

Research Article

Phyto diversity study of Nayagarh Forest Division, Odisha

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ABSTRACT

The Eastern Ghat offers 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 and 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 182 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 lifeforms possessing (122 species 33%), followed by herbs (108 plant species, 29%), shrubs (98 species, 27%), and climbers (36 species, 10%). 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 and 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 to sustainable management for biodiversity and the ecosystem preservation. A greater part of world's plant species varieties finds perfect homes 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 km² 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 Pragasam & 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. Namdapha National Park in Arunachal Pradesh of Northeast India (Nath et al., 2005) evaluated the species composition, diversity, and tree population structure of tropical wet evergreen forests. Some ethnobotanical floristic studies on the eastern Ghats were investigated (Reddy & Pattanaik, 2009, Sahu et al., 2012, Sahu et al., 2007, Khadanga et al., 2023) in the following regions: Gandhamardan Hill, Mahendra giri hill, Boudha, and Malyagiri hill, respectively. 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 phyto geographical position.

As a result 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

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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 an ecological and diversifying perspectives, it is 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 84°20' and 85°19' E longitude and 19° 54' and 20°28' N latitude and covers an area of 3067.28 km². 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, Shabar and indigenous populations, who live in densely forested areas, make up the majority of these blocks. There are 962,789 people living in the Nayagarh district overall.

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 the region. The commercial crop grown in the blocks of Nayagarh, Gania, Odogaon, Khandapada and Bhapuris sugarcane. The indigenous people living in the study villages primarily rely on agriculture, animal husbandry, and the 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 kondhas 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 Shabar (6.77%) (Census India 2011).

Forest cover

The forest types of Odisha are classified into 5 Forest Type Groups, which are further subdivided into 16 Forest Types, according to the Champion & Seth Classification of Forest Types (1968) (*A Revised Survey of the Forest Types of India, 1968*), i.e. 1) Tropical Semi evergreen forests, 2) Tropical Moist Deciduous forests, 3) Tropical Dry Deciduous forests, 4) Subtropical Broad-leaved Hill forests, 5) Littoral and Swamp forests. A total of 3890 km² makes up Nayagarh's geographical area, of which 1,713.75 km² are covered by forests, accounting for 44.49% of the total geographical area. Out of these, 189 km² are covered by very dense forest, 965 km² by moderately dense forest, 559.75 km² by open forest, and 171.36 km² by scrub forest (*Forest Survey of India*).

Northern Tropical Dry Deciduous Forest, Miscellaneous Forest, South Indian Moist Mixed Deciduous Forest, and Mixed Sal Forest from the Dry Peninsula comprise 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 932 metres.

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 °C, and the maximum monsoon temperature is around 30 °C. Between December and February, the wintertime minimum temperature is approximately 8–10 °C. 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, garniferous 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 nullahs that provide excellent drainage for the forests. A significant amount of drainage water from the forests, falls into the Mahanadi, which is the district's most significant river.

