

Diversity of Tree Species in Similipal Biosphere Reserve, Odisha, India

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The Similipal is named so because once *Bombax ceiba* was the dominant tree found in that forest, in Odiya this plant is called as 'Simili'. Foresters and ecologists define a tree is a woody plant attains diameter of 10 cm or more at the breast height (130 cm from ground). The trees differ from other plants in having cambium tissue that are responsible for their secondary woods of their stems [1]. Shrubs are also woody but differ from trees because their first branch start from the base near the ground but in trees first branches are much above and usually have a single stem emerging from the ground level [2]. The diversity of tree species is complex in nature and because of the varying topographic and climatic conditions the vegetation structure also changes from place to place. Biodiversity has become the issue of global attention because of growing awareness of its importance on the one hand as ecosystem energy and on the other hand it allows building complex tropical networks and functions as insurance for ecosystem stability and resilience [3-4]. Trees vigorously influence the environmental condition by sequestering huge carbon, releasing much more oxygen and water vapours. Trees bind the soil, maintain minerals cycling and regulate rain water [5-7]. Trees provide us food, shelter, clothing, medicine, timber, fuel wood, tannins, essential oils, perfumes, gum, resins, fibres, wax, paper, coir and so many products. The present study has been undertaken due to the lack of detailed tree species database in Similipal forest.

Similipal Biosphere reserve is located in the Mayurbhanj district of Odisha state, India. It lies in the tri-junction of three states- Odisha, West Bengal and Jharkhand. Its latitude is between 21.28° N to 22.08° N and longitude between 86.03° E to 86.37° E covers major portion in the central part of Mayurbhanj district. It contains over an area of 5569.00 km² with a core area of 1200 km² (approx.), buffer area 1335 km² and transitional area of 3040 km². Similipal Biosphere Reserve includes three protected areas- Similipal Tiger Reserve, Hadagarh Wildlife Sanctuary, Kuldiha Wildlife Sanctuary.

- Studies were carried during the time period of November-December of 2021, March-April of 2022 and September-

October of 2022 for the purpose to cover all spectrum of vegetation.

- The surveys of area have been done by sampling method. Vegetation surveys were carried out by quadrat methods.
- All plants above 130 cm tall were recorded and maximum specimens are collected for herbarium preparation.
- The height was estimated visually.
- Photographs were taken by using DSLR, GPS Camera.
- Ethnomedicinal importance of the trees were documented with the help of the local resource persons, guides, local foresters, local medicine men etc.
- Cross check all information by various flora, herbarium center, experts, scientists.

A total of 171 tree species belonging to 42 families were observed during our survey in Similipal Biosphere Reserve. Fabaceae claimed highest number of tree species here are 22. Then family Moraceae bear 15 tree species followed by Malvaceae 9 species, Phyllanthaceae, Euphorbiaceae and Maliaceae have 8 species each, Rutaceae have 7 species followed by Anacardiaceae, Combretaceae, Myrtaceae have 6 tree species each. Least number of tree species 1(one) was found among the families of Sabiaceae, Magnoliaceae, Ulmaceae, Ochnaceae, Bixaceae, Cornaceae, Pittosporaceae and Araliaceae [8-11].

Maximum tree species are very useful as timber, fire wood, house making. Many plants are used by local people in curing different types of disease as remedy for dysentery, fever, piles, skin disease, diarrhoea, loss of memory, prevent bleeding, rheumatism and so many purpose. Fruits are eaten by wild animal like deer, gaur, squirrel and birds [12-13].

SUMMARY

Similipal is one of the Sal dominated large forest in Odisha and also in India. There are many forest types are present in this Biosphere Reserve such as- Tropical dry deciduous forest, Moist Deciduous Forest, Semi-evergreen forest, Mixed deciduous forest, High Level Sal Forest, Hill Forest, Savannah

