the non-official members will be three years.

(x) The DLSC may co-opt NGOs or other experts as members with credibility and experience of working on forest related issues.

(xi) The DLSC will meet at least once in six months and shall facilitate functioning of the VSS / EDC and provide necessary support and guidance to them.

(xii) The DLSC will oversee protection and sustainable management of forests, forest based livelihood and holistic development of the villages.

(xiii) State Level Steering Committee (SLSC): The constitution of the State Level Steering Committee shall be as under:—

1.	Minister (Forest)	: Chairperson
2.	Chief Secretary	: Vice-Chairperson
3.	Principal Secretary, F & E Department	: Member
4.	Principal CCF (O)	: Member
5.	PCCF (WL)	: Member
6.	2 D.F.Os./One RCCF from field to be	: Member
	nominated by PCCF (O) on rotation basis	
7 .	Secretary, Revenue Department	: Member
8.	Secretary, Rural Development Department	: Member
9 .	Secretary, Home Department	: Member
10.	Secretary, PR Department	: Member
11 .	Secretary, SC & ST Department	: Member
12.	Chief Conservator of Forests (Central)	: Member
13.	Director, Orissa Watershed	: Member
	Development Mission	
14.	Two representatives of	: Member
	Civil Society Organisations / Experts	
	to be nominated by F&E Department	
15.	Special Secretary, F& E Department	: Member
16.	Chairpersons of two VSS / EDC	
	to be nominated by the PCCF (O)	: Member
17.	CCF (Plan, Programme & Afforestation),	
	Office of PCCF, Orissa	: Member-Convener

(xiv) The non-official members of the State Level Steering Committee will have tenure of three years.

(xv) The Committee shall meet at least once in a year to guide the process of participatory forest management.

(xvi) Changes in the Resolution, if any shall be placed before the SLSC for approval and

recommendation to Government.

16. Repeal and Savings:

This supersedes Forest & Environment Department Resolution No.17454-1F-Affn.17/2008/F&E., dated the 22nd October, 2008. However, all VSSs already formed under provisions of Forest & Environment Department Resolutions made earlier will be treated as VSS formed under this Resolution.

ORDER

Ordered that the Resolution be published in the Extraordinary issue of the *Orissa Gazette.*

By order of the Governor

AUROBINDO BEHERA
Principal Secretary to Government

ANNEXURE-A

VSS / EDC Account and Procedure of Accounting

(i) The Executive Committee (EC) of the VSS / EDC shall be responsible to account for and manage the funds and other resources received from the Government, other agencies and funds internally generated, if any. For this purpose a joint account called VSS account/EDC account shall be opened in any commercial, rural or Co-operative Bank recognised by the RBI or in any post office, which shall be operated, jointly by the Secretary and the Treasurer of the VSS / EDC. The account will be opened in the style of "(village name/any other prefix) VSS / EDC Account". All money received by the VSS / EDC either in cash or instrument shall be deposited into the account before it is used for any purpose.

(ii) Any withdrawal from the VSS / EDC account can be done only after a specific resolution of the EC in this regard.

(iii) The funds deposited into the VSS / EDC account shall be utilised towards the conservation, development and management of forest, development of the village or for any other purpose ancillary to the implementation of the Micro Plan.

(iv) In case the EC decides to spend the money from the "VSS Account/EDC account" for any other purpose it shall seek the approval of the General Body of the VSS / EDC.

(v) In case of detection of any financial irregularity the General Body may pass a resolution and freeze the VSS / EDC account for a specific period and refer the matter to the Palli Sabha. The Palli Sabha may conduct necessary enquiry and may take required action.

(vi) The Secretary shall be fully responsible for up keeping the Monthly account and maintenance of the Cash Book of the VSS / EDC. The local Forest Officials will provide guidance to the EC, whenever necessary to maintain the account in proper form.

(vii) A quarterly work programme may be drawn up by the EC and implemented subject to availability of funds for the purpose. Funds will be withdrawn accordingly from the VSS / EDC Account.

(viii) All vouchers will be passed by the EC and jointly signed by the Secretary and the Treasurer and shall be retained at the VSS / EDC level. The Secretary will prepare the monthly cash account along with an abstract of receipt and expenditure by the 10th of the following month to be approved by the EC.

(ix) Annual receipt and expenditure of the VSS / EDC shall be audited by an auditor to be appointed by the General Body of the VSS / EDC. The annual statement of receipt and expenditure of the VSS / EDC account shall be placed before the GB for its approval. Whenever funds provided by Govt. are utilized, the audited and approved abstract of annual receipt and expenditure shall be communicated by the EC to the concerned RO and DFO for record.

(x) Utilisation Certificate relating to the expenditure incurred out of funds received from Government or any other external agency shall be prepared by the Treasurer and jointly signed by the Chairperson and the Secretary and submitted to the authorities concerned.