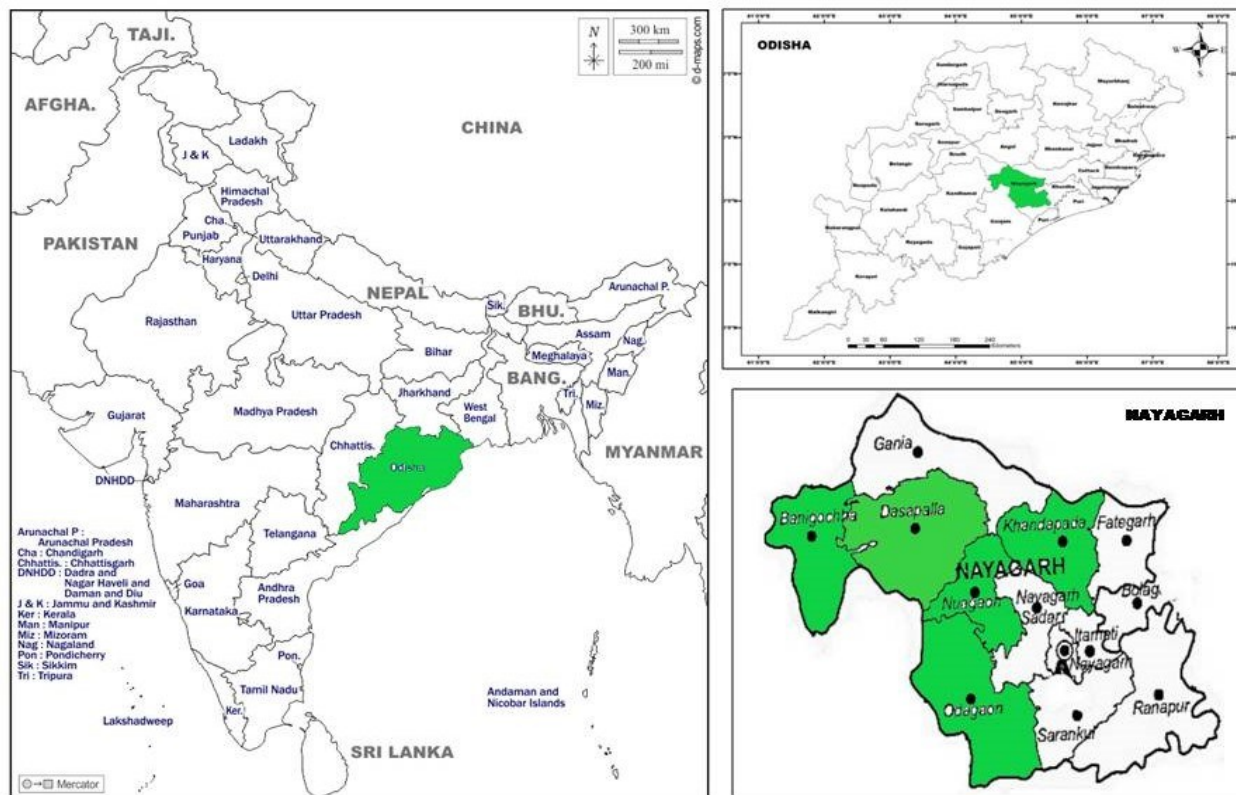


Figure 1. Map of Study area

Survey, Sample collection and Identification

Two to three specimens of each species were collected during flowering/fruitlet 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), Flora of Peninsular India (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 362 vascular plant species and 2 fern species under 83 families and 282 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 Table 1. Trees count the maximum number of species i.e. 122 (33%), followed by 108 Herbs (29%), 98 Shrub (27%) and 36 Climbers (10%) (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, *Buchnanian 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*. 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 caudatus*, *Amaranthus viridis*, *Andrographis paniculata*. Some of the common climbing species reported from the study area includes *Abrus precatorius*, *Ampelocissus latifolia*, *Asparagus racemosus*, *Phanera vahlii* etc. Besides all the angiospermic herbaceous and tree species, a number of ferns, orchid, and bryophytes and lichen were observed during the study. Utility categories chart shows that the Nayagarh forest is richer in medicinal, followed by economical, food and timber providing valuable plant resources.

This study indicate that the Kondh tribes utilised most of the plants they came across for a range of regional uses. Certain commercially significant plant species, such *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 and other domestic applications. All those plant species that has identified with highest use as medicinal followed by food, economical, fuel, cultural, ecological, social value etc. as cited by the local people (Fig 4). Among them about 247 species were having some medicinal values.

DISCUSSIONS

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 results of our study indicate 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, 1999a), and in the Anamalais (Ayyappan & Parthasarathy, 1999), the number of single trees per hectare varied between 266 and 632. (Khadanga et al., 2023) state 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 Forest Division. According to (Reddy & Pattanaik, 2009) research of the flora, there are a relatively higher number of herbaceous species (519), followed by 173 trees, 119 climbers, and 101 shrubs.

