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Research Article

Phytodiversity study of Nayagarh Forest Division, Odisha

Sudipta Nayak[1,5], Kalicharan Mandal[1], Sifan Priyadarshini[2], Dharitri Mishra[1], Sudam Charan Sahu[2], Manish Kumar[1], Kshama Sarangi[3], Phalguni Sarathi Mallik[4], Nabin Kumar Dhal[1*]

[1]*Environment and Sustainability Department, CSIR -Institute of Minerals and Materials Technology, Bhubaneswar, Odisha 751013, India*
[2] *Department of Botany, Maharaja Sriram Chandra Bhanja Deo University, Baripada, Odisha, India*
[3] *Divisional Forest Officer, Nayagarh Forest Division, Odisha, India*
[4]*Divisional Forest Officer, Mahanadi Wild Life Division, Odisha, India*
[5]*Academic of Scientific and Innovative Research (AcSIR), Ghaziabad, Uttar Pradesh-201002, India*

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ABSTRACT

The Eastern Ghats offer better opportunity to link plant community structure and environmental drivers through their tropical mountain forests. However, the biotic and abiotic factors lead to rapid degradation along with species loss. Systematic inventorization, documentation and conservation of these biological resources are necessary. Therefore, this study aims to document the diversity of vascular plants and their economic uses in the four protected reserve areas of Nayagarh Forest Division of Odisha. A total of 284 genera and 83 families comprising 364 vascular plant species were recorded. Of these, the most dominant family was Fabaceae (47 species), followed by Acanthaceae (21 species), Poaceae (19 species), Rubiaceae (18 species), Apocynaceae (17 species), Malvaceae (16 species), Asteraceae & Euphorbiaceae (11 each), and Amaranthaceae (9 species), among others. Trees were the dominant life forms possessing (127 species, 35%), followed by herbs (106 species, 29%), shrubs (91 species, 25%), and climbers (38 species, 10%) and fern (2 species, 1%). In utility categories, medicinal plants were showing highest number of species (314), followed by economical (293), food (131) and timber (44) species, respectively. The documentation of diversity and economic uses of the vascular plants of the Nayagarh Forest Division will aid conservation biologists and policy makers in preserving the priceless plant resources as well as their sustainable utilization.

Keywords: Floristic diversity, Nayagarh Forest Division, Ecological services, Anthropogenic disturbances, Biodiversity conservation

INTRODUCTION

Forest nurtures the vast majority of species on earth which also offer important ecological goods and services to people. Many ecosystem services are based on forest biodiversity, and the functioning processes of ecosystems are greatly influenced by the characteristics of individual species (Naeem et al., 2009). Diversity in plant species demonstrates the beneficial interrelationship between species richness and evenness. High species diversity of the plant community contributes to its stability and richness within the forest ecosystem. According to Farooquee & Saxena (1996), the plant community is essential towards sustainable management for biodiversity and the ecosystem preservation. A greater part of world's plant species varieties finds perfect home in tropical forests, which are physiologically rich (May & Stumpf, 2000). Two-thirds of the terrestrial biodiversity on earth is found in tropical forest ecosystems, which also yield economic goods and environmental services that benefit people locally, regionally, and worldwide (Gardner et al., 2009).

Eastern Ghats harbour unique vegetation and covers an area of 75000 km^2 across Odisha, Andhra Pradesh, Tamil Nadu, Karnataka, and Telangana. Currently, a great variation in species is seen in the tropics indicating a growing recognition and curiosity about the differences. In terms of floristic diversity, tropical moist deciduous forests are the most extensive. In contrast to the tropical forest found in the Western Ghats, the Eastern Ghats area, covering states such as Odisha, Andhra Pradesh, and Tamil Nadu, is distinguished by its tropical moist deciduous and tropical dry deciduous forests. There are just a couple of the research that has been conducted on the assessment of floristic varieties in the Eastern Ghats compared to the Western Ghats (Panda et al., 2019) and (Arul Pragasan & Parthasarathy, 2010) and documented 136 indigenous species found in the area of Eastern Ghats, while (Rani et al., 2007) gave an overview of the occurrence of 560 tree species in this area. In Northeast India, Nath et al. (2005) evaluated the species composition, diversity, and tree population structure of tropical wet evergreen forests in Namdapha National Park of Arunachal Pradesh. Some ethnobotanical floristic studies on the Eastern Ghats regions such as Gandhamardhan hills, Mahendragiri hills, Boudha, and Malayagiri hills were investigated by few researchers (Reddy & Pattanaik, 2009, Sahu et al., 2012, Sahu et al., 2007, Khadanga et al., 2023). However, the Nayagarh Forest Division, a floristically rich region was not fully investigated in the past because of its variable terrain conditions, environmental considerations, and phytogeographical position.

By virtue of increased knowledge of biodiversity's significance as an ecosystem's energy source, establishing intricate tropical networks, and a guarantee of ecosystem resilience and stability, biodiversity has gained attention on a worldwide scale. The biodiversity

[*]*Corresponding Author's E-mail: nkd.radha@gmail.com*

and vegetation of an ecosystem have a direct impact on its overall health, particularly in mountainous areas. Floristic survey and categorization of plant species are therefore the first step towards ecosystem protection. Studies of this kind could prove to be an invaluable resource for determining ecological relevance and the degree of environmental adaptability (Pascal & Pelissier,1996). The necessity for assessing the biodiversity or flora of a region has increased in recent decades because of the decline in flora biodiversity and the growing demand for conserving biological resources. The swift degradation of tropical forests on a global scale has been expedited by habitat destruction, deforestation, human encroachment, globalization, forest fires, agricultural expansion, and various anthropogenic infrastructure developments over the last century. These drivers have had detrimental impacts on biodiversity, climate dynamics, ecological functions, soil fertility, and the socio-economic well-being of both forest-dependent populations and rural communities. Moreover, they have contributed to phenomena such as eutrophication, acidification, and desiccation.

The Nayagarh district of Eastern Ghats of India is endowed with an abundance of distinct plant species, each with a distinct growth pattern and economic significance. This area is of greater importance since it has valuable plant species that fall into various utility categories, including food, medicinal, economic, and ecological significance. Thus, priority should be given for the preservation and documentation of these plants as well as their important knowledge before they disappear from the planet. These forests are primarily with ecological and diversifying perspectives, it is an imperative to catalogue and quantify floristic diversity in order to comprehend the ecosystem. Prior to now, just a few of researchers in the Nayagarh district conducted studies on floristic composition, ethnobotany and biodiversity (Sahoo et al., 2017 and Priyadarshini et al., 2023, 2024); nevertheless, minimal is known about the ecological, medicinal, and use values of each plant species. So, this study aims to document comprehensively the floral diversity as well as their valuable economic and ecological significant of different forest covers of Nayagarh district, Odisha, Eastern Ghats, India. The documentation of floral diversity serves as a valuable resource for informing future forest management and conservation efforts in the region.

MATERIALS AND METHODS

STUDY AREA

Nayagarh district is situated in the eastern region of Odisha. It lies between 84º20′ and 85º19′ E longitude and 19º 54′ and 20º28′ N latitude and covers an area of 3067.28 km^2. Floristic study was carried out during 2022-2024 in four reserve forests of Nayagarh district including Sulia, Sapua, Gochha and Pokharigochha.

Demography and geographic boundaries

Nayagarh district, which spans 3890 square kilometres and is a part of the Eastern Ghats region, is located between 19°54′ and 20°32′ N and 84°29′ and 85°27′ E. On April 1, 1993, the former Puri district was split into three districts: Khordha., Puri and Nayagarh. The districts of Khordha on the east, Kandhamal on the west, Cuttack on the north, and Ganjam on the south encircle the district (Fig. 1). The district (district gateway) is home to 8 Tehsils, 8 Blocks, 14 Police stations, 194 Gram panchayats, and 1702 Villages. The blocks of Mahipur, Odagaon, Daspalla, Khandapara, and Nayagarh were the sites of the study. The Khond, Saora, Sabara and indigenous populations, who live in densely forested areas, make up the majority of these blocks. Overall, about 962,789 people are living in the Nayagarh district.

Cultural and socioeconomic variables

In the Nayagarh district, agriculture is the primary economy. It is feasible for agriculture to cover about 38% of the entire geographical region. Merely, 13% of the entire land area is under irrigation. Maize, biri (urad bean), paddy rice, peanut, mustard, moong (or mung bean), sugarcane, and linseed are the main crops farmed in this region. Sugarcane is the commercial crop grown in the blocks of Nayagarh, Gania, Odogaon, Khandapada and Bhapur. The indigenous people living in the study villages primarily rely on agriculture, animal husbandry, gathering and sale of forest resources for their means of subsistence. A portion of the population is also engaged in business, carpentry, or contracting or building homes. District's residents adhere to a diverse range of religious beliefs. The district's rich cultural legacy is reflected in its temples, churches, artwork, sculptures, handicrafts, traditional dances, and festivals. The common folk people known as khonds are those who live together within the village's boundaries. They continue to uphold their culture and tribal identity among themselves.6.1% of the district's total population is made up of scheduled tribes, with the Khond (76.92%) being the largest, followed by the Saora (8.06%) and the Sabar (6.77%) (Census India 2011).