ANNEXURE -B

Form –1

RESOLUTION

We the following villagers of _____ villages (s), hereby resolve to have formed / reconstituted a Vana Surakshya Samiti (VSS) / Eco Development Committee (EDC) for the protection and management of the part/whole of _____ forest in accordance with the provisions of Para 3 i of the Orissa Joint Forest Management Resolution, 2011. The details of the area are as follows:—

1. Name of Committee:
2. Village:
3. Gram Panchayat:
4. C.D. Block:
5. Police Station:
6. Forest Beat:
7. Forest Section:
8. Forest Range:
9. Total Members (list of members enclosed):
   (i) No. of S.T. member _____
   (ii) No. of S.C. member _____
   (iii) No. of Women members _____
10. Forest areas protected and managed _____ha.
11. Name of the Forest Block _____
12. Comp. No. _____

NAME OF VILLAGERS **SINGATURE**

1.
2.
3.
4.
5.
6.
8.
9.

Form – 2

OFFICE OF THE FOREST RANGE OFFICER _____ RANGE

Memo No. _____ Date _____

FORMATION OF VSS / EDC

The villagers of _____ village (s) have formed / reconstituted the Vana Surakshya Samiti / Eco Development Committee (EDC) as per the provision of Para 3 i of the Orissa Joint Forest Management Resolution, 2011 for the protection and management of the part/whole of _____ forest. The details of the area are as follows:—

1. Name of Committee:
2. Village:
3. Gram Panchayat:
4. C.D. Block:
5. Police Station:
6. Forest Beat:
7. Forest Section:
8. Forest Range:
9. Total Members (list of members enclosed):
    (i) No. of S.T. member _____
    (ii) No. of S.C. member _____
    (iii) No. of Women members _____
10. Forest areas proposed to be protected and managed _____ha.
11. Name of the Forest Block _____
12. Comp. No. _____

The Resolution of the Palli Sabha of the village of _____village(s) is forwarded herewith for registration of the VSS / EDC in accordance with the provision of Para 9 i of the Orissa Joint Forest Management Resolution, 2011.

Signature of Forest Range Officer

Form – 3

OFFICE OF THE DIVISIONAL FOREST OFFICER _____DIVISION

OFFICE ORDER NO. _____ Date _____

In accordance with the provision of Para 9 i of the Orissa Joint Forest Management Resolution, 2011, the _____ Vana Surakshya Samiti / Eco Development Committee is here by registered in this office vide Registration No. _____

Forest Area Schedule:

Extent of Forest Area: ha

Description of Location:

DIVISIONAL FOREST OFFICER _____
FOREST DIVISION

OFFICE OF THE DIVISIONAL FOREST OFFICER _____ DIVISION

Memo No. _____ Date _____

Copy forwarded to Forest Range Officer _____Range for information and necessary action. He is instructed to demarcate the forest area as per above schedule and depict the area in the topo sheet (1:50000 scale). A copy of the map should be available with the VSS / EDC, and in the Range Office. Another copy of the map should be submitted to this office for record.

Copy forward to Sarpanch, _____ Gram Panchayat for information and necessary action.

DIVISIONAL FOREST OFFICER _____
FOREST DIVISION

Form – 4

PERMIT UNDER THE ORISSA JOINT FOREST MANAGEMENT RESOLUTION – 2011

· Name of the assigned Forests _____

 Description of Forest produce Quantity

· Source of Procurement of the forest produce _____

· Name of the VSS / EDC Member _____

Date of issue: Destination:

Valid up to:

Signature of the President

_____ VSS / EDC

Signature of the Secretary

_____ VSS / EDC

Form –5

MEMORANDUM OF UNDERSTANDING

1. We the members of the Executive Committee of the Vana Surakshya Samiti /Eco Development Committee of _____ village and the Officials of _____ Forest Range under _____ Forest Division have come together to collaborate and perform the duties and shoulder the responsibilities as detailed in the Orissa Joint Forest Management Resolution, 2011, for protection, and sustainable management of the forest areas as per the schedule given hereunder.
   i. Name of the VSS / EDC
   ii. Registration N.
   iii. District _____
   iv. Forest Division _____
   v. Forest Range:
   vi. Section :
   vii. Beat:
   viii. Police Station :
   ix. Village:
   x. Name of the assigned Forest Block:
   xi. Legal status of the Forest area:
   xii. Area (Ha) of the assigned forest:
   xiii. Boundaries of the area:

North	East
South	West

2. It is hereby agreed by and between us to abide by the provisions of JFM Resolution, 2011.
3. We undertake to function in consonance with the existing laws of the land.
4. A copy of the aforesaid Resolution is annexed herewith duly signed by us on every page in proof/evidence of our having read/understood the same in letter and spirit. It is hereby agreed that this MoU will come into effect from _____.

Signature of the Chairperson
_____ VSS / EDC

Witnesses:
1.
2.
3.