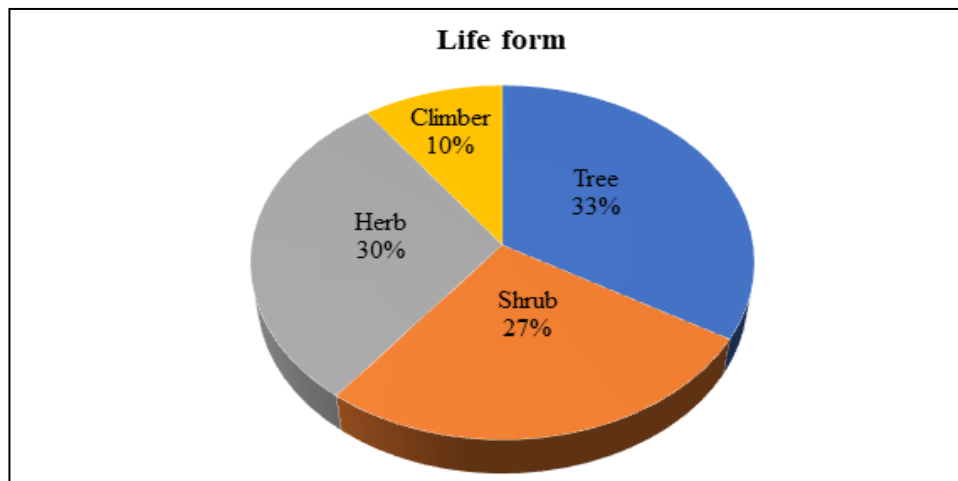


Figure 2. Life Forms (%)