Forest cover

The forest types of Odisha are classified into 5 Forest Type Groups, which are further sub divided into 16 Forest Types, according to the Champion & Seth Classification of Forest Types (1968) Such as, Tropical Semi Evergreen Forests, Tropical Moist Deciduous Forests, Tropical Dry Deciduous Forests, Subtropical Broadleaved Hill Forests, Littoral and Swamp Forests. A total of 3890 km^2 makes up Nayagarh's geographical area, of which 1,713.75 km^2 are covered by forests, accounting for 44.49% of the total geographical area. Out of these, 189 km^2 are covered by very dense forest, 965 km^2 by moderately dense forest, 559.75 km^2 by open forest, and 171.36 km^2 by scrub forest (FSI, 2019).

Nayagarh district is covered with Northern Tropical Dry Deciduous Forest, Miscellaneous Forest, South Indian Moist Mixed Deciduous Forest, and Mixed Sal Forest from the Dry Peninsula comprises the district's forests. On the plains and lower hills, Sal (*Shorea robusta*) is the predominant forest species; however, when one approaches the upper hill slopes, a multitude of species can be discovered. Above mean sea level (MS), the height varies from 47 to 932m.

Climate

This region experiences three distinct seasons: a hot and dry summer, a humid and hot rainy season, and a mild winter. The maximum summer temperature is between 39 and 44 ºC, and the maximum monsoon temperature is around 30 ºC. Between December and February, the wintertime minimum temperature is approximately 8–10 ºC. Eighty percent (approximately 1500 mm) of the average yearly precipitation falls between June and September.

Geological conditions

The majority of the research area is composed of up of rocks, including sandstones, granulites, quartz, garnetiferous granite gneiss, acid charnockite, khondalite, and pegmatite veins. These successions are supported by the most recent alluvium, laterite, and soil deposits. The soils found in the reserve forests are mostly fine-textured, well-drained, extremely deep, and behave acidically. Soils have a moderate available water capacity and are significantly degraded. These kinds of soil have been categorised as typical haplustalfs, which have deeply well-drained, moderately eroded soil. There are many rivers, rivulets, streams, and nallahs that provide excellent drainage for the forests. A significant amount of drainage water from the forests falls into the district's most significant Mahanadi River.

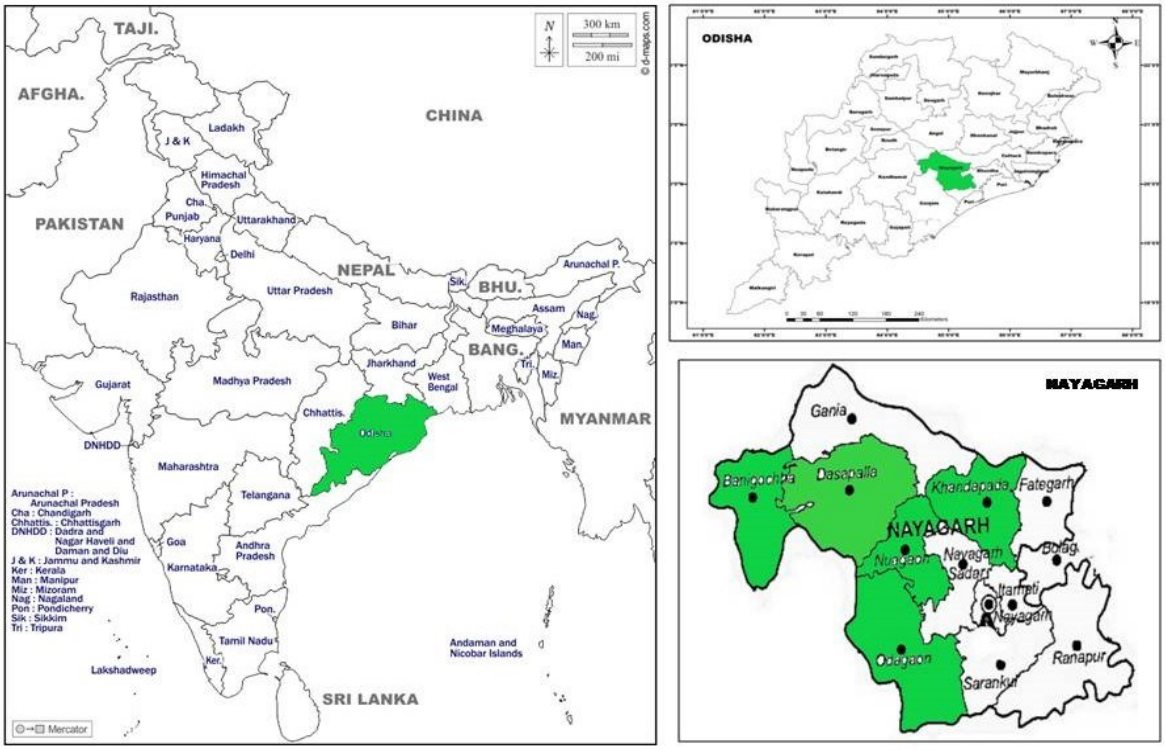

Figure 1. Map of Study area

Survey, Sample collection and Identification

Two to three specimens of each species were collected during flowering/fruiting stage. Field photographs and micro-morphological photographs were taken for easy identification wherever possible. The voucher specimens were carefully identified while they were still fresh, right there in the field. Formalin, acetic acid, and alcohol solution (FAA) or hot water was used to dissolve dried flowers and fruits in order to dissect them. Further, with the aid of floras, monographs, revisions, and other taxonomic literature, their identity was determined in the herbarium (Haines, 1921- 25; Hooker 1875 -97; Saxena & Brahmam, 1994-1996). The specimens were critically analysed. Nomenclature of the identified plants has been updated with Plants of The World Online (POWO), India Flora Online (Herbarium JCB), International Plant Names Index (IPNI), India Biodiversity portal, United States Department of Agriculture (USDA) Plants Data base and Tropicos.

Herbarium Specimens preparation

Before being pressed into blotting papers, each specimen was immersed in a 10% $HgCl_2$ and ethyl alcohol solution. Every other day, the papers were replaced until the specimens were fully dry. Following a thorough drying process, a single set of specimens was adhered on customised (42 × 28 cm) herbarium sheets using contemporary synthetic adhesives such as fevicol. They were seen in four or five locations for further security. Every mounted specimen came with a label that included information on the field number, collection date, botanical name, family to which it belongs, collecting location, short identifying description, potential uses, local names, etc. Using standard preservative techniques, plant parts such as fruits, rhizomes, corms, and tubers, as well as fragile flowers and fleshy specimens that could not be placed on herbarium sheets, were kept in museum jars. Preservation of voucher specimens were done at CSIR-IMMT (RRL-B), Bhubaneswar, Odisha.

RESULTS

This floral study listed out a total of 364 species (361 angiosperms, 1 gymnosperm and 2 fern species) under 83 families and 284 genera (Table 1). The dominant families were Fabaceae with 47 species, followed by Acanthaceae (21), Poaceae (19), Rubiaceae (18), Apocynaceae (17), Malvaceae (16), Asteraceae & Euphorbiaceae (11 each) and Amaranthaceae (9) as represented in Fig 3 and Table1. Trees count the maximum number of species i.e. 127 (35%), followed by 106 Herbs (29%), 91 Shrubs (25%) and 38 Climbers (10%) and fern species (1%) (Fig 2). Fabaceae, Acanthaceae, Poaceae, Rubiaceae, Apocynaceae, Malvaceae, Asteraceae, Euphorbiaceae were the most common plant families among the 364 species of plants that were identified from the vicinity of the Nayagarh reserve forest.

Eleven significant species in the Nayagarh Forest Division contributed to 67.2% of the total tree population. The most common tree species were, *Buchnania lanzan, Butea monosperma, Butea superba, Careya arborea, Senegalia catechu, Shorea robusta, Tectona grandis*. Similarly, the common shrub species includes *Abutilon indicum, Allophylus serratus, Bauhinia tomentosa.* Along with this, some common herbaceous species were also documented which includes highest number of species from Poaceae family i.e. *Cyanodon dactylon* and *Bambusa bambos* while other herbaceous species includes *Elephantopus scaber, Acmella paniculata, Amaranthus caudatous, Amaranthus viridis, Andrographis paniculata*. Some of the common climbing species reported from the study area includes *Abrus precatorious, Ampelocissus latifolia*, *Asparagus racemosus, Phanera vahlii* etc. Besides all the angiospermic herbaceous and tree species, a number of ferns, orchid, bryophytes and lichen were observed during the study. Utility categories chart (Fig 4) shows that the Nayagarh forest is richer in medicinal, followed by economical, food and timber providing valuable plant resources.

This study indicates that the Kondh tribes utilised most of the plants they came across for a range of regional uses. Certain commercially significant plant species, such as *Terminalia bellirica, Achyranthes aspera, Cassia fistula, Streblus asper, Smilax zeylanica, Shorea robusta, Abelmoschus moschatus*, *Abrus precatorius*, *Abutilon indicum*, *Asparagus racemosus, Barleria strigosa* and others, have therapeutic significance as well. A few numbers of plant species, such as *Ficus bengalensis*, *Semecarpus anacardium*, and *Mangifera indica*, are reported to be well conserved by the tribal people and are cherished for religious purposes in addition to their medical value along with other domestic applications. All those plant species that has identified with highest use as medicinal (314 species) followed by economical (293 species), food (131), timber (44 species) as well as other fuel, cultural, ecological, social value as cited by the local people are represented in Fig 4.