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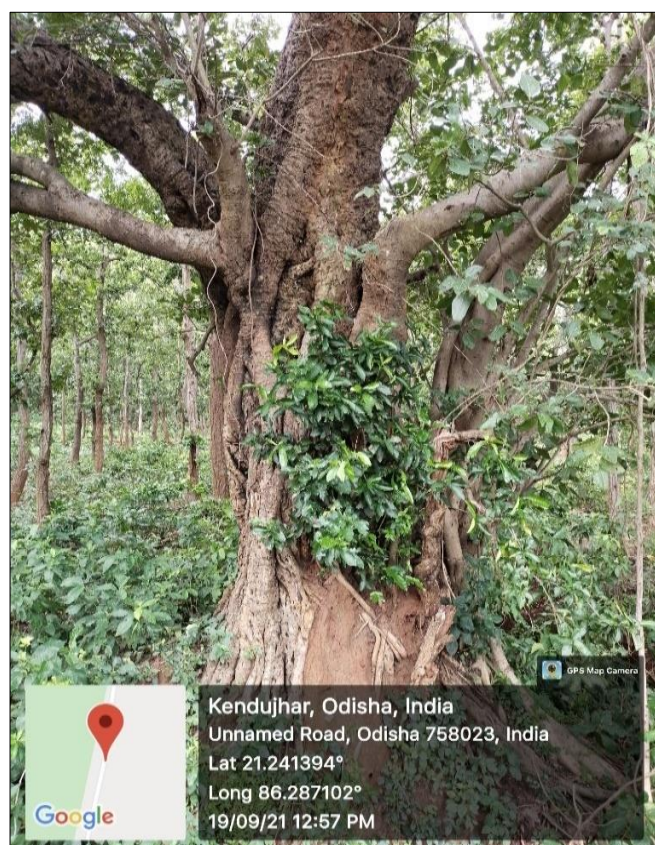
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and Grassland meadow types. That's why in this paper we analysis all the tree species found in this Biosphere along with their ethno-medicinal importance. The main objectives of the study are to identify and classify all tree plants present within the reserve and documented their ethno-medicinal uses. The study was done in three seasonal conditions- pre monsoon, post monsoon and in winter. Many photographs were taken for their further identification. Plants were collected in field and note their habit, habitat, flower colour, fruit colour, odour, and after that prepare herbarium, analyzed through proper and available flora. In present study we exclude tree species of Monocotyledons, Gymnosperms and Pteridophytes. The present study deals with only tree species present in Similipal Biosphere Reserve. More

attention should be paid to the tree species showing very low amount. Similipal Biosphere Reserve is a protected forest, still the forest vegetation is experiencing destruction due to the interaction of the local people for their dependence on the forest for the timber, medicine, fire wood, as well as non- wood forest products. Overgrazing by the livestock has added to the parameter of destruction of newly germinating seeds. This preliminary study will add to the knowledge about the present status of vegetation in the biosphere. Many endangered, rare and endemic species are also at high-risk position. Plantation of the species and thereby restoration of the forest vegetation is the key message of the survey.