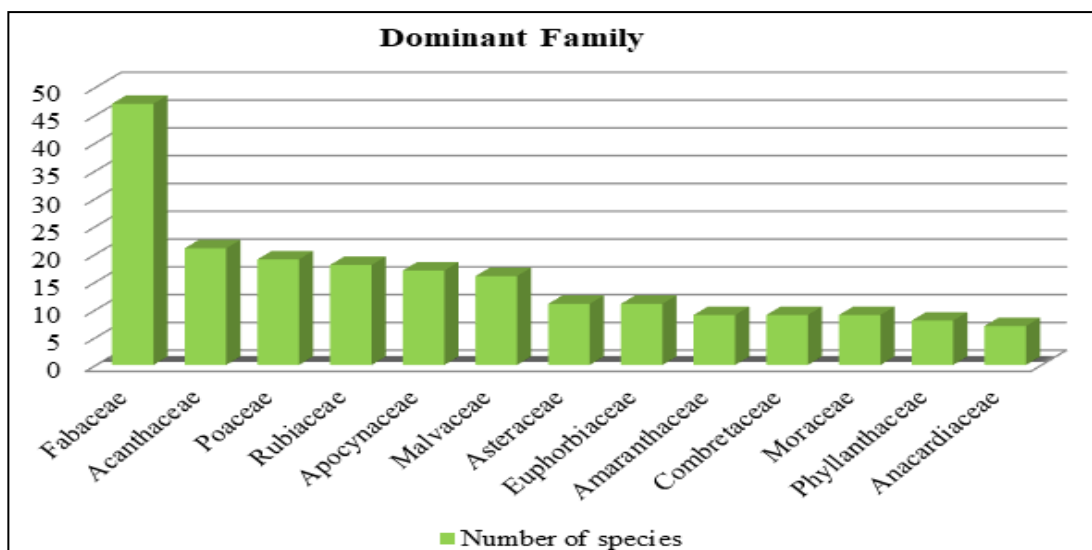


Figure 3. Dominant Families

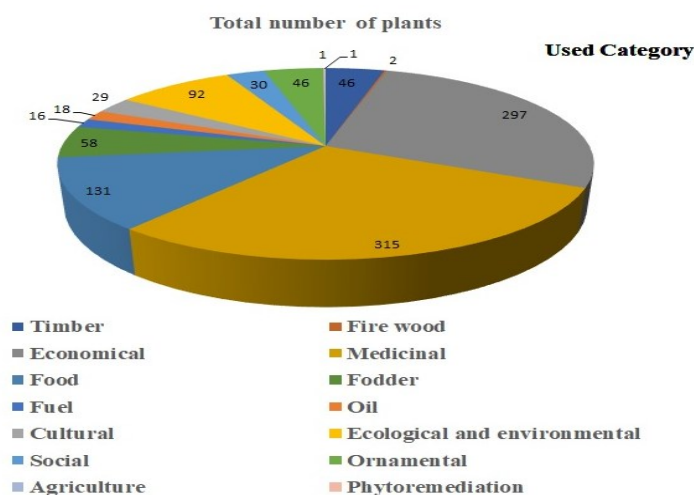


Figure 4. Used Categories of species

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

52	<i>Erythrina variegata</i> L.	Fabaceae	Tree	Ornamental, Fodder, Fuel, Food, Cultural
53	<i>Ficus benghalensis</i> L.	Moraceae	Tree	Medicinal, Cultural, Economical, Food
54	<i>Ficus hispida</i> L.	Moraceae	Tree	Medicinal, Food, Economical, Cultural
55	<i>Ficus racemosa</i> Willd.	Moraceae	Tree	Medicinal, Food, Economical, Cultural
56	<i>Ficus religiosa</i> Forssk.	Moraceae	Tree	Economical, Cultural, Medicinal, Ecological
57	<i>Ficus tomentosa</i> Roxb. ex Willd.	Moraceae	Tree	Medicinal, Ecological, Economical, Food
58	<i>Flacourtia indica</i> (Burm.) Merr.	Flacourtiaceae	Tree	Timber, Medicinal, Economical, Cultural, Ecological, Ornamental
59	<i>Gardenia gummifera</i> L.f.	Rubiaceae	Tree	Food, Medicinal, Ecological,
60	<i>Gardenia latifolia</i> Aiton.	Rubiaceae	Tree	Medicinal, Economical
61	<i>Gliricidia sepium</i> (Jacq.) Kunth	Fabaceae	Tree	Food, Medicinal, Fuel, Social, Economical
62	<i>Glycosmis pentaphylla</i> (Retz.) DC.	Rutaceae	Tree	Medicinal, Economical
63	<i>Guazum aulmifolia</i> Lam.	Malvaceae	Tree	Medicinal, Fodder, Food, Ecological, Social
64	<i>Helicteres isora</i> L.	Malvaceae	Tree	Medicinal, Economical
65	<i>Hymenodictyon orixense</i> (Roxb.) Mabb.	Rubiaceae	Tree	Medicinal, Economical, Oil
66	<i>Ixora arborea</i> Roxb. ex Sm.	Rubiaceae	Tree	Medicinal, Economical, Ornamental, Ecological
67	<i>Kydia calycina</i> Roxb.	Malvaceae	Tree	Timber, Medicinal, Economical
68	<i>Lagerstroemia parviflora</i> Roxb.	Lythraceae	Tree	Timber, Medicinal, Economical
69	<i>Lagerstroemia speciosa</i> subsp. <i>speciosa</i>	Lythraceae	Tree	Ornamental
70	<i>Lannea coromandelica</i> (Houtt.) Merr.	Anacardiaceae	Tree	Medicinal, Food, Economical
71	<i>Leea macrophylla</i> Roxb. ex Hornem.	Vitaceae	Tree	Medicinal, Food, Economical
72	<i>Limonia acidissima</i> L.	Rutaceae	Tree	Medicinal, Economical, Food
73	<i>Macaranga peltata</i> (Roxb.) Müll.Arg.	Euphorbiaceae	Tree	Ecological, Medicinal, Economical
74	<i>Madhuca longifolia</i> (J.Konig) J.F.Macbr.	Sapotaceae	Tree	Medicinal, Food, Timber, Economical
75	<i>Magnolia champaca</i> (L.) Baill. ex Pierre	Magnoliaceae	Tree	Ornamental
76	<i>Mallotus philippensis</i> (Lam.) Muell.Arg.	Euphorbiaceae	Tree	Medicinal, Cultural, Economical, Food, Oil, Timber
77	<i>Mangifera indica</i> L.	Anacardiaceae	Tree	Food, Medicinal, Economical, Timber, Ecological
78	<i>Melia azadirachta</i> L.	Meliaceae	Tree	Economical, Timber, Medicinal, Ecological
79	<i>Memecylon edule</i> Roxb.	Melastomataceae	Tree	Economical, Medicinal, Food, Ecological
80	<i>Mesua ferrea</i> L.	Calophyllaceae	Tree	Ornamental, Food, Ecological, Economical, Oil, Medicinal