Signature of R.O.
Range:
Division:

Witnesses:
1.
2.
3.

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No. 22562600092015

Government of Odisha

Forest and Environment Department

RESOLUTION

No 9182 /F&E.,

Bhubaneswar, dated 01-06-15

Sub : Amendment to Joint Forest Management Resolution,2011

The Provisions laid down in the clause (*i*) and (*iii*) of the para- 4 and clause (*vi*) of the ANNEXURE-A of the Joint Forest Management Resolution, 2011 issued vide this Department Resolution No. 16524/F&E, dated 09.09.2011 are substituted as under.

4. (*i*) The Palli Sabha shall elect the Chairperson, the Vice-Chairperson, the Treasurer and a minimum of other 11(eleven) members with Local Forest Guard/ Local Forester (Ex- officio member) as Secretary and other Ex- officio member such as concerned Ward member(s) to constitute the Executive Committee. At least 50% of the members of the EC shall be women. The number of SC & ST members in the Executive Body shall be in proportion to their membership in VSS/EDC. There should also be representation from the group of community, who do not have any livelihood support other than depending on the forests.

4. (*iii*) The composition of the EC shall be as follows.

1. Chairperson	:	Elected Member
2. Vice-Chairperson	:	Elected Member
3. Secretary (Local Forest Guard/Local Forester)	:	Ex officio Member
4. Treasurer	:	Elected Member
5. Ward Member (s) concerned	:	Ex officio Member(s)
6. Members	:	Elected Members

ANNEXURE-A

VSS/EDC Account and Procedure of Accounting :

(*vi*) The Secretary shall be fully responsible for up keeping the Monthly account and maintenance of the Case Book of the VSS/EDC.

By order of the Governor

U.N. Behera,

Additional Chief Secretary

Annexure-XXXXIII

LIST OF V.S.S. CONSTITUTED IN GHUMSUR NORTH DIVISION

Sl. No.	Name of the village	Name of the V.S.S	Area assigned (in Ha.)	Name of the Forest Block	Date of formation of V.S.S.	Amount Paid out of FDA / NMPB fund	Remarks
1	2	3	4	5	6	7	8
1	Balarampur	Balarampur	200	Vinjigiri RF C/3	22.02.2005	442940	
2	Baradhangidi	Baradhangidi	200	Vinjigiri RF C/2	06.02.1999	442940	
3	Bibhutia	Bibhutia	100	Ragada RF C/5	06.11.1998	442940	
4	Sandhipalli	Birahanumant	112	Dumudumi West	02.03.2005	442940	
5	Buduli	Buduli	150	Kaliamba RF C/6	19.01.2009	--	
6	Dandipadar	Dandipadar	80	Tiliki RF C/6	11.07.2002	245176	
7	Dimiripalli	Dimiripalli	150	Kaliamba RF C/4	12.07.2002	245176	
8	Dumakumpa	Dumakumpa	100	Tiliki RF C/4	18.07.2002	442940	
9	Dumudumi	Dumudumi	105	Dumudumi East	16.07.2002	442940	
10	Gochha & Tikidi	Gochha &	100	Ragada RF C/7	07.11.1998	442940	
11	Godipadar	Godipadar	150	Tiliki RF C/3	13.02.2003	442940	
12	Godipalli	Godipalli	100	Ragada RF C/4	19.07.2002	356554	
13	Gudiamba	Gudiamba	200	Tiliki RF C/5 (P)	12.12.1993	245176	
14	Gurandia	Gurandia	120	Ragada RF C/5	12.07.2002	290870	
15	Haripur	Haripur	100	Ragada RF C/10	26.07.2009	--	
16	Kadalijhola	Kadalijhola	100	Ragada RF C/5	25.08.2009	--	
17	Kaliamba	Kaliamba	200	Kaliamba RF C/2	31.08.2008	--	
18	Kaliaguda	Kaliaguda	100	Ragada RF C/3	20.05.2005	--	
19	Kaliapalli	Kaliapalli	200	Tiliki RF C/5	22.07.2002	442940	
20	Kanteipalli	Kanteipalli	200	Kaliamba RF C/5	13.01.2000	405676	
21	Kesera	Kesera	50	Vinjigiri RF C/2	10.07.2002	440368	
22	Khariguda	Khariguda	200	Ragada RF C/3	17.09.2000	507258	
23	Kulangi	Kulangi	100	Ragada RF C/4	20.09.2008	--	
24	Lathipada	Lathipada	100	Ragada RF C/4	23.03.2005	442940	
25	Makarapalli	Makarapalli	243	Ragada RF C/4	10.07.2002	442940	
26	Malati	Malati	100	Malati RF C/1	09.12.2003	442940	
27	Maraipatta	Maraipatta	150	Kaliamba RF C/4 & 5	02.03.2004	253824	
28	Mathasahi	Mathasahi	60	Dumudumi West	07.03.2005	442940	
29	Neempalli	Neempalli	100	Ragada RF C/4	13.01.2006	442940	
30	Palakasandha	Palakasandha	173	Dumudumi East	12.10.2007	--	
31	Parsulunda	Parsulunda	170	Dumudumi East	13.05.1995	491120	
32	Purunapani	Purunapani	150	Kaliamba RF C/3	16.01.2003	290870	
33	Ragada	Ragada	200	Ragada RF C/1 & 2	12.11.1998	442940	
34	Rampalli	Rampalli	150	Tiliki RF C/3	16.06.2005	442940	
35	Rangabali	Rangabali	200	Vinjigiri RF C/2	23.02.2005	442940	