Botanical name	Family	Botanical name	Family
<i>Shorea robusta</i> Gaerth	Dipterocarpaceae	<i>Ficus virens</i> aiton	Moraceae
<i>Schleicheraoleosa</i> (Lour.) Merr	Sapindaceae	<i>Streblus asper</i> Lour.	Moraceae
<i>Lepisanthes rubiginosa</i> (Roxb) Leenth.	Sapindaceae	<i>Streblus taxoides</i> (Roth) Kurz	Moraceae
<i>Tamarindus indica</i> L.	Fabaceae	<i>Elaeocarpus stipularis</i> var <i>siamensis</i> (Craib) Coode	Elaeocarpaceae
<i>Butea monosperma</i> (Lam) Taub.	Fabaceae	<i>Elaeocarpus tectorius</i> (Lour) Poir	Elaeocarpaceae
<i>Bauhinia purpurea</i> L.	Fabaceae	<i>Cassine glauca</i> (Rottb) Kuntze	Celastraceae
<i>Bauhinia semla</i> Wunderlin	Fabaceae	<i>Ononymus glaber</i> Roxb.	Celastraceae
<i>Bauhinia malabarica</i> Roxb.	Fabaceae	<i>Ochna obtusata</i> DC. Var. obtusata	Ochnaceae
<i>Bauhinia variegata</i> L.	Fabaceae	<i>Antidesma acidum</i> Retz	Phyllanthaceae
<i>Albizia lebbeck</i> (L.) Benth.	Fabaceae	<i>Antidesma montanum</i> Blume	Phyllanthaceae
<i>Albizia procera</i> (Roxb.) Benth.	Fabaceae	<i>Baccaurea ramiflora</i> Lour.	Phyllanthaceae
<i>Albizia chinensis</i> (Osbeek) Merr	Fabaceae	<i>Bridelia glauca</i> Blume	Phyllanthaceae
<i>Albizia odoratissima</i> (L.f) Benth	Fabaceae	<i>Bridelia retusa</i> (L) A. juss	Phyllanthaceae
<i>Acacia nilotica</i> (L) Delile	Fabaceae	<i>Glochidion heyneanum</i> (Wight & Arn) wight	Phyllanthaceae
<i>Acacia lenticularis</i> Benth.	Fabaceae	<i>Cleistanthus collinus</i> (Roxb) Benth.ex Hook.f.	Phyllanthaceae
<i>Acacia farnesiana</i> (L) willd	Fabaceae	<i>Phyllanthus emblica</i> L.	Phyllanthaceae
<i>Cassia fistula</i> L.	Fabaceae	<i>Salix tetrasperma</i> Roxb.	Salicaceae
<i>Dalbergia lanceolaria</i> L.f.	Fabaceae	<i>Xylosma longifolia</i> Clos	Salicaceae
<i>Dalbergia latifolia</i> Roxb.	Fabaceae	<i>Garcinia cowaroxb.</i> Ex Choisy	Clusiaceae
<i>Pongamia pinnata</i> (L) Pierre	Fabaceae	<i>Garcinia xanthochymus</i> Hook.f. ex T.Anders	Clusiaceae
<i>Pterocarpus marsupium</i> Roxb.	Fabaceae	<i>Anogeissus acuminata</i> (Roxb.ex DC) wall.ex Guillen & per	Combretaceae
<i>Saraca asoca</i> (Roxb) Willd.	Fabaceae	<i>Anogeissus latifolia</i> (Roxb.ex DC) wall.ex Guillen & per	Combretaceae
<i>Xylia xylocarpa</i> (Roxb) Taub.	Fabaceae	<i>Terminalia arjuna</i> (Roxb.ex DC) wight & Arn.	Combretaceae
<i>Desmodium oojainensis</i> (Roxb) Ohashi	Fabaceae	<i>Terminalia bellirica</i> (Gartn.) Roxb	Combretaceae
<i>Erythrina suberosa</i> Roxb.	Fabaceae	<i>Terminalia chebula</i> Retz.	Combretaceae