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

117	<i>Terminalia tomentosa</i> Wight & Arn.	Combretaceae	Tree	Medicinal, Timber, Food, Economical
118	<i>Tilia tomentosa</i> Moench	Malvaceae	Tree	Economical, Ecological, Food, Ornamental
119	<i>Vachellia leucophloea</i> (Roxb.) Maslin, Seigler & Ebinger	Fabaceae	Tree	Medicinal, Fodder, Oil, Edible
120	<i>Vachellia nilotica</i> (L.) Delile	Fabaceae	Tree	Medicinal, Firewood, Fodder, Phytoremediation
121	<i>Zanthoxylum rhetsa</i> (Roxb.) DC.	Rutaceae	Tree	Food, Medicinal, Economical
122	<i>Ziziphus mauritiana</i> Lam.	Rhamnaceae	Tree	Social, Economical, Food, Fodder, Cultural
SHRUB				
123	<i>Abelmoschus moschatus</i> Medik.	Malvaceae	Shrub	Medicinal, Food, Economical, Social
124	<i>Abutilon indicum</i> (L.) Sweet	Malvaceae	Shrub	Medicinal, Economical, Ornamental
125	<i>Acacia farnesiana</i> (L.) Wild	Fabaceae	Shrub	Medicinal, Economical
126	<i>Aganosmaheynei</i> (Spreng.) I.M.Turner	Apocynaceae	Shrub	Medicinal, Economical
127	<i>Allophylus serratus</i> (Roxb.) Kurz	Sapindaceae	Shrub	Medicinal, Economical
128	<i>Alstonia venenata</i> R.Br.	Apocynaceae	Shrub	Medicinal, Economical
129	<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson	Araceae	Shrub	Medicinal, Food
130	<i>Ardisia solanacea</i> Roxb.	Primulaceae	Shrub	Medicinal, Ornamental
131	<i>Jatropha curcas</i> L.	Euphorbiaceae	Shrub	Medicinal, Ecological, Economical
132	<i>Averrhoa carambola</i> L.	Oxalidaceae	Shrub	Food
133	<i>Bambusa bambos</i> (L.) Voss	Poaceae	Shrub	Economical, Ecological, Timber, Fuelwood, Paper
134	<i>Bambusa tulda</i> Roxb.	Poaceae	Shrub	Timber, Food, Paper, Economical, Fuel Wood
135	<i>Barleria prionitis</i> L.	Acanthaceae	Shrub	Medicinal, Economical
136	<i>Bauhinia acuminata</i> L.	Fabaceae	Shrub	Medicinal, Ornamental, Economical
137	<i>Bauhinia tomentosa</i> L.	Fabaceae	Shrub	Food, medicinal, Ornamental, Economical
138	<i>Benkara malabarica</i> (Lam.) Tirveng.	Rubiaceae	Shrub	Cultural, Food, Medicinal, Economical
139	<i>Blepharisma deraspatensis</i> (L.) B.Heyne ex Roth	Acanthaceae	Shrub	Economical, Medicinal, Cultural, Ecological
140	<i>Breynia rhamnoides</i> Müll. Arg.	Phyllanthaceae	Shrub	Medicinal, Economical
141	<i>Breynia vitis-idaea</i> (Burm.) Fisch.	Phyllanthaceae	Shrub	Medicinal, Economical, Ecological, Cultural
142	<i>Butea superba</i> Roxb.	Fabaceae	Shrub	Economical, Medicinal
143	<i>Calotropis gigantea</i> (L.) W.T.Aiton	Apocynaceae	Shrub	Fodder, Medicinal, Economical
144	<i>Carissa spinarum</i> G. Lodd.	Apocynaceae	Shrub	Medicinal, Firewood, Food
145	<i>Casearia elliptica</i> Willd.	Salicaceae	Shrub	Food, Timber, Economical
146	<i>Cassia tora</i> (L.) Roxb.	Fabaceae	Shrub	Medicinal, Economical, Food
147	<i>Chromolaena odorata</i> (L.) R.M. King & H. Rob.	Asteraceae	Shrub	Medicinal, Ornamental, Economical,
148	<i>Cleome gynandra</i> L.	Cleomaceae	Shrub	Food, Social, Economical
149	<i>Clerodendrum indicum</i> (L.) Kuntze	Lamiaceae	Shrub	Medicinal, Economical
150	<i>Clerodendrum infortunatum</i> L.	Verbenaceae	Shrub	Medicinal, Cultural, Economical, Ecological