36	Saluapalli	Saluapalli	150	Kaliamba RF C/6	22.01.2004	270382	
37	Sardula	Sardula	100	Tiliki RF C/6	26.07.2009	--	
38	Somanathpalli	Somanathpalli	200	Kaliamba RF C/5	22.08.2002	356554	
39	Sunapalibanjar	Sunapalibanjar	80	Dumudumi East	22.10.2003	442940	
40	Tinikhandia	Tinikhandia	200	Ragada RF C/3	20.07.2002	356554	
41	Tokaganda	Tokaganda	170	Tiliki RF C/6 (A)	11.11.1998	436807	
42	V.Kotibadi	V.Kotibadi	160	Vinjigiri RF C/1	22.12.1998	360258	
43	Vinjigiri	Vinjigiri	110	Vinjigiri RF C/4	17.01.2003	442940	
44	Central	Gobarabandha	100	Kaliamba RF C/2		66,634	
45	Baliapata	Baliapata	60	Gallery RF C/23	Date not	354352	
46	Banjarasahi	Banjarasahi	160	Chandragiri RF C/3	13.01.2008	442940	
47	Barhakuda	Barhakuda	200	Gallery RF C/16	17.10.2004	354352	
48	Beruanbadi	Beruanbadi	200	Chandragiri RF C/11	21.01.2003	202434	
49	Bilipada	Bilipada	60	Gallery RF C/23	18.10.2004	221470	
50	Bori Bandha	Bori Bandha	70	Gallery RF C/23	09.04.2004	221470	
51	Budhagochha	Budhagochha	200	Chandragiri RF C/11	09.01.2005	365764	
52	Chadheapalli	Chadheapalli	100	Chadheapalli RF C/1	17.01.1999	--	
53	Dhimirijholi	Dhimirijholi	200	Dhimirijholi RF C/2	21.01.2003	290635	
54	Dhobataila	Dhobataila	150	Gallery RF C/20	12.10.2004	354352	
55	Harigada	Harigada	200	Dhimirijholi RF C/2	07.01.2005	354352	
56	Kalijhari	Kalijhari	200	Chadheapalli RF C/1	21.01.2003	202430	
57	Khairaputi	Khairaputi	200	Gallery RF C/23	21.01.2003	174265	
58	Khamanasahi	Khamanasahi	200	Ambajhara RF C/4	21.01.2003	--	
59	Kirajhola	Kirajhola	200	Chandragiri RF C/3	15.09.2006	112424	
60	Kotipada	Kotipada	200	Gallery RF C/22	15.01.1999	253225	
61	Kumbhipalli	Kumbhipalli	140	Chandragiri RF C/11	14.01.2005	354352	
62	Kurhadia	Kurhadia	150	Chandragiri RF C/3	15.01.2008	--	
63	Kutunikumpa	Kutunikumpa	140	Chandragiri RF C/12	07.10.2004	354352	
64	Nua Lembhei	Maa	150	Chandragiri RF C/10	20.07.2008	--	
65	Lembhai	Maa	150	Chandragiri RF C/10	26.12.2008	--	
66	Manisahi	Manisahi	200	Dhimirijholi RF C/1	13.03.2008	--	
67	Puduringi	Puduringi	200	Chandragiri RF C/1	08.02.2004	354352	
68	Rangameru	Rangameru	200	Gallery RF C/18	21.12.2003	177571	
69	Ranikirari	Ranikirari	200	Dhimirijholi RF C/1	21.01.2003	265410	
70	Ranjasahi	Ranjasahi	200	Gallery RF C/16	17.10.2004	354352	
71	Samarada	Samarada	200	Chandragiri RF C/11	21.01.2003	175711	
72	Tuinpadara	Tuinpadara	200	Ambajhara RF C/5	16.11.2008	--	
73	Gallery	Nuapalli	100	Dimirijholi RF C/2	26.02.2011	-	
74	Akulakumpa	Akulakumpa	200	Jagannathprasad RF C/5	23.08.2002	405522	
75	Baniapalli	Baniapalli	200	Jagannathprasad RF	08.05.2004	442940	
76	Bankatara	Bankatara	200	Jagannathprasad RF C/9	11.02.2004	442940	
77	Bhusubhusa	Bhusubhusa	100	Jagannathprasad RF C/8	18.10.2007	--	
78	Biluamara	Biluamara	100	Jagannathprasad RF C/1	24.04.2005	354352	
79	Dhimiripalli	Dhimiripalli	100	Jagannathprasad RF C/5	09.01.1999	442940	
80	Dungapalli	Dungapalli	150	Jagannathprasad RF C/6	14.01.1999	356553	