<i>Azadirachta indica</i> A.Juss.	Meliaceae	<i>Terminalia tomentosa</i> Wight & Arn.	Combretaceae
<i>Aphanamixis polystachya</i> (Wall) R.Parker	Meliaceae	<i>Psidium guajava</i> L.	Myrtaceae
<i>Cipadessa baccifera</i> (Roth.) Miq.	Meliaceae	<i>Syzygium cumini</i> (L) Pers.	Myrtaceae
<i>Heynea trijuga</i> Roxb.ex Sims	Meliaceae	<i>Syzygium fruticosum</i> DC	Myrtaceae
<i>Melia azedarach</i> L.	Meliaceae	<i>Syzygium jambos</i> (L) Alston	Myrtaceae
<i>Soyimida febrifuga</i> (Roxb.) A.Juss.	Meliaceae	<i>Syzygium nervosum</i> A.Cunn.ex DC	Myrtaceae
<i>Toona ciliate</i> M.Roem.	Meliaceae	<i>Syzygium praecox</i> (Roxb) Rathakr. & N C Nair	Myrtaceae
<i>Walsura trifoliata</i> (A.Juss) Harms.	Meliaceae	<i>Acronychia pedunculata</i> (L) Miq	Rutaceae
<i>Diospyros malabarica</i> (Desr.) Kostel.	Ebenaceae	<i>Aegle marmelos</i> (L) Corr	Rutaceae
<i>Diospyros melanoxydon</i> Roxb.	Ebenaceae	<i>Atalantia monophylla</i> DC	Rutaceae
<i>Diospyros montana</i> Roxb.	Ebenaceae	<i>Chloroxylon swietenia</i> DC	Rutaceae
<i>Diospyros sylvatica</i> Roxb.	Ebenaceae	<i>Micromelum minutum</i> (Forst.f.) wight & Arn	Rutaceae
<i>Croton persimilis</i> Muell.arg	Euphorbiaceae	<i>Murraya paniculata</i> (L) Jack	Rutaceae
<i>Dimorphocalyx glabellus</i> Thw.	Euphorbiaceae	<i>Zanthoxylum rhetsa</i> (Roxb) DC	Rutaceae
<i>Falconeria insignis</i> Royle	Euphorbiaceae	<i>Bombax ceiba</i> L.	Malvaceae
<i>Lasiorocca comberi</i> Haines	Euphorbiaceae	<i>Firmiana colorata</i> (Roxb) R. Br.	Malvaceae
<i>Mallotus nudiflora</i> (L) Kulju&Welzen	Euphorbiaceae	<i>Firmiana simplex</i> (L) W.Wight	Malvaceae
<i>Macaranga denticulate</i> (Bl.) Muell-Arg.	Euphorbiaceae	<i>Grewia orbiculata</i> Rottler	Malvaceae
<i>Macaranga peltata</i> (Roxb.) Muell-Arg.	Euphorbiaceae	<i>Grewia serrulata</i> DC	Malvaceae
<i>Suregada multiflora</i> (Juss.) Baill.	Euphorbiaceae	<i>Guazuma ulmifolia</i> Lam.	Malvaceae
<i>Lannea corromandelica</i> (Houtt.) Merr.	Anacardiaceae	<i>Kydia calycina</i> Roxb	Malvaceae
<i>Mangifera indica</i> L.	Anacardiaceae	<i>Pterospermum acerifolium</i> (L) Willd.	Malvaceae
<i>Buchanania cochinchinensis</i> (Lour.) M.R.Almeida	Anacardiaceae	<i>Sterculia villosa</i> Roxb.	Malvaceae
<i>Nothopegia heyneana</i> gamble	Anacardiaceae	<i>Cochlospermum religiosum</i> (L.) Alston	Bixaceae
<i>Rhus chinensis</i> Mill.	Anacardiaceae	<i>Alangium salvifolium</i> (L.f) Wang	Cornaceae
<i>Semecarpus anacardium</i> L.f.	Anacardiaceae	<i>Careya arborea</i> Roxb.	Lecythidaceae