DISCUSSION

Fabaceae family is dominant and shows the maximum number of species among the four reserve forests (Sulia, Sapua, Gochha and Pokharigochha). Locations with a seasonal dry environment or an arid climate are generally associated with the plant family Fabaceae, which has the greatest number of species globally (Pennington et al., 2006). Fabaceae species have been recognised as important indicator species to distinguish between various vegetation types. Investigation confirms that due to the presence of favourable environmental conditions in the dry deciduous forest, leads to massive growth of Fabaceae species. The totality of species found within a specific area, whether they are cultivated or wild, represents the area's plant diversity and serves as a representation of the local vegetation and plant resources. Certain invasive plants, like *Lantana camara* and *Chromolaena odorata*, indicate that human disturbances have taken place in the reserve forest. Therefore, in order to maintain the native flora's natural regrowth, it is imperative that these disturbances be monitored and managed. Environmental factors are the primary determinant of a region's floristic composition (Khajeddin et al., 2012). Plant resources are impacted by overgrazing, agriculture, human contact, and natural disasters. In the flooded Varzea forest of Rio Xingu, Brazil, species richness is reported to range from 20 species ha^{-1} to 307 species ha^{-1} (Valencia et al., 1994). In a recent assessment of species richness in tropical deciduous forests in the Eastern Ghats, (Panda et al.,2013) discovered 882 species in the 222-ha region. In terms of floristic composition and structure, tropical dry forests are more complex than wet forests (Murphy & Lugo, 1986).

The current study explored 364 plant species in Nayagarh Reserve forest, particularly in 4 mentioned RFs. The results of our study indicated certain similarities with the floral composition found in other parts of the world (Durai & Sundara Pandian, 2014). In the Koli Hills of the Western Ghats of India (Chittibabu & Parthasarathy, 2000), in the Kalrayan hills of the Eastern Ghats (Kadavul & Parthasarathy,1999), and in the Anamalais (Ayyappan & Parthasarathy, 1999), the count of trees per hectare varied between 266 to 632 in number. Khadanga et al. (2023) stated that the floristic survey of the Mahendra Giri hill forest, which was mainly concerned with the variety of tree species, revealed 189 species representing 131 genera. Sahu et al. (2007) found 187 species in the Boudha Forest division, comprising 91 types of trees, 10 shrubs, 12 climbers, and 74 herbs. Sahu et al. (2012) identified a total of 1063 trees from 57 different species from 60 sample plots in the Malyagiri Forest Ranges. According to Reddy &Pattanaik, (2009) research of the flora, there are a relatively higher number of herbaceous species (519),

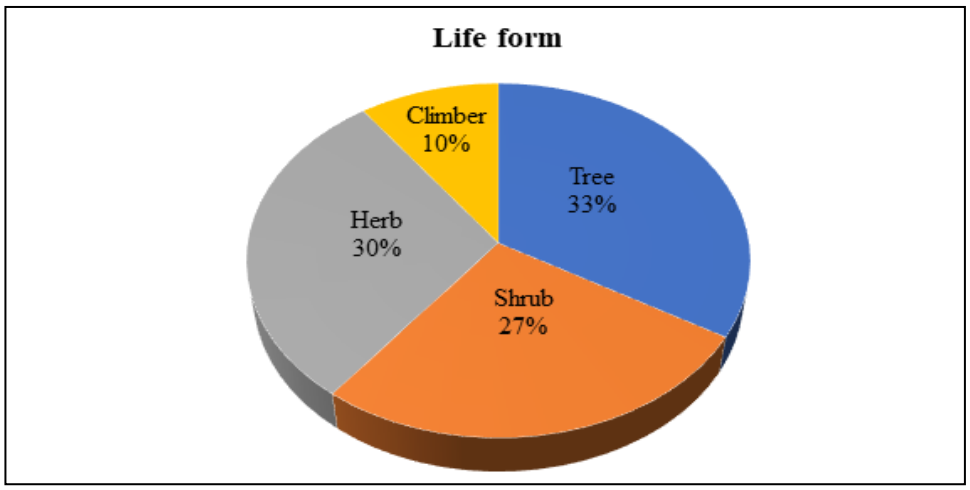

Figure 2. Life Forms (%)

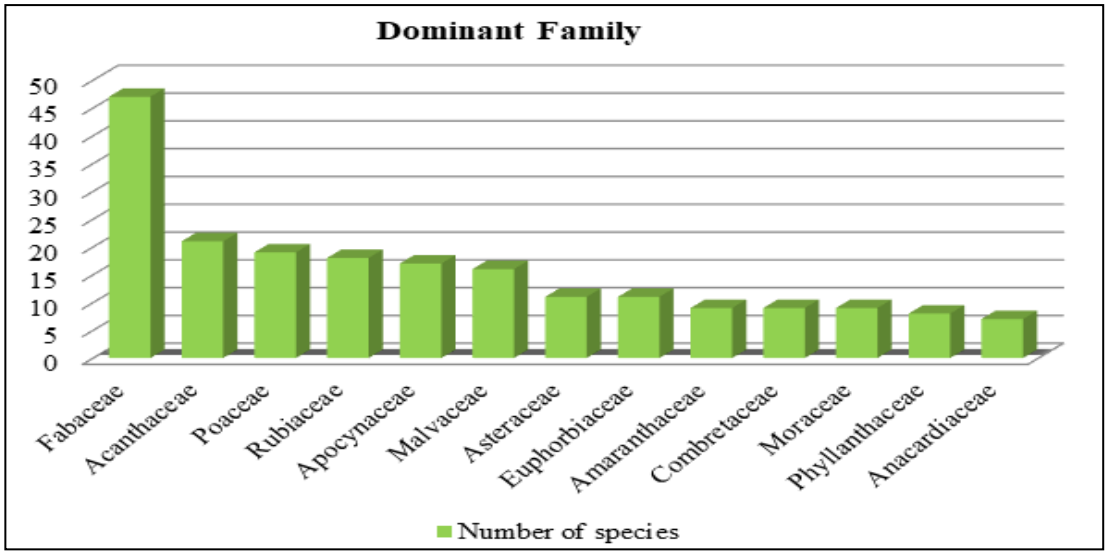

Figure 3. Dominant Families

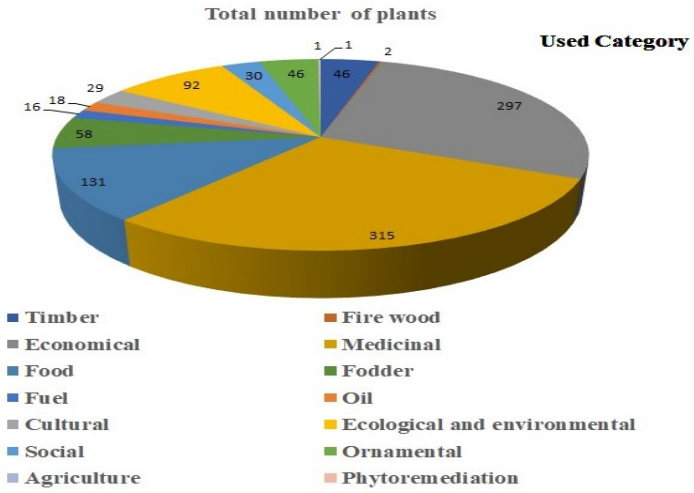

Figure 4. Used Categories of species

Table 1. An inventory of the plant species recorded in the Nayagarh Forest Division in Odisha

Sl. No.	Name of the plant	Family	Habit	Use Category
TREES				
1	Acacia auriculiformis A.Cunn.ex Benth	Fabaceae	Tree	Timber, Firewood, Economical
2	Adina cordifolia (Roxb.) Brandis	Rubiaceae	Tree	Medicinal, Timber, Economical
3	Aegle marmelos(L.) Corrêa	Rutaceae	Tree	Medicinal, Food
4	Albizia lebbeck(L.) Benth.	Fabaceae	Tree	Medicinal, Timber, Food, Fodder
5	Alstonia scholaris(L.) R.Br.	Apocynaceae	Tree	Medicinal, Timber
6	Anacardium occidentale L.	Anacardiaceae	Tree	Food, Fuel
7	Antidesma acidumRetz.	Phyllanthaceae	Tree	Medicinal
8	Antidesma ghaesembilla Gaertner	Euphorbiaceae	Tree	Medicinal, Food, Economical
9	Artocarpus heterophyllus Lam.	Moraceae	Tree	Food, Fodder
10	Artocarpus lacuchaBuch.-Ham.	Moraceae	Tree	Medicinal, Fodder, Timber, Fuel, Food
11	Azadirachta indica A.Juss.	Meliaceae	Tree	Medicinal, Food, Oil, Fodder, Cultural, Ecological