81	Ekagharia	Ekagharia	41	Jogipahada Protected	27.10.2004	221470	
82	Gothalunda	Gothalunda	100	Jagannathprasad RF	05.01.2005	442940	
83	Hajapalli	Hajapalli	100	Jagannathprasad RF C/9	08.01.2005	442940	
84	Jaripankal	Jaripankal	120	Jagannathprasad RF C/3	19.09.2003	265764	
85	Kandha Banta	Kandha Banta	100	Jagannathprasad RF C/2	15.12.2003	442940	
86	Kandhatirigochh	Kandhatirigoch	100	Jagannathprasad RF C/1	19.01.2005	265764	
87	Kapilapalli	Kapilapalli	120	Jagannathprasad RF C/9	20.03.2005	442940	
88	Kepiti	Kepiti	200	Jagannathprasad RF C/9	17.08.2002	447697	
89	Kriyadhar	Kriyadhar	200	Jagannathprasad RF C/3	20.08.2002	507258	
90	Kudutei	Kudutei	200	Jagannathprasad RF C/9	18.11.2004	442940	
91	Lunagundi	Lunagundi	100	Jagannathprasad RF C/5	15.01.1999	442940	
92	Lundurupadar	Lundurupadar	200	Paichhelia RF C/5	22.08.2002	507258	
93	Narayanapalli	Narayanapalli	200	Jagannathprasad RF C/8	21.01.2003	418217	
94	Patrapalli	Patrapalli	100	Jagannathprasad RF	02.01.2005	442940	
95	Samarabandha	Samarabandha	150	Jagannathprasad RF C/8	16.11.2007	--	
96	Talapanka	Talapanka	100	Jagannathprasad RF C/6	20.03.2003	442940	
97	Tirikupa	Tirikupa	150	Jagannathprasad RF C/7	28.11.2007	--	
98	Umasahi	Umasahi	65	Jagannathprasad RF C/9	10.06.2005	221470	
99	Jagannath	Banta	150	J.N.Prasad RF C/2	12.02.2009	49,976	
10	Jagannath	Banta Nuasahi	100	J.N.Prasad RF C/2	01.01.2010	49,976	
10	Akhupadar	Akhupadar	50	Tiliki RF C/1	07.03.2008	--	
10	Badapathara	Badapathara	107	Gallery RF C/5	21.01.2003	356554	
10	Bahakapalli	Bahakapalli	25	Jagannathprasad RF	26.01.2003	221470	
10	Balinkia	Balinkia	100	Rambha RF C/3	18.12.2004	442940	
10	Banjaragaon	Maa	100	Darapangia RF C/10	07.02.2008	--	
10	Bedigoba	Bedigoba	200	Rambha RF C/5	25.01.2004	442940	
10	Bhaluguda	Bhaluguda	100	Rambha RF C/2	21.01.2003	405676	
10	Binagaon	Binagaon	150	Darapangia RF C/9	14.02.2008	--	
10	Binjigiri	Binjigiri	156	Gallery RF C/6	21.01.2003	507140	
11	Buduli	Bira	150	Gallery RF C/5 & 6	08.06.2009	--	
11	Chadheapalli	Chadheapalli	150	Gallery RF C/4	14.01.2004	442940	
11	Birikote	Dadhibamana	200	Darapangia RF C/6	15.09.2004	442940	
11	Daha	Daha	150	Baiballi RF C/10	22.01.2009	--	
11	Danguapalli	Danguapalli	102	Gallery RF C/2	21.01.2003	405676	
11	Dirbisingh	Mahabir	100	Darapangia RF C/10	07.02.2008	--	
11	Durgaprasad	Durgaprasad	200	Rambha RF C/7	21.01.2004	442940	
11	Gajapadar	Gajapadar	70	Jagannathprasad RF	14.03.2004	442940	
11	Gambharigochh	Gambharigoch	36.79	Revenue Forest Gramya	08.02.2008	--	
11	Gandisula	Gandisula	150	Gallery RF C/7	01.11.2004	442940	
12	Gochhapalli	Gochhapalli	70	Tilliki RF C/1	08.03.2008	--	
12	Gutuliguda	Gutuliguda	150	Darapangia RF C/3	25.12.2005	442940	
12	Hati Sahi	Hati Sahi	100	Gallery RF C/1	23.09.2004	442940	
12	Jaya Mangala	Jaya Mangala	150	Gallery RF C/10	21.01.2004	442940	
12	Jogimari	Jogimari	100	Gallery RF C/5	21.11.2004	442940	
12	Kadalundi	Kadalundi	75	Jagannathprasad RF	02.03.2003	442940	