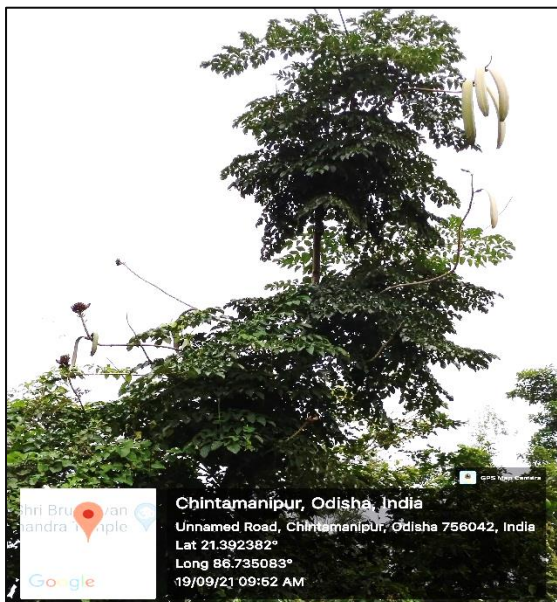
<i>Magnolia champaca</i> (L.) Baill.ex Pierre	Magnoliaceae	<i>Barringtonia acutangula</i> (L) Gaertn.	Lecythidaceae
<i>Annona squamosa</i> L.	Annonaceae	<i>Madhuca longifolia</i> var <i>latifolia</i> (Roxb) A. Chev	Sapotaceae
<i>Annona reticulata</i> L.	Annonaceae	<i>Mimusops elengi</i> L.	Sapotaceae
<i>Polyalthiacerasoides</i> (Roxb.) Bedd.	Annonaceae	<i>Xantolis tomentosa</i> (Roxb) Rafin	Sapotaceae
<i>Polyalthia simiarum</i> (Buch-Ham ex Hook.f. & Thompson) Benth ex Hook.f. & Thompson	Annonaceae	<i>Ardisia solanacea</i> (Poir) A.Chev	Primulaceae
<i>Polyalthia suberosa</i> (Roxb.) Thw	Annonaceae	<i>Embelia ribes</i> Burm.f.	Primulaceae
<i>Actinodaphne gullavara</i> (Buch-Ham.exnees) M.R. Almeida	Lauraceae	<i>Symplocos cochinchinensis</i> (Lour) S.Moore	Symplocaceae
<i>Litsea monopetala</i> (Roxb.) Pers.	Lauraceae	<i>Symplocos recemosa</i> Roxb.	Symplocaceae
<i>Neocinnamomum caudatum</i> (Nees) Merr.	Lauraceae	<i>Gardenia latifolia</i> Ait	Rubiaceae
<i>Ocotea lancifolia</i> (Schott) Mez.	Lauraceae	<i>Haldinia cordifolia</i> (Roxb) Ridsd	Rubiaceae
<i>Persea villosa</i> (Roxb.) Kosterm.	Lauraceae	<i>Ixora pavetta</i> Andr.	Rubiaceae
<i>Meliosma pinnata</i> (Roxb.) Maxim.	Sabiaceae	<i>Mitragyna parvifolia</i> (Roxb) Korth	Rubiaceae
<i>Dillenia aurea</i> Sm.	Dilleniaceae	<i>Morinda citrifolia</i> L.	Rubiaceae
<i>Dillenia indica</i> L.	Dilleniaceae	<i>Strychnos nux-vomica</i> L.	Loganiaceae
<i>Dillenia pentagyna</i> Roxb.	Dilleniaceae	<i>Strychnos potatorum</i> L.f	Loganiaceae
<i>Prunus ceylanica</i> (Wight) Miq	Rosaceae	<i>Alstonia scholaris</i> (L) R.Br.	Apocynaceae
<i>Prunus pygeoides</i> Koehne	Rosaceae	<i>Holarrhena pubescens</i> Wall.ex.G.Don	Apocynaceae
<i>Ziziphus jujube</i> Mill.	Rhamnaceae	<i>Plumeria rubra</i> L.	Apocynaceae
<i>Ziziphus glabrata</i> heyne ex Roth	Rhamnaceae	<i>Wrightia arborea</i> (Dennst.) Mabb	Apocynaceae
<i>Ziziphus rugosa</i> Lam.	Rhamnaceae	<i>Wrightia tinctoria</i> R. Br.	Apocynaceae
<i>Holoptelea integrifolia</i> (Roxb) Planch	Ulmaceae	<i>Cordia dichotoma</i> G.Forst	Boraginaceae
<i>Trema orientalis</i> (L.) Bl	Cannabaceae	<i>Cordia monoica</i> Roxb	Boraginaceae
<i>Celtis tetrandra</i> Roxb.	Cannabaceae	<i>Chionanthus mala-elengi</i> (Dennst.) Green	Oleaceae
<i>Artocarpus heterophyllus</i> Lam	Moraceae	<i>Ligustrum gamblei</i> Ramam	Oleaceae
<i>Artocarpus lacucha</i> Buch. - Ham	Moraceae	<i>Callicarpa tomentosa</i> (L.) L.	Lamiaceae
<i>Ficus benghalensis</i> L.	Moraceae	<i>Gmelina arborea</i> Roxb	Lamiaceae
<i>Ficus benjamina</i> L.	Moraceae	<i>Premna barbata</i> Wall.ex Schauer	Lamiaceae
<i>Ficus exasperate</i> Vahl	Moraceae	<i>Premna mollissima</i> Roth	Lamiaceae
<i>Ficus hispida</i> L.f.	Moraceae	<i>Tectona grandis</i> L.f	Lamiaceae
<i>Ficus macrocarpa</i> L.f	Moraceae	<i>Oroxylum indicum</i> (L.) Kurz	Bignoniaceae
<i>Ficus nervosa</i> B. Heyne ex Roth	Moraceae	<i>Stereospermum chelonoides</i> (L.f) DC	Bignoniaceae
<i>Ficus recemosa</i> L.	Moraceae	<i>Stereospermum tetragonum</i> DC	Bignoniaceae
<i>Ficus religiosa</i> L.	Moraceae	<i>Pittosporum wightii</i> A.K.Mukh	Pittosporaceae
<i>Ficus rumphii</i> Bl.	Moraceae	<i>Trevesia palmata</i> (Roxb.ex Lindl.) Vis	Araliaceae
<i>Ficus semicordata</i> Buch. -ham. Ex Sm	Moraceae		