12	*Azadirachta indica* A.Juss.	Meliaceae	Tree	Medicinal, Food, Oil, Fodder, Cultural, Ecological
13	*Barringtonia acutangula* (L.) Gaertn.	Lecythidaceae	Tree	Social, Medicinal, Ecological and Economical
14	*Bauhinia variegata* L.	Fabaceae	Tree	Fodder, Economical, Ornamental, Fodder, Agricultural
15	*Bauhinia racemosa* Lam.	Fabaceae	Tree	Medicinal, Economic, Cultural, Ecological
16	*Bixa orellana* L.	Bixaceae	Tree	Medicinal, Economical
17	*Bombax ceiba* L.	Malvaceae	Tree	Economical, Medicinal, Cultural, Ecological
18	*Borassus flabellifer* L.	Arecaceae	Tree	Timber, Economical, Cultural
19	*Boswellia serrata* Roxb.ex Colebr.	Burseraceae	Tree	Medicinal, Economical, Ecological
20	*Bridelia retusa* (L.) A.Juss.	Euphorbiaceae	Tree	Medicinal, Food, Timber, Economical, Ecological
21	*Buchanania cochinchinensis* (Lour).	Anacardiaceae	Tree	Medicinal, Economical, Fuel, Fodder, Food
22	*Buchanania lanzan* Spreng.	Anacardiaceae	Tree	Cultural, Economical, Medicinal, Food,
23	*Butea monosperma* (Lam.) Taub.	Fabaceae	Tree	Fodder, Economic, Oil, Timber, Medicinal, Economical
24	*Caesalpinia bonduc* (L.) Roxb.	Fabaceae	Tree	Ornamental
25	*Careya arborea* Roxb.	Lecythidaceae	Tree	Medicinal, Economical
26	*Caryota urens* L.	Arecaceae	Tree	Economical, Ornamental, Ecological
27	*Casearia graveolens* Dalzell	Salicaceae	Tree	Fuel, Medicinal, Non-Edible Oil, Food
28	*Casearia tomentosa* subsp. *tomentosa*	Salicaceae	Tree	Food, Timber, Economical
29	*Cassine glauca* (Rottb.) Kuntze	Celastraceae	Tree	Timber, Economical and Medicinal
30	*Cassia fistula* L.	Fabaceae	Tree	Medicinal, Economical, Food, Timber
31	*Cassia siamea* Lam.	Fabaceae	Tree	Timber, Fire Wood, Ornamental, Fodder, Fuel, Economical
32	*Catunaregam spinosa* (Thunb.) Tirveng.	Rubiaceae	Tree	Medicinal, Food, Ecological and Economical
33	*Ceiba pentandra* (L.) Gaertn.	Malvaceae	Tree	Timber, Medicinal, Economical
34	*Chloroxylon swietenia* DC.	Rutaceae	Tree	Medicinal, Timber, Economical
35	*Cipadessa baccifera* (Roth) Miq.	Meliaceae	Tree	Medicinal, Economical
36	*Cleistanthus collinus* (Roxb.) Benth. ex Hook.f.	Phyllanthaceae	Tree	Economical, Ecological, Cultural
37	*Cordia dichotoma* G. Frost.	Boraginaceae	Tree	Medicinal, Food, Economical
38	*Couroupita guianensis* Aubl.	Lecythidaceae	Tree	Ornamental, Medicinal, Economical
39	*Crateva magna* (Lour.) DC.	Capparaceae	Tree	Medicinal, Ecological, Economical
40	*Cycas circinalis* L.	Cycadaceae	Tree	Medicinal, Food, Ornamental
41	*Delonix regia* (Bojer ex Hook.) Raf.	Fabaceae	Tree	Medicinal, Food, Ecological, Economical
42	*Dillenia pentagyna* Roxb.	Dilleniaceae	Tree	Medicinal, Food, Timber, Fiber, Economic
43	*Diospyros chloroxylon* Roxb.	Ebenaceae	Tree	Food
44	*Diospyros ebenum* J. Koenig	Ebenaceae	Tree	Economic, Timber
45	*Diospyros malabarica* (Desr.) Kostel.	Ebenaceae	Tree	Oil, Medicinal, Food, Timber, Economical
46	*Diospyros melanoxylon* Roxb.	Ebenaceae	Tree	Timber, Medicinal, Fuelwood, Economical
47	*Diospyros ovalifolia* Wight	Ebenaceae	Tree	Timber, Economical
48	*Diospyros sylvatica* Roxb.	Ebenaceae	Tree	Food, Medicinal, Timber, Economical
49	*Ehretia laevis* Roxb.	Boraginaceae	Tree	Food, Medicinal
50	*Emblica officinalis* Gaertn.	Euphorbiaceae	Tree	Medicinal, Food, Economical
51	*Erythrina variegata* L.	Fabaceae	Tree	Ornamental, Fodder, Fuel, Food, Cultural

52	*Ficus benghalensis* L.	Moraceae	Tree	Medicinal, Cultural, Economical, Food
53	*Ficus hispida* L.	Moraceae	Tree	Medicinal, Food, Economical, Cultural
54	*Ficus racemosa* Willd.	Moraceae	Tree	Medicinal, Food, Economical, Cultural
55	*Ficus religiosa* Forssk.	Moraceae	Tree	Economical, Cultural, Medicinal, Ecological
56	*Ficus rumphii* Blume	Moraceae	Tree	Medicinal, Fodder, Economical, Ornamental
57	*Ficus semicordata* Buch. -Ham. ex Sm.	Moraceae	Tree	Medicinal, Ecological, Economical, Food
58	*Firmiana simplex* (L.) W.Wight	Malvaceae	Tree	Medicinal, Timber, Economical
59	*Flacourtia indica* (Burm.) Merr.	Flacourtiaceae	Tree	Timber, Medicinal, Economical, Cultural, Ecological, Ornamental
60	*Garcinia xanthochymus* Hook.f. ex T.Anderson	Clusiaceae	Tree	Ecological, Ornamental
61	*Gardenia gummifera* L.f.	Rubiaceae	Tree	Food, Medicinal, Ecological,
62	*Gardenia latifolia* Aiton.	Rubiaceae	Tree	Medicinal, Economical
63	*Gliricidia sepium* (Jacq.) Kunth	Fabaceae	Tree	Food, Medicinal, Fuel, Social, Economical
64	*Glycosmis pentaphylla* (Retz.) DC.	Rutaceae	Tree	Medicinal, Economical
65	*Guazum ulmifolia* Lam.	Malvaceae	Tree	Medicinal, Fodder, Food, Ecological, Social
66	*Helicetres isora* L.	Malvaceae	Tree	Medicinal, Economical
67	*Hymenodictyon orixense* (Roxb.) Mabb.	Rubiaceae	Tree	Medicinal, Economical, Oil
68	*Ixora coccinea* L.	Rubiaceae	Small Tree	Medicinal, Economical, Ornamental, Ecological
69	*Kydia calycina* Roxb.	Malvaceae	Tree	Timber, Medicinal, Economical
70	*Lagerstroemia parviflora* Roxb.	Lythraceae	Tree	Timber, Medicinal, Economical
71	*Lagerstroemia speciosa* subsp. *speciosa*	Lythraceae	Tree	Ornamental
72	*Lannea coromandelica* (Houtt.) Merr.	Anacardiaceae	Tree	Medicinal, Food, Economical
73	*Leea macrophyla* Roxb. ex Hornem.	Vitaceae	Tree	Medicinal, Food, Economical
74	*Limonia acidissima* L.	Rutaceae	Tree	Medicinal, Economical, Food
75	*Macaranga peltata* (Roxb.) Müll.Arg.	Euphorbiaceae	Tree	Ecological, Medicinal, Economical
76	*Madhuca longifolia* (J.Konig) J.F.Macbr.	Sapotaceae	Tree	Medicinal, Food, Timber, Economical
77	*Magnolia champaca* (L.) Baill. ex-Pierre	Magnoliaceae	Tree	Ornamental
78	*Mallotus philippensis* (Lam.) Muell.Arg.	Euphorbiaceae	Tree	Medicinal, Cultural, Economical, Food, Oil, Timber
79	*Mangifera indica* L.	Anacardiaceae	Tree	Food, Medicinal, Economical, Timber, Ecological
80	*Melia azadirachta* L.	Meliaceae	Tree	Economical, Timber, Medicinal, Ecological