12	Kalipanka	Kalipanka	143	Gallery RF C/9	21.01.2003	405676	
12	Kanabindha	Kanabindha	150	Darapangia RF C/14	16.11.2003	442940	
12	Khariguda	Khariguda	100	Gallery RF C/11	14.02.2008	--	
12	Khariguda	Khariguda	150	Gallery RF C/11	28.03.2008	--	
13	Khurudugochha	Khurudugochh	100	Rambha RF C/3	21.01.2003	290870	
13	Kotibaradi	Kotibaradi	200	Kullada RF C/2 & 3	06.01.1999	447698	
13	Krushnapalli	Krushnapalli	30	Jagannathprasad RF	14.03.2011	221470	
13	Kutunikumpa	Kutunikumpa	150	Gallery RF C/3	26.03.2008	--	
13	Langalakhola	Langalakhola	200	Darapangia RF C/9	28.11.2005	442940	
13	Naringipalli	Maa Bapangi	200	Baiballi RF C/6	14.09.2004	442940	
13	Kullada	Maa Bhuinyani	150	Kullada RF C/2	14.03.2004	442940	
13	Gunakia	Maa Budhima	200	Baiballi RF C/11	16.09.2004	442940	
13	Baragoan	Maa	200	Baiballi RF C/6	27.09.2004	442940	
13	Baiballi	Maa Kali	200	Baiballi RF C/4	27.09.2004	442940	
14	Benakunda	Maa	200	Kullada RF C/1	24.02.2006	442940	
14	Dhaumundia	Maa Thakurani	200	Baiballi RF C/11	26.09.2004	442940	
14	Mahaguda	Mahaguda	200	Gallery RF C/2	05.01.2005	442940	
14	Miniary	Miniary	108	Gallery RF C/11	14.05.2004	442940	
14	Nabagochha	Nabagochha	200	Darapangia RF C/11	11.12.2005	--	
14	Nidhiapalli	Nidhiapalli	150	Gallery RF C/11	18.01.2004	442940	
14	Nuapalli	Maa Kandhuni	50	Tilliki RF C/2	07.03.2008	--	
14	Nuasahi	Nuasahi	177	Baiballi RF C/12	21.01.2003	405676	
14	Pankal	Pankal	105	Kullada RF C/3	21.01.2003	195579	
14	Pochalundi	Pochalundi	50	Jagannathprasad RF	02.03.2003	442940	
15	Raipalli	Raipalli	75	Jagannathprasad RF	02.03.2003	442940	
15	Rajakunda	Rajakunda	150	Gallery RF C/6	09.11.2004	442940	
15	Ripitipalli	Ripitipalli	176	Baiballi RF C/10	21.01.2003	356554	
15	Sadhugaon	Sadhugaon	100	Gallery RF C/12	21.01.2003	356554	
15	Sahanapalli	Sahanapalli	50	Kullada RF C/1	16.03.2008	--	
15	Samapalli	Samapalli	158	Gallery RF C/4	21.01.2003	356554	
15	Sarapada	Sarapada	150	Baiballi RF C/9	07.02.2008	--	
15	Satagharia	Satagharia	107	Darapangia RF C/8	21.01.2003	356554	
15	Sidhapadar	Maa Suradevi	80	Gallery RF C/6	08.02.2006	--	
15	Salapaguda	Maa Suradevi	200	Darapangia RF C/7	28.09.2004	442940	
16	Sutangi	Sutangi	200	Gallery RF C/17	23.09.2004	442940	
16	Tadama	Tadama	200	Baiballi RF C/2	23.08.2005	221470	
16	Tajiki	Tajiki	100	Rambha RF C/1	21.01.2003	356554	
16	Tangana	Tangana	25	Jagannathprasad RF	02.02.2003	221470	
16	Tiliki	Tiliki	100	Tiliki RF C/2	01.02.2003	442940	
16	Uldan	Uldan	75	Jagannathprasad RF	28.01.2003	442940	
16	Upar Bagdevi	Upar Bagdevi	70	Kullada RF C/2	21.01.2003	442940	
16	Mujagada	Indagada	25	Baiballi RF C/10	22.01.2010		
16	Mujagada	Khandikoti	120	Darapangia RF C/10	18.01.2010	66,634	
16	Adibasi colony	Adibasi colony	120	Ambajhara RF C/12	05.03.2004	442940	
17	Badabhumi	Badabhumi	100	Ghogoda RF C/4	21.01.2003	264729	