151	<i>Clerodendrum serratum</i> (L.) Moon	Verbenaceae	Shrub	Medicinal, Economical
152	<i>Clerodendrum viscosum</i> Vent.	Lamiaceae	Shrub	Medicinal, Economical
153	<i>Colebrookea oppositifolia</i> G.Lodd.	Lamiaceae	Shrub	Medicinal
154	<i>Costusspeciosus</i> (J.Koeng) Sm.	Costaceae	Shrub	Medicinal, Food, Economical
155	<i>Crossandra infundibuliformis</i> (L.) Nees	Acanthaceae	Shrub	Economical, Medicinal
156	<i>Crotalaria pallida</i> Aiton	Fabaceae	Shrub	Ecological, Cultural, Social, Food, Medicinal
157	<i>Crotolari ajuncea</i> L.	Fabaceae	Shrub	Fodder, Ecological, Medicinal, Economical
158	<i>Datura metel</i> L.	Solanaceae	Shrub	Medicinal, Economical
159	<i>Desmodium gangeticum</i> (L.) DC.	Fabaceae	Shrub	Medicinal, Economical, Food
160	<i>Dicliptera bupleuroides</i> Nees	Acanthaceae	Shrub	Medicinal, Economic
161	<i>Euphorbia neriifolia</i> L.	Euphorbiaceae	Shrub	Medicinal, Ornamental, Food, Ecological
162	<i>Flemingia chapper</i> Buch.-Ham.ex Benth	Fabaceae	Shrub	Social, Economical, Medicinal, Food, Ecological, Fodder
163	<i>Flemingia paniculata</i> Benth.	Fabaceae	Shrub	Economical, Ecological, Medicinal
164	<i>Glochidion zeylanicum</i> (Gaertn.) A.Juss.	Phyllanthaceae	Shrub	Medicinal, Food, Timber, Economical, Food
165	<i>Gossypium herbaceum</i> L.	Malvaceae	Shrub	Fodder, Economical, Medicinal, Food
166	<i>Grewia asiatica</i> L.	Malvaceae	Shrub	Food, medicinal, Economical
167	<i>Grewia hirsutavahl.</i>	Malvaceae	Shrub	Medicinal, Food, Economical, Ecological
168	<i>Hellenia speciosa</i> (J.Koenig) S.R.Dutta	Costaceae	Shrub	Environmental, Ornamental, Economical, Medicinal
169	<i>Holarrhena antidysenterica</i> Wall.	Apocynaceae	Shrub	Medicinal, Economical
170	<i>Holarrhena pubescens</i> Wall.exG.Don	Apocynaceae	Shrub	Economical, Medicinal
171	<i>Hyptis suaveolens</i> (L.) Kuntze	Lamiaceae	Shrub	Medicinal, Economical, Oil
172	<i>Ipomoea littoralis</i> Blume	Convolvulaceae	Shrub	Economical, Medicinal
173	<i>Jasminum multiflorum</i> (Burm. f.) Andrews	Oleaceae	Shrub	Economical, Cultural, Food, Oil, Medicinal, Ornamental
174	<i>Jasminum sambac</i> (L.) Aiton	Oleaceae	Shrub	Ornamental, Economical, Medicinal, Oil
175	<i>Ecboium ligustrinum var. ligustrinum</i>	Acanthaceae	Shrub	Economical
176	<i>Justicia gendarussa</i> Blanco	Acanthaceae	Shrub	Medicinal, Ornamental, Economical
177	<i>Lepidagathis incurva</i> Buch.-Ham. ex D.Don	Acanthaceae	Shrub	Economical, Medicinal, Ecological
178	<i>Lepisanthes tetraphylla</i> (Vahl) Radlk.	Sapindaceae	Shrub	Medicinal, Economical, Ornamental
179	<i>Lippia Javanica</i> (Burm.f.) Spreng	Verbenaceae	Shrub	Medicinal, Economical, Economical, Oil
180	<i>Melastoma malabathricum</i> L.	Melastomaceae	Shrub	Medicinal, Food, Ornamental, Economical
181	<i>Mikania micrantha</i> Kunth	Asteraceae	Shrub	Fodder, Medicinal, Ecological, Economical, Social
182	<i>Mimosa himalayana</i> Gamble	Fabaceae	Shrub	Medicinal, Economical, Social, Economical
183	<i>Morinda citrifolia</i> L.	Rubiaceae	Shrub	Medicinal, Economical, Food
184	<i>Bergera koenigii</i> L.	Rutaceae	Shrub	Medicinal, Economical
185	<i>Nyctanthes arbor-tristis</i> L.	Oleaceae	Shrub	Medicinal, Economical, Oil, Ecological
186	<i>Pavetta crassicaulis</i> Bremek.	Rubiaceae	Shrub	Medicinal, Economical
187	<i>Phoenix acaulis</i> Roxb.	Arecaceae	Shrub	Food, Medicinal, Economical, Social, Timber