81	*Memecylon edule* Roxb.	Melastomataceae	Tree	Economical, Medicinal, Food, Ecological
82	*Mesua ferrea* L.	Calophyllaceae	Tree	Ornamental, Food, Ecological, Economical, Oil,
83	*Miliusa tomentosa* (Roxb.) Finet &Gagnep.	Annonaceae	Tree	Economical, Medicinal
84	*Mitragyna parvifolia* (Roxb.) Korth.	Rubiaceae	Tree	Medicinal, Timber, Economical
85	*Morinda tinctoria* Roxb.	Rubiaceae	Tree	Medicinal, Ecological, Economical
86	*Naringi crenulata* (Roxb.) Nicolson	Rutaceae	Tree	Fodder, Fuel, Timber, Ornamental, Medicinal,
87	*Neolamarckia cadamba* (Roxb.) Bosser	Rubiaceae	Tree	Ornamental, Timber, Economical, Medicinal
88	*Ochna obtusata* DC.	Ochnaceae	Tree	Medicinal, Economical
89	*Pandanus odorifer* (Forssk.) Kuntze	Pandanaceae	Tree	Economical, Medicinal
90	*Pavetta indica* L.	Rubiaceae	Tree	Medicinal, Social, Economical
91	*Peltophorum pterocarpum* (DC.) Backer ex K.Heyne	Fabaceae	Tree	Social, Fodder, Medicinal, Food, Economical
92	*Phoenix sylvestris* (L.) Roxb.	Arecaceae	Tree	Fodder, Fuel, Medicinal, Economical, Food
93	*Phyllanthus vitis-idaea* (Burm.f.) J.Koenig ex Roxb.	Phyllanthaceae	Tree	Medicinal, Economical, Ecological, Cultural
94	*Pterocarpus marsupium* Roxb.	Fabaceae	Tree	Fuelwood, Medicinal, Timber, Economical
95	*Pterospermum xylocarpum* (Gaertn.) Oken	Malvaceae	Tree	Medicinal, Social, Ecological, Cultural, Economical
96	*Sapindus trifoliatus* L.	Sapindaceae	Tree	Medicinal, Economical
97	*Schleichera oleosa* (Lour.) Oken	Sapindaceae	Tree	Medicinal, Economical
98	*Schrebera swietenioides* Roxb.	Oleaceae	Tree	Medicinal, Ecological, Economical
99	*Semecarpus anacardium* L.f.	Anacardiaceae	Tree	Medicinal, Food
100	*Senegalia catechu* (L.f.) P.J.H. Hurter& Mabb.	Fabaceae	Tree	Economic, Medicinal
101	*Shorea robusta* Roth	Dipterocarpaceae	Tree	Timber, Medicinal, Economical, Ecological
102	*Soymida febrifuga* (Roxb.) Juss.	Meliaceae	Tree	Timber, Medicinal, Ecological
103	*Spondias pinnata* (L.f.) Kurz	Anacardiaceae	Tree	Economical, Food, Medicinal, Ecological
104	*Sterculia foetida* L.	Sterculiaceae	Tree	Medicinal, Economical, Timber, Ecological
105	*Stereospermum chelonoides* DC.	Bignoniaceae	Tree	Medicinal, Cultural, Economical
106	*Streblus asper* Lour.	Moraceae	Tree	Fuel, Medicinal, Economical, Cultural
107	*Strychnos nux-vomica* L.	Loganiaceae	Tree	Medicinal, Economical
108	*Suregada multiflora* (A.Juss.) Baill.	Euphorbiaceae	Tree	Medicinal, Economical
109	*Swietenia mahagoni* (L.) Jacq.	Meliaceae	Tree	Timber, Economical
110	*Syzygium cumini* (L.) Skeels	Myrtaceae	Tree	Medicinal, Economical, Fuelwood, Food, Social, Fodder
111	*Syzygium nervosum* DC.	Myrtaceae	Tree	Economical, Medicinal, Social
112	*Tamarindus indica* L.	Fabaceae	Tree	Food
113	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn.	Combretaceae	Tree	Timber, Economic
114	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae	Tree	Food, Fodder, Medicinal, Economical
115	*Terminalia catappa* L.	Combretaceae	Tree	Medicinal, Ecological, Economical, Food, Fodder
116	*Terminalia chebula* Retz.	Combretaceae	Tree	Food, Timber, Economic

117	*Terminalia elliptica* Willd.	Combretaceae	Tree	Timber, Medicinal, Economical
118	*Terminalia tomentosa* Wight &Arn.	Combretaceae	Tree	Medicinal, Timber, Food, Economical
119	*Tilia tomentosa* Moench	Malvaceae	Tree	Economical, Ecological, Food, Ornamental
120	*Vachellia leucophloea* (Roxb.) Maslin, Seigler & Ebinger	Fabaceae	Tree	Medicinal, Fodder, Oil, Edible
121	*Vachellia nilotica* (L.) Delile	Fabaceae	Tree	Medicinal, Firewood, Fodder, Phytoremediation
122	*Varronia dichotoma* Ruiz & Pav.	Boraginaceae	Tree	Economical, Ecological
123	*Wrightia arborea* (Dennst.) Mabb.	Apocynaceae	Tree	Economical, Timber, Medicinal
124	*Wrightia tinctoria* subsp. *rothii* (G.Don) Ngan	Apocynaceae	Tree	Medicinal, Economical, Ecological
125	*Zanthoxylum rhetsa* (Roxb.) DC.	Rutaceae	Tree	Food, Medicinal, Economical
126	*Ziziphus mauritiana* Lam.	Rhamnaceae	Tree	Social, Economical, Food, Fodder, Cultural
127	*Ziziphus xylopyrus* (Retz.) Willd.	Rhamnaceae	Tree	Medicinal, Economical, Food
		SHRUB		
1	*Abelmoschus moschatus* Medik.	Malvaceae	Shrub	Medicinal, Food, Economical, Social
2	*Abutilon indicum* (L.) Sweet	Malvaceae	Shrub	Medicinal, Economical, Ornamental
3	*Aganosma heynei* (Spreng.) I.M.Turner	Apocynaceae	Shrub	Medicinal, Economical
4	*Allophylus serratus* (Roxb.) Kurz	Sapindaceae	Shrub	Medicinal, Economical
5	*Alstonia venenata* R.Br.	Apocynaceae	Shrub	Medicinal, Economical
6	*Amorphophallus paeoniifolius* (Dennst.) Nicolson	Araceae	Shrub	Medicinal, Food
7	*Ardisia elliptica* Thunb.	Primulaceae	Shrub	Medicinal, Ornamental
8	*Bambusa arundinacea* (Retz.)	Poaceae	Shrub	Food, Medicinal, Economical
9	*Bambusa bambos* (L.) Voss	Poaceae	Shrub	Economical, Ecological, Timber, Fuelwood, Paper
10	*Bambusa tulda* Roxb.	Poaceae	Shrub	Timber, Food, Paper, Economical, Fuel Wood
11	*Barleria prionitis* L.	Acanthaceae	Shrub	Medicinal, Economical
12	*Bauhinia tomentosa* L.	Fabaceae	Shrub	Food, medicinal, Ornamental, Economical
13	*Benkara malabarica* (Lam.) Tirveng.	Rubiaceae	Shrub	Cultural, Food, Medicinal, Economical
14	*Bergera koenigii* L.	Rutaceae	Shrub	Medicinal, Economical
15	*Blepharis maderaspatensis* (L.) B.Heyne ex Roth	Acanthaceae	Shrub	Economical, Medicinal, Cultural, Ecological
16	*Butea superba* Roxb.	Fabaceae	Shrub	Economical, Medicinal
17	*Calotropis gigantea* (L.) W.T.Aiton	Apocynaceae	Shrub	Fodder, Medicinal, Economical
18	*Carissa spinarum* G. Lodd.	Apocynaceae	Shrub	Medicinal, Firewood, Food
19	*Chromolaena odorata* (L.) R.M. King &H.Rob.	Asteraceae	Shrub	Medicinal, Ornamental, Economical,
20	*Cleome gynandra* L.	Cleomaceae	Shrub	Food, Social, Economical
21	*Clerodendrum indicum* (L.) Kuntze	Lamiaceae	Shrub	Medicinal, Economical
22	*Clerodendrum infortunatum* L.	Verbenaceae	Shrub	Medicinal, Cultural, Economical, Ecological
23	*Clerodendrum serratum* (L.) Moon	Verbenaceae	Shrub	Medicinal, Economical

24	*Clerodendrum viscosum* Vent.	Lamiaceae	Shrub	Medicinal, Economical
25	*Colebrookea oppositifolia* G.Lodd.	Lamiaceae	Shrub	Medicinal
26	*Crossandra infundibuliformis* (L.) Nees	Acanthaceae	Shrub	Economical, Medicinal
27	*Crotalaria pallida* Aiton	Fabaceae	Shrub	Ecological, Cultural, Social, Food, Medicinal
28	*Crotolaria juncea* L.	Fabaceae	Shrub	Fodder, Ecological, Medicinal, Economical
29	*Datura metel* L.	Solanaceae	Shrub	Medicinal, Economical
30	*Dendrocalamus strictus* (Roxb.) Nees	Poaceae	Shrub	Economical, Timber, Medicinal, Food
31	*Desmodium gangeticum* (L.) DC.	Fabaceae	Shrub	Medicinal, Economical, Food
32	*Desmodium triangulare* (Retz.) Merr.	Fabaceae	Shrub	Medicinal, Economical
33	*Dicliptera bupleuroides* Nees	Acanthaceae	Shrub	Medicinal, Economic
34	*Ecbolium ligustrinum* var. ligustrinum	Acanthaceae	Shrub	Economical
35	*Ecbolium viride* (Forssk.) Alston	Acanthaceae	Shrub	Medicinal, Economical
36	*Euphorbia neriifolia* L.	Euphorbiaceae	Shrub	Medicinal, Ornamental, Food, Ecological
37	*Flemingia chapper* Buch. -Ham.ex Benth	Fabaceae	Shrub	Social, Economical, Medicinal, Food, Ecological, Fodder
38	*Flemingia paniculata* Benth.	Fabaceae	Shrub	Economical, Ecological, Medicinal
39	*Glochidion zeylanicum* (Gaertn.) A.Juss.	Phyllanthaceae	Shrub	Medicinal, Food, Timber, Economical, Food
40	*Gossypium herbaceum* L.	Malvaceae	Shrub	Fodder, Economical, Medicinal, Food
41	*Grewia hirsuta* vahl.	Malvaceae	Shrub	Medicinal, Food, Economical, Ecological
42	*Hellenia speciosa* (J.Koenig) S.R.Dutta	Costaceae	Shrub	Environmental, Ornamental, Economical, Medicinal
43	*Holarrhena antidysenterica* Wall.	Apocynaceae	Shrub	Medicinal, Economical
44	*Hygrophila auriculata* (Schumach.) Heine	Acanthaceae	subshrub	Medicinal, Economical
45	*Hyptis suavuolens* (L.) Kuntze	Lamiaceae	Shrub	Medicinal, Economical, Oil
46	*Ipomoea littoralis* Blume	Convolvulaceae	Shrub	Economical, Medicinal
47	*Jasminum multiflorum* (Burm. f.) Andrews	Oleaceae	Shrub	Economical, Cultural, Food, Oil, Medicinal, Ornamental
48	*Jasminum sambac* (L.) Aiton	Oleaceae	Shrub	Ornamental, Economical, Medicinal, Oil
49	*Jatropha curcas* L.	Euphorbiaceae	Shrub	Medicinal, Ecological, Economical
50	*Justicia gendarussa* Blanco	Acanthaceae	Shrub	Medicinal, Ornamental, Economical
51	*Lepidagathis incurva* Buch. -Ham. ex D.Don	Acanthaceae	Shrub	Economical, Medicinal, Ecological
52	*Lepisanthes tetraphylla* (Vahl) Radlk.	Sapindaceae	Shrub	Medicinal, Economical, Ornamental
53	*Lippia javanica* (Burm.f.) Spreng	Verbenaceae	Shrub	Medicinal, Economical, Economical, Oil
54	*Melastoma malabathricum* L.	Melastomataceae	Shrub	Medicinal, Food, Ornamental, Economical
55	*Mikania micrantha* Kunth	Asteraceae	Shrub	Fodder, Medicinal, Ecological, Economical, Social
56	*Mimosa himalayana* Gamble	Fabaceae	Shrub	Medicinal, Economical, Social, Economical
57	*Morinda citrifolia* L.	Rubiaceae	Shrub	Medicinal, Economical, Food
58	*Nyctanthes arbor-tristis* L.	Oleaceae	Shrub	Medicinal, Economical, Oil, Ecological
59	*Pavetta crassicaulis* Bremek.	Rubiaceae	Shrub	Medicinal, Economical
60	*Phoenix acaulis* Roxb.	Arecaceae	Shrub	Food, Medicinal, Economical, Social, Timber