17	Badagunduribad	Badagunduriba	120	Gunduribadi RF C/1	04.08.2004	442940	
17	Beniasahi	Baniasahi	80	Ambajhara RF C/9	05.05.2009	--	
17	Barapalli	Barapalli	200	Paichhelia RF C/3	20.03.2004	442940	
17	Bhogara	Bhogara	120	Gunduribadi RF C/3	Date not	138732	NMPB
17	Bibhutiakhala	Bibhutiakhala	100	Paichhelia RF C/3	16.03.2008	--	
17	Budhabari	Budhabari	120	Paichhelia RF C/2	18.02.2004	138732	NMPB
17	Budurungi	Budurungi	120	Paichhelia RF C/2	24.05.2004	138732	NMPB
17	Dangabhumi	Dangabhumi	250	Brahamanasahi RF C/3	18.12.2003	130702	NMPB
17	Dubapalli	Dubapalli	50	Brahamanasahi RF C/6	05.05.2009	--	
18	Gouda	G.Nabagochha	120	Paichhelia RF C/2	07.03.2004	130702	NMPB
18	Garudapathara	Garudapathara	200	Chandragiri RF C/8 & 9	06.11.2004	442940	
18	Ghogada	Ghogada	150	Ghogoda RF C/4	22.04.2004	138732	NMPB
18	Khetamunduli	Gramadevati	75	Brahamanasahi RF C/2	21.01.2003	356553	
18	Halandakhola	Halandakhola	160	Chandragiri RF C/9	27.12.2004	442940	
18	Harijana colony	Harijana	150	Ambajhara RF C/19	30.06.2004	--	
18	Gayaganda	Highschoolsahi	120	Ambajhara RF C/18	Date not	442940	
18	Indira colony	Indira colony	150	Ambajhara RF C/13	02.04.2004	442940	
18	Jadadhara	Jadadhara	150	Ambajhara RF C/10	14.05.2004	442940	
18	Kandha	Kandha	100	Paichhelia RF C/2	20.04.2004	138732	NMPB
19	Kadaligada	Kadaligada	150	Ambajhara RF C/14	05.12.2003	442940	
19	Kalingapadar	Kalingapadar	150	Ambajhara RF C/12	23.07.2004	442940	
19	Kandhagundurib	Kandhagunduri	150	Paichhelia RF C/2	01.02.2008	--	
19	Kandhasarala	Kandhasarala	200	Brahamanasahi RF C/3	11.12.2003	138732	NMPB
19	Kathapatani	Kathapatani	120	Gunduribadi RF C/2	21.01.2003	405676	
19	Khajuripalli	Khajuripalli	150	Ghogoda RF C/3	Date not	442940	
19	Khallisahi	Khallisahi	120	Ambajhara RF C/12	08.01.2004	442940	
19	Khetamundali	Khetamundali	100	B.Sahi RF C/5(p),2	13.02.2008	--	
19	Kimbharakhani	Kimbharakhani	120	Paichhelia RF C/2	21.01.2008	--	
19	Khurudupalli	Khurudupalli	200	Ambajhara RF C/10	22.12.2003	--	
20	Siuli	Maa	200	Ambajhara RF C/14	14.12.2005	442940	
20	Mahadevakham	Mahadevakha	150	Ambajhara RF C/16	04.08.2004	442940	
20	Malliksahi	Malliksahi	200	Ghogoda RF C/3	12.02.2008	--	
20	Manapur	Manapur	429	Brahamanasahi RF C/6	21.01.2003	507258	
20	Mandapathara	Mandapathara	100	Paichhelia RF C/1	Date not	138732	NMPB
20	Narayanprasada	Narayanprasad	150	Ambajhara RF C/10	17.12.2003	442940	
20	Nuasahi	Nuasahi	150	Brahamanasahi RF C/2	21.01.2003	507258	
20	Patangi	Patangi	200	Paichhelia RF C/3	28.03.2004	442940	
20	Patharaganda	Patharaganda	120	Ghogoda RF C/3	05.07.2005	442940	
20	Rampoo	Rampoo	130	Paichhelia RF C/4	23.12.2003	442940	
21	Rudhapadar	Rudhapadar	100	Ghogoda RF C/13	Date not	442940	
21	Salapataila	Salapataila	200	Chandragiri RF C/5	01.03.2004	138732	NMPB
21	Sarangapatta	Sarangapatta	180	Gunduribadi RF C/4	11.02.2008	--	
21	Sisunda	Sisunda	200	Brahamanasahi RF C/5	16.09.2004	442940	
21	Suramani	Suramani	200	Brahamanasahi RF C/4	13.03.2003	507258	
21	Talaganda	Talaganda	150	Ghogoda RF C/3	05.07.2005	442940	