188	<i>Platyclusus orientalis</i> (L.) Franco	Cupressaceae	Shrub	Medicinal, Food, Ecological, Economical
189	<i>Plumbago zeylanica</i> L.	Plumbaginaceae	Shrub	Medicinal, Ecological, Economical
190	<i>Plumeria rubra</i> L.	Apocynaceae	Shrub	Medicinal, Economical, Ornamental, Social, Ecological
191	<i>Polyalthia suberosa</i> (Roxb.) Thwaites	Annonaceae	Shrub	Medicinal, Economical
192	<i>Randia malabarica</i> Lam.	Rubiaceae	Shrub	Economical, Medicinal
193	<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Apocynaceae	Shrub	Medicinal, Ecological, Economical
194	<i>Rauvolfia tetraphylla</i> L.	Apocynaceae	Shrub	Medicinal, Food, Economical
195	<i>Rhinacanthus kaokoensis</i> K. Balkwill & S. D. Will.	Acanthaceae	Shrub	Medicinal, Economical
196	<i>Ricinus communis</i> L.	Euphorbiaceae	Shrub	Medicinal, Economical
197	<i>Rungia pectinata</i> (L.) Nees	Acanthaceae	Shrub	Medicinal, Economical
198	<i>Sansevieria trifasciata</i> Prain	Acanthaceae	Shrub	Medicinal, Economical, Social, Ornamental
199	<i>Santalum album</i> L.	Santalaceae	Shrub	Economical, Medicinal
200	<i>Scoparia dulcis</i> L.	Plantaginaceae	Shrub	Medicinal, Ecological, Social
201	<i>Senna hirsuta</i> (L.) H.S. Irwin & Barneby	Fabaceae	Shrub	Medicinal, Fuelwood, Economical
202	<i>Senna occidentalis</i> (L.) Link	Fabaceae	Shrub	Medicinal, Food, Economical
203	<i>Sesbania grandiflora</i> (L.) Poir.	Fabaceae	Shrub	Fodder, Food, Ecological, Economical
204	<i>Sesmodium triangulare</i> (Retz.) Merr.	Fabaceae	Shrub	Medicinal, Economical, Ecological
205	<i>Solanum nigrum</i> L.	Solanaceae	Shrub	Medicinal, Food, Ecological
206	<i>Spermacoce articularis</i> L.f.	Rubiaceae	Shrub	Medicinal, Oil, Economical
207	<i>Streblus taxoides</i> (Roth) Kurz	Moraceae	Shrub	Medicinal, Ecological, Economical
208	<i>Strobilanthes scabra</i> Nees	Acanthaceae	Shrub	Food, Medicinal, Economical
209	<i>Symphorema involucratum</i> Roxb.	Lamiaceae	Shrub	Economical, Medicinal
210	<i>Tacca leontopetaloides</i> (L.) Kuntze	Dioscoreaceae	Shrub	Food, Economical, Medicinal
211	<i>Triumfetta rhomboidea</i> Jacq.	Tiliaceae	Shrub	Environmental, Social, Food, Medicinal, Fodder
212	<i>Uraria lagopodoides</i> (L.) DC.	Fabaceae	Shrub	Medicinal, Social, Cultural, Economical
213	<i>Urena lobate</i> L.	Malvaceae	Shrub	Medicinal, Economical, Ecological, Social, Fodder
214	<i>Urena sinuate</i> L.	Malvaceae	Shrub	Medicinal, Ecological, Economical
215	<i>Vincetoxicum indicum</i> var. <i>indicum</i>	Apocynaceae	Shrub	Medicinal, Economical
216	<i>Vitex negundo</i> L.	Verbenaceae	Shrub	Medicinal, Economical, Food
217	<i>Woodfordia fruticose</i> (L.) Kurz	Lythraceae	Shrub	Medicinal, Economical
218	<i>Wrightia tinctoria</i> subsp. <i>rothii</i> (G. Don) Ngan	Apocianaceae	Shrub	Medicinal, Economical, Ecological
219	<i>Ziziphus oenopolia</i> (L.) Mill.	Rhamnaceae	Shrub	Medicinal, Economical, Ecological, Social, Cultural
220	<i>Ziziphus rugosa</i> Lam.	Rhamnaceae	Shrub	Food, Medicinal, Economical
Herb				
221	<i>Acampe praemorsa</i> (Roxb.) Blatt. & McCann	Orchidaceae	Herb	Medicinal, Economical
222	<i>Achyranthes aspera</i> L.	Amaranthaceae	Herb	Food, Medicinal
223	<i>Acmella paniculata</i> (Wall. ex-DC.) R.K. Jansen	Asteraceae	Herb	Food, Medicinal, Insecticide
224	<i>Aerides odorata</i> Lour.	Orchidaceae	Herb	Medicinal, Food, Economical
225	<i>Aerva lanata</i> (L.) Juss. ex Schult.	Amaranthaceae	Herb	Medicinal, Economical