61	*Phyllanthus maderaspatensis* L.	Phyllanthaceae	Shrub	Medicinal, Economical
62	*Platycladus orientalis* (L.) Franco	Cupressaceae	Shrub	Medicinal, Food, Ecological, Economical
63	*Plumbago zeylanica* L.	Plumbaginaceae	Shrub	Medicinal, Ecological, Economical
64	*Plumeria rubra* L.	Apocynaceae	Shrub	Medicinal, Economical, Ornamental, Social, Ecological
65	*Randia malabarica* Lam.	Rubiaceae	Shrub	Economical, Medicinal
66	*Rauvolfia serpentina* (L.) Benth. ex Kurz	Apocynaceae	Shrub	Medicinal, Ecological, Economical
67	*Rauvolfia tetraphylla* L.	Apocynaceae	Shrub	Medicinal, Food, Economical
68	*Rhinacanthus kaokoensis* K. Balkwill & S. D .Will.	Acanthaceae	Shrub	Medicinal, Economical
69	*Ricinus communis* L.	Euphorbiaceae	Shrub	Medicinal, Economical
70	*Rungia pectinata* (L.) Nees	Acanthaceae	Shrub	Medicinal, Economical
71	*Sansevieria trifasciata* Prain	Acanthaceae	Shrub	Medicinal, Economical, Social, Ornamental
72	*Scoparia dulcis* L.	Plantaginaceae	Shrub	Medicinal, Ecological, Social
73	*Senna hirsuta* (L.) H.S.Irwin & Barneby	Fabaceae	Shrub	Medicinal, Fuelwood, Economical
74	*Senna occidentalis* (L.) Link	Fabaceae	Shrub	Medicinal, Food, Economical
75	*Senna tora* (L.) Roxb.	Fabaceae	Shrub	Medicinal, Economical, Food
76	*Sesbania grandiflora* (L.) Poir.	Fabaceae	Shrub	Fodder, Food, Ecological, Economical
77	*Solanum nigrum* L.	Solanaceae	Shrub	Medicinal, Food, Ecological
78	*Streblus taxoides* (Roth) Kurz	Moraceae	Shrub	Medicinal, Ecological, Economical
79	*Strobilanthes scabra* Nees	Acanthaceae	Shrub	Food, Medicinal, Economical
80	*Symphorema involucratum* Roxb.	Lamiaceae	Shrub	Economical, Medicinal
81	*Tabernaemontana divaricata* (L.) R.Br. ex Roem. & Schult.	Apocynaceae	Shrub	Medicinal, Economical, Ecological
82	*Tacca leontopetaloides* (L.) Kuntze	Dioscoreaceae	Shrub	Food, Economical, Medicinal
83	*Triumfetta rhomboidea* Jacq.	Tiliaceae	Shrub	Environmental, Social, Food, Medicinal, Fodder
84	*Uraria lagopodoides* (L.) DC.	Fabaceae	Shrub	Medicinal, Social, Cultural, Economical
85	*Urena lobata* L.	Malvaceae	Shrub	Medicinal, Economical, Ecological, Social, Fodder
86	*Urena sinuata* L.	Malvaceae	Shrub	Medicinal, Ecological, Economical
87	*Vincetoxicum indicum* var. *indicum*	Apocynaceae	Shrub	Medicinal, Economical
88	*Vitex negundo* L.	Verbenaceae	Shrub	Medicinal, Economical, Food
89	*Woodfordia fruticosa* (L.) Kurz	Lythraceae	Shrub	Medicinal, Economical
90	*Ziziphus oenopolia (L.) Mill.*	Rhamnaceae	Shrub	Medicinal, Economical, Ecological, Social, Cultural
91	*Ziziphus rugosa* Lam.	Rhamnaceae	Shrub	Food, Medicinal, Economical
	HERB			
1	*Acampe praemorsa* (Roxb.) Blatt. & McCann	Orchidaceae	Herb	Medicinal, Economical
2	*Achyranthes aspera* L.	Amaranthaceae	Herb	Food, Medicinal
3	*Acmella paniculata* (Wall. ex-DC.) R.K.Jansen	Asteraceae	Herb	Food, Medicinal, Insecticide
4	*Aerides odorata* Lour.	Orchidaceae	Herb	Medicinal, Food, Economical
5	*Aerva lanata* (L.) Juss. ex-Schult.	Amaranthaceae	Herb	Medicinal, Economical
6	*Agave americana* L.	Asparagaceae	Herb	Ornamental, Medicinal, Fodder

7	*Agave sisalana* Perrine	Asparagaceae	Herb	Medicinal
8	*Ageratum conyzoides* L.	Asteraceae	Herb	Medicinal, Fodder, Insecticide,
9	*Alocasia macrorrhizos* (L.) G.Don	Araceae	Herb	Fodder, Medicinal, Economical
10	*Alternanthera paronychioides* A. St. -Hil.	Amaranthaceae	Herb	Food
11	*Alternanthera sessilis* (L.) DC.	Amaranthaceae	Herb	Medicinal, Ornamental, Food
12	*Alysicarpus vaginalis* DC.	Fabaceae	Herb	Fodder, Ecological, Economical
13	*Amaranthus caudatus* L.	Amaranthaceae	Herb	Food
14	*Amaranthus spinosus* L.	Amaranthaceae	Herb	Food
15	*Andrographis echioides* L.	Acanthaceae	Herb	Medicinal, Economical
16	*Andrographis paniculata* (Burm.f.) Nees	Acanthaceae	Herb	Medicinal
17	*Bacopa monnieri* (L.) Wettst.	Plantaginaceae	Herb	Medicinal
18	*Bambusa arundinacea* (Retz.) Willd.	Poaceae	Herb	Food, Medicinal, Economical
19	*Barleria cristata* L.	Acanthaceae	Herb	Medicinal, Ornamental, Economical
20	*Barleria strigosa* Willd	Acanthaceae	Herb	Medicinal, Cultural, Economical
21	*Basella alba* L.	Basellaceae	Herb	Medicinal
22	*Biophytum sensitivum* (L.) DC.	Oxalidaceae	Herb	Medicinal, Economical
23	*Blumea lacera* (Burm.f.) DC	Asteraceae	Herb	Medicinal
24	*Boerhavia diffusa* L.	Nyctaginaceae	Herb	Economical, Fodder, Medicinal, Ecological,
25	*Bothriochloa bladhii* (Retz.) ST Blake	Poaceae	Herb	Food, Fodder, Medicinal, Economical, Ecological
26	*Celosia argentea* L.	Amaranthaceae	Herb	Medicinal, Ecological, Ornamental, Food, Economical
27	*Centella asiatica* (L.) Urb.	Apiaceae	Herb	Medicinal
28	*Chlorophytum aurandanceae* Baker	Asparagaceae	Herb	Medicinal, Ecological, Economical
29	*Chrysopogon aciculatus* (Retz.) Trin.	Poaceae	Herb	Fodder, Medicinal, Economical
30	*Cleome rutidosperma* DC.	Cleomaceae	Herb	Medicinal, Economical, Food
31	*Cleome viscosa* L.	Cleomaceae	Herb	Food, Medicinal, Economical, Ecological
32	*Commelina benghalensis* Forssk.	Commelinaceae	Herb	Medicinal, Food
33	*Commelina diffusa* Burm.f.	Commelinaceae	Herb	Ecological, Medicinal, Fodder, Food
34	*Crinum asiaticum* L.	Amaryllidaceae	Herb	Medicinal, Economical
35	*Curculigo orchioides* Gaertn.	Hypoxidaceae	Herb	Medicinal, Economical
36	*Curcuma aromatica* Salisb.	Zingiberaceae	Herb	Economical, Food, Medicinal
37	*Curcuma longa* L.	Zingiberaceae	Herb	Food, Medicinal, Economical
38	*Cyanotis axillaris* (L.) D.Don ex Sweet	Commelinaceae	Herb	Medicinal, Fodder, Economical
39	*Cymbopogon citratus* (DC.) Stapf	Poaceae	Herb	Medicinal, Economical, Food
40	*Cynodon dactylon* (L.) Pers.	Poaceae	Herb	Medicinal, Fodder
41	*Cyperus compressus* L.	Cyperaceae	Herb	Fodder, Medicinal, Ecological, Economical
42	*Cyperus difformis* L.	Cyperaceae	Herb	Economical, Food, Oil, Ecological
43	*Cyperus rotundus* L.	Cyperaceae	Herb	Economical, Ecological, Medicinal, Food
44	*Dichanthium annulatum* (Forssk.) Stapf	Poaceae	Herb	Food, Medicinal, Economical, Fodder