21	Talakhamana	Talakhamana	150	Ghogoda RF C/6	16.03.2008	--	
21	Tinichhakia	Tinichhakia	180	Chandragiri RF C/9	05.12.2004	442940	
21	Tirigochha	Tirigochha	99	Brahamanasahi RF C/2	18.04.2004	442940	
21	Toladi	Toladi	180	Paichhelia RF C/4	01.03.2004	442940	
22	Tarasingi	Baradanda	100	Brahamansahi RF C/5	21.12.2009	66,634	
22	Tarasingi	Dasasahi	100	Ghogoda RF C/5	12.03.2010	66,634	
22	Gallery	Banjarasahi	100	Chandragiri RF C/3	13.01.2008	66,634	
22	Tarasingi	Naragadu	100	Ghogoda RF C/3	19.02.2010	66,634	
		Total	31,457.79				

DLC Data												
GANJAM	05	BHANJANAGAR	06	NA	DADARALUNDA	NA	671	3117	0.3970	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	DADARALUNDA	NA	671	3119	4.1250	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	BUDULI	NA	264	237	6.5780	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	RAMBHA	NA	355	193/2153	0.1600	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	RAMBHA	NA	355	943	20.2250	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	RAMBHA	NA	355	1943	1.0930	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	RAMBHA	NA	355	163	17.1250	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	RAMBHA	NA	355	164	14.5250	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	SURANGI	NA	133	559	21.0000	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	DINDIPALLI	NA	705	753	13.2000	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	DINDIPALLI	NA	705	1171	0.4300	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	DINDIPALLI	NA	705	742	11.9250	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/144	49	1.0200	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/143	47	1.5150	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/143	64/5944	3.4000	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/143	65/5445	0.8400	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/144	55	8.0300	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/144	555	1.0000	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/144	73	14.3250	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/144	74	0.3950	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/143	58/5851	4.0000	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/144	58	8.3600	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/145	70	2.8000	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	NA	NA	NA	TOTAL	156.4680	AC	GOVT	JUNGLE

GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/145	51	2.6200	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/145	157/5222	0.2400	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/145	78/5226	0.1200	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/145	78/5227	0.3200	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/145	555/5376	1.3800	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/145	556/5626	0.4400	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/145	77	2.6000	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/145	78	0.2800	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/143	47	7.0250	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/143	57/5853	2.0000	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/143	71/5854	2.0000	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/143	59	3.7250	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	KOKOLABA	NA	534/143	60/5806	3.3300	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	JADADHARA	NA	337/59	2502	1.1000	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	JADADHARA	NA	337/59	14	0.1430	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	JADADHARA	NA	337/59	15	0.1740	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	JADADHARA	NA	337/59	16	0.2620	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	JADADHARA	NA	337/59	17	0.7080	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	JADADHARA	NA	337/57	2501	0.5700	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	JADADHARA	NA	337/57	2503	0.2130	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	JADADHARA	NA	337/57	2505	0.1500	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	JADADHARA	NA	337/57	2506	1.2600	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	JADADHARA	NA	337/57	13	0.1950	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	JADADHARA	NA	337/57	12	0.5820	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	JADADHARA	NA	337/57	11	8.6650	AC	GOVT	JUNGLE
GANJAM	05	BHANJANAGAR	06	NA	JADADHARA	NA	337/57	2504	0.1800	AC	GOVT	JUNGLE

Annexure-XXXXV

List of Bamboo Artisans of Ghumsur North Division		
Range	**Village**	**Name of the Artisans**
Jagannath Prasad	Nada	1. Aintha Naik
		2. Phagu Naik
		3. Akula Naik
		4. Sukanti Naik W/o- Bidesi
		5. Sukanti Naik W/o- Matia
		6. Gauda Naik S/o- Sukuru
		7. Udiya Naik
		8. Chaitnya naik
		9. Dibakar naik
		10. Barun naik
Tarasingi	Gayaganda	11. Supriya Nayak
	Kainfulia	12. Sankar Nayak
		13. Padan Nayak
	Sarangapatta	14. Hadu Nayak
	Kalingapadar	15. Duruja Nayak
		16. Sudam Nayak
		17. Arakhita Nayak
Mujagada	Hatiguda (Dihakumpalli)	18. Karuna Paricjhha
		19. MochiaParichha
		20. Parama Parichha
		21. Nischinta Nayak
	Baunsakata	22. Bulu Mantri
		23. Upendra Mantri
		24. Mantri Behera
	Bhanjanagar (Medirisahi)	25. R. Ram
		26. R.Paramananda
		27. N.Subasini
		28. R.Runu
Central	Gangapur	29. Indira Nayak
		30. Maheswara Nayak
		31. Santash Nayak
		32. Jala Nayak
	Gopalpursasan	33. Banamali Nayak
		34. Mita Naik
		35. Santosh Naik
		36. Ahalya Naik
	Rangabali	37. Hadia Mallick
		38. Bipra Mallick
		39. Brundabana Mallick
		40. Purnachandra Mallick
		41. Namita Mallick
	Kendupalli	42. Ganda Mallick
		43. Indira Mallick
		44. Braja Mallick
		45. Iswar Mallick