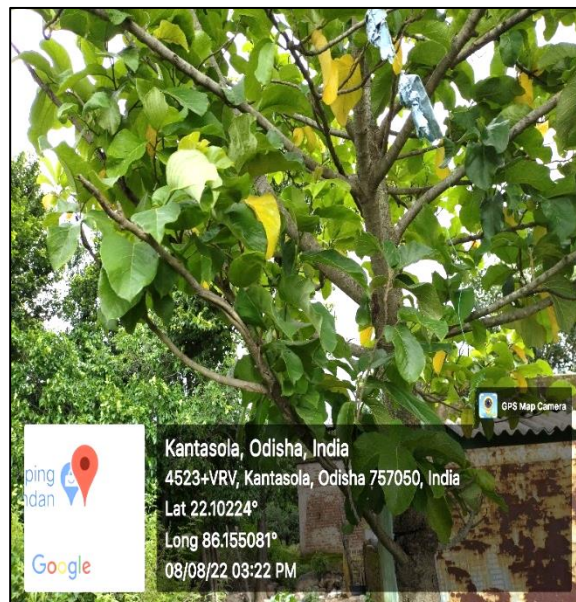
Pic 1 *Ficus benghalensis*



Pic 2 *Shorea robusta*



Pic 3 *Oroxylum indicum*



Pic 4 *Artocarpus lacucha*

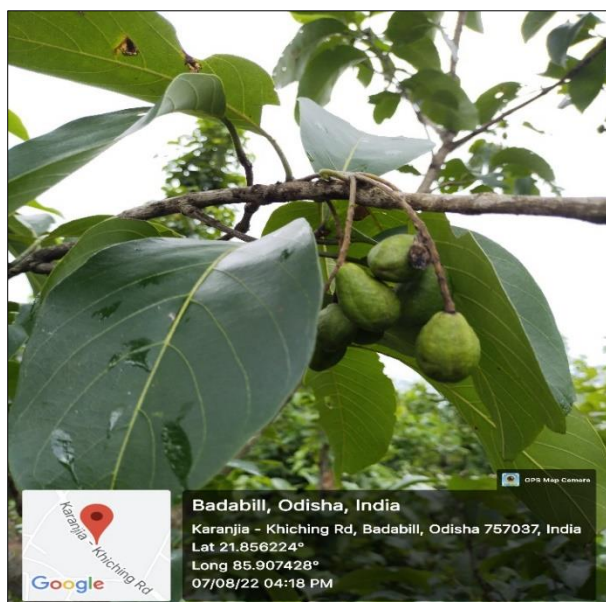


Fig 5 *Terminalia chebula*

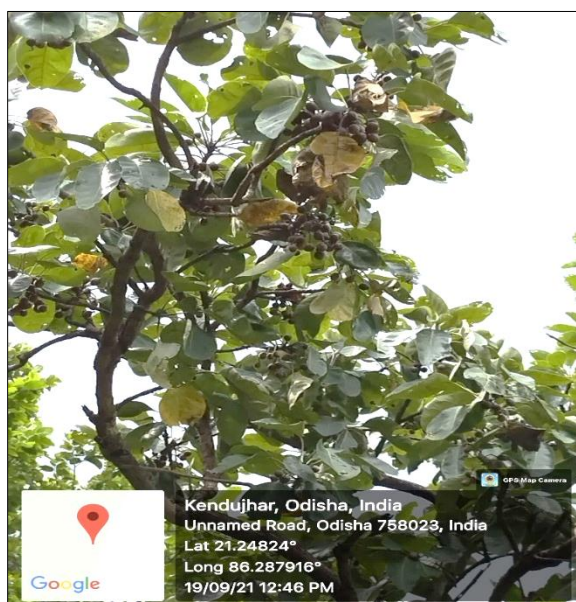


Fig 6 *Terminalia bellirica*

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