45	*Dicliptera acuminata* (Ruiz & Pav.) Juss.	Acanthaceae	Herb	Medicinal, Economical
46	*Dipteracanthus prostratus* (Poir.) Nees	Acanthaceae	Herb	Medicinal, Economical
47	*Dracaena trifasciata* (Prain) Mabb.	Asparagaceae	Herb	Medicinal, Economical
48	*Drimia indica* (Roxb.) Jessop	Asparagaceae	Herb	Medicinal, Economical
49	*Eclipta prostrata* (L.) L.	Asteraceae	Herb	Medicinal, Ecological, Fodder
50	*Elephantopus scaber* L.	Asteraceae	Herb	Medicinal
51	*Eragrostis japonica* (Thunb.) Trin.	Poaceae	Herb	Fodder, Medicinal, Economical
52	*Eranthemum capense* L.	Acanthaceae	Herb	Medicinal, Economical, Ornamental
53	*Eranthemum nervosum* Dalzell & A.Gibson	Acanthaceae	Herb	Economical, Medicinal, Ornamental, Timber
54	*Eulaliopsis binata* (Retz.) C.E. Hubb.	Poaceae	Herb	Medicinal, Economical
55	*Euphorbia hirta* L.	Euphorbiaceae	Herb	Medicinal
56	*Evolvulus alsinoides* L.	Convolvulaceae	Herb	Medicinal, Fodder, Food, Ecological, Cultural
57	*Evolvulus nummularius* L.	Convolvulaceae	Herb	Food, Medicinal, Economical
58	*Globba sessiliflora* Sims	Zingiberaceae	Herb	Medicinal, Cultural, Economical
59	*Gomphrena celosioides* Mart.	Amaranthaceae	Herb	Medicinal, Economical
60	*Habenaria plantaginea* Lindl.	Orchidaceae	Herb	Economical, Medicinal, Ornamental
61	*Hackelochloa granularis* (L.) Kuntze	Poaceae	Herb	Fodder, Medicinal, Food, Ecological
62	*Hemigraphis latebrosa* (B.Heyne ex Roth) Nees	Acanthaceae	Herb	Medicinal, Economical, Ecological
63	*Heteropogon contortus* (L.) P.Beauv. ex Roem. & Schult.	Poaceae	Herb	Fodder, Economical, Medicinal, Ecological
64	*Hybanthus enneaspermus* (L.) F. Muell.	Violaceae	Herb	Economical, Medicinal
65	*Ipomoea aquatica* Forssk	Convolvulaceae	Herb	Economical, Food, Economical
66	*Kallstroemia maxima* (L.) Hook. &Arn.	Zygophyllaceae	Herb	Economical
67	*Knoxia sumatrensis* (Retz.) DC.	Rubiaceae	Herb	Medicinal, Economical
68	*Leucas aspera* (Willd.) Link	Lamiaceae	Herb	Medicinal, Ecological, Economical
69	*Lindernia ciliata* (Colsm.) Pennell	Linderniaceae	Herb	Medicinal, Economical
70	*Merremia tridentata* (L.) Hallier f.	Convolvulaceae	Herb	Medicinal, Economical, Ecological
71	*Mimosa pudica* L.	Fabaceae	Herb	Economical, Medicinal
72	*Mollugo pentaphylla* (L.) Spreng.	Molluginaceae	Herb	Fodder, Medicinal, Economical
73	*Ocimum gratissimum* L.	Lamiaceae	Herb	Medicinal, Food, Economical
74	*Oplismenus burmanni* (Retz.) P.Beauv.	Poaceae	Herb	Fodder, Medicinal, Social, Economical
75	*Ouret sanguinolenta* (L.) Kuntze	Amaranthaceae	Herb	Medicinal, Economical
76	*Oxalis corniculata* L.	Oxalidaceae	Herb	Medicinal, Food, Economical
77	*Panicum brevifolium* L.	Poaceae	Herb	Medicinal, Economical
78	*Panicum notatum* Retz.	Poaceae	Herb	Medicinal, Fodder, Food, Economical
79	*Parthenium hysterophorus* L.	Asteraceae	Herb	Medicinal, Economical, Social
80	*Phyllanthus acidus* (L.) Skeels	Phyllanthaceae	Herb	Food, Medicinal, Oil, Economical
81	*Phyllanthus amarus* Schumach. & Thonn.	Phyllanthaceae	Herb	Medicinal, Environmental, Food, Economical
82	*Phyllanthus nummulariifolius* Poir.	Phyllanthaceae	Herb	Medicinal, Economical

83	*Plesmonium margaritiferum* (Roxb.) Schott	Araceae	Herb	Medicinal, Economical
84	*Polygonum plebeium* R.Br.	Polygonaceae	Herb	Medicinal, Economical
85	*Polygonum stagninum* Buch. -Ham.ex Meisn.	Polygonaceae	Herb	Medicinal, Economical
86	*Portulaca oleracea* L.	Portulaceae	Herb	Medicinal, Economical
87	*Portulaca quadrifida* L.	Portulaceae	Herb	Medicinal, Economical
88	*Salomonia ciliata* (L.) DC.	Polygalaceae	Herb	Medicinal, Social, Economical
89	*Setaria pumila* (Poir.) Roem. & Schult.	Poaceae	Herb	Medicinal, Food, Fodder, Economical
90	*Sida cordata* (Burm.f.) Borss.Waalk.	Malvaceae	Herb	Medicinal, Economical
91	*Solanum virginianum* L.	Solanaceae	Herb	Medicinal, Ornamental, Economical
92	*Spermacoce articularis* L.	Rubiaceae	Herb	Medicinal, Economical
93	*Spilanthes paniculata* Wall. ex-DC.	Asteraceae	Herb	Medicinal, Ecological, Economical
94	*Sporobolus diandrus* (Retz.) P.Beauv.	Poaceae	Herb	Medicinal, Food, Economical
95	*Swertia angustifolia* Buch. -Ham. ex D.Don	Gentianaceae	Herb	Medicinal, Economical
96	*Syndrella nodiflora* (L.) Gaertn.	Asteraceae	Herb	Medicinal, Economical, Social, Fodder, Food
97	*Tephrosia purpurea* (L.) Pers.	Fabaceae	Herb	Medicinal, Economical, Fodder
98	*Thysanolaena latifolia* (Roxb. ex Hornem.) Honda	Poaceae	Herb	Economical, Social
99	*Tragia involucrata* L.	Euphorbiaceae	Herb	Medicinal, Economical
100	*Trapa natans* L.	Lythraceae	Herb	Food, Fodder, Economical
101	*Uraria picta* (Jacq.) Desv. ex-DC.	Fabaceae	Herb	Medicinal, Economical
102	*Urochloa distachyos* (L.) T.Q.Nguyen	Poaceae	Herb	Fodder, Medicinal, Economical, Ecological
103	*Vanda tessellata* (Roxb.) Hook. ex G.Don	Orchidaceae	Herb	Medicinal, Ornamental, Economical
104	*Vernonia cinerea* (L.) Less.	Asteraceae	Herb	Medicinal, Food, Economical
105	*Waltheria indica* L.	Malvaceae	Herb	Food, Fodder, Medicinal, Economical
106	*Zingiber zerumbet* (L.) Roscoe ex Sm.	Zingiberaceae	Herb	Medicinal, Economical, Ornamental
	CLIMBER & LIANA			
1	*Abrus precatorius* L.	Fabaceae	Climber	Medicinal, Economical
2	*Ampelocissus latifolia* (Roxb.) Planch.	Vitaceae	Climber	Medicinal
3	*Asparagus racemosus* Willd.	Asparagaceae	Climber	Medicinal
4	*Atylosia scarabaeoides* (L.) Thouars	Fabaceae	Climber	Medicinal
5	*Cajanus scarbaeoides* (L.) Thouars	Fabaceae	Climber	Economical, Food
6	*Calamus guruba* Buch. -Ham. ex-Mart	Arecaceae	Climber	Timber. Economical
7	*Calamus viminalis* Rein w. ex-Mart.	Arecaceae	Climber	Economic, Ornamental, Food
8	*Calycopteris floribunda* Roxb.	Combretaceae	Climber	Medicinal, Economical
9	*Cardiospermum halicacabum* L.	Sapindaceae	Climber	Medicinal, Economical
10	*Cayratia pedata* (Lam.) Juss. ex Gagnep.	Vitaceae	Climber	Medicinal, Economical
11	*Celastrus paniculatus* Willd.	Celastraceae	Climber	Medicinal, Oil, Economical
12	*Cissampelos pareira* L.	Menispermaceae	Climber	Ecological, Fodder, Medicinal, Economical
13	*Clitoria ternatea* L.	Fabaceae	Climber	Medicinal, Economical, Ornamental, Ecological
14	*Cocculus hirsutus* (L.) W.Theob.	Menispermaceae	Climber	Medicinal, Economical
15	*Combretum malabaricum* (Bedd.) Sujana, Ratheesh & Anil Kumar	Combretaceae	Climber	Economical, Medicinal
16	*Combretum roxberghii* Spreg.	Combretaceae	Climber	Medicinal, Economical
17	*Cryptolepis buchananii* R.Br. ex Roem. & Schult.	Apocynaceae	Climber	Economical, Environmental, Ornamental
18	*Cryptolepis dubia* (Burm.f.) M.R.Almeida	Apocynaceae	Climber	Medicinal, Ornamental, Economical, Food

19	*Derris canarensis* (Dalzell) Baker	Fabaceae	Climber	Economical
20	*Dioscorea bulbifera* L.	Dioscoreaceae	Climber	Medicinal, Food, Economical, Ecological
21	*Entada phaseoloides* (L.) Merr.	Fabaceae	Liana	Food, Ecological, Economical
22	*Entada rheedii* Spreng.	Fabaceae	Climber	Medicinal, Food, Economical
23	*Erycibe paniculata* Roxb.	Convolvulaceae	Climber	Medicinal, Economical, Ecological
24	*Gloriosa superba* L.	Colchicaceae	Climber	Medicinal, Ecological, Economical
25	*Gymnema sylvestre* (Retz.) R.Br. ex Sm.	Apocynaceae	Climber	Medicinal, Economical
26	*Hemidesmus indicus* (L.). R. Br	Apocynaceae	Climber	Medicinal, Economical
27	*Ichnocarpus frutescens* (L.) W. T. Aiton	Apocynaceae	Climber	Medicinal, Ecological, Economical
28	*Ipomoea hederifolia* L.	Convolvulaceae	Climber	Medicinal, Ecological, Economical, Ornamental
29	*Mucuna pruriens* (L.) DC.	Fabaceae	Climber	Food, Ecological, Economical
30	*Paederia foetida* L.	Rubiaceae	Climber	Food, Fodder, Medicinal, Economical
31	*Passiflora foetida* L.	Passifloraceae	Climber	Medicinal, Fodder, Social, Ecological
32	*Pergularia daemia* (Forssk.) Chiov.	Apocynaceae	Climber	Medicinal, Economical
33	*Phanera vahlii* (Wight & Arn.) Benth.	Fabaceae	Climber	Ecological, Medicinal, Economical
34	*Scindapsus officinalis* (Roxb.) Schott	Araceae	Climber	Medicinal, Economical
35	*Smilax prolifera* Roxb.	Smilacaceae	Climber	Food, Medicinal, Economical
36	*Smilax zylanica* L.	Smilacaceae	Climber	Medicinal, Economical
37	*Tiliacora acuminata* (Lam.) Miers	Menispermaceae	Climber	Medicinal, Economical
38	*Ventilago denticulata* Willd.	Rhamnaceae	Liana	Medicinal, Oil, Economical
		FERN		
1	*Adiantum caudatum* L.	Pteridaceae	Fern	Medicinal, Ornamental, Economical
2	*Lygodium flexuosum* (L.) Sw.	Lygodiaceae	Fern	Medicinal, Food, Economical

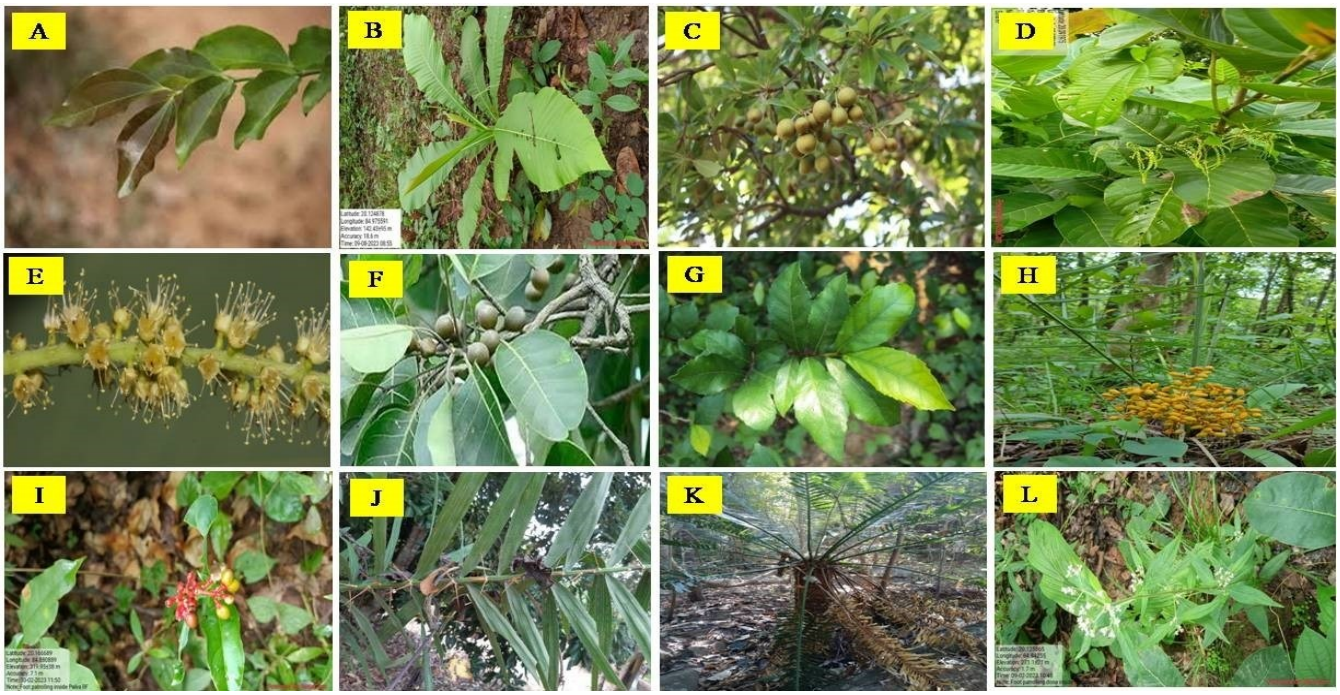

Figure 5. Medicinal and Economic significant plants of Nayagarh Forest Division (A) *Strychnos nux-vomica* L (B) *Dilleniapentagyna* Roxb. (C) *Madhuca longifolia* (L.) J.F.Macbr. (D) *Shorea robusta* C.F.Gaertn. (E) *Terminalia chebula* Retz. (F) *Terminalia bellirica* (Gaertn.) Roxb. (G) *Streblus asper* Lour. (H) *Phoenix acaulis* Roxb. (I) *Rauvolfia serpentina* (L.) Benth. ex Kurz (J) *Calamus viminalis* Willd. (K) *Cycas circinalis*Roxb. (L) *Knoxiasumatrensis* (Retz.) DC.

CONCLUSIONS

A total number of 364 plant species were identified in this present study, which shows the richness of diversifying species within the forests. Enhancing taxonomic research will help to safeguard and conserve India's plant wealth for the benefit of humankind. Even though the present study area is coming under reserve forest and protected by Forest Department of Odisha, however, overgrazing by livestock and frequent visits by residents of neighbouring villages for everyday needs (fuel, medication, fodder, bamboo, and other non-timber forest produce) are causing the forest to be destroyed. These activities caused the forest to become fragmented, which is harming the biodiversity. Minimising the loss of naturally occurring forest products would also be aided by educating the local population and enforcing the laws effectively. The state government, in especially the forest department, would benefit greatly from our study in creating an action plan and strategy for managing this richly biodiversity forest area. The local population and government agencies have a moral and ethical obligation to safeguard the plant resources. Comprehensive research focusing on floristic behaviour, the utility of plant species, ecology, regeneration, and other related topics is necessary to obtain additional knowledge that will aid in the construction of a reserve forest habitat restoration and management plans.

FUTURE PROSPECTIVES

Understanding and addressing the effects of environmental changes heavily relies on anticipating future work opportunities. There is a pressing need for comprehensive floristic surveys in the remaining forests of Nayagarh Forest Division to enhance the diversity of plant species across the entire forest area. It is crucial to document and conserve Endangered, Rare, and Threatened (RET) species in these four specific reserve forests, leveraging advanced technologies for effective intervention. Integrating these species into the district's forest coverage enhances accessibility and ensures that floristic studies maintain their relevance and impact within the scientific community and beyond.

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