226	<i>Agave americana</i> L.	Asperagaceae	Herb	Ornamental, Medicinal and Fodder
227	<i>Agave sisalana</i> Perrine	Asparagaceae	Herb	Medicinal
228	<i>Ageratum conyzoides</i> L.	Astaraceae	Herb	Medicinal, Fodder, Insecticide,
229	<i>Alocasia macrorrhizos</i> (L.) G. Don	Araceae	Herb	Fodder, Medicinal, Economical, Social,
230	<i>Alternanthera paronychioides</i> A. St.-Hil.	Amaranthaceae	Herb	Food, Ecological
231	<i>Alternanthera sessilis</i> (L.) DC.	Amaranthaceae	Herb	Food
232	<i>Alysicarpus vaginalis</i> DC.	Amaranthaceae	Herb	Medicinal, Ornamental, Food
233	<i>Amaranthus caudatus</i> L.	Fabaceae	Herb	Fodder, Ecological, Economical
234	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Herb	Fodder
235	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Herb	Food
236	<i>Andrographis echioides</i> L.	Acanthaceae	Herb	Medicinal, Economical
237	<i>Andrographis paniculata</i> (Burm.f.) Nees	Acanthaceae	Herb	Medicinal
238	<i>Bacopa monnieri</i> (L.) Wettst.	Plantaginaceae	Herb	Medicinal
239	<i>Bambusa arundinacea</i> (Retz.) Willd.	Poaceae	Herb	Food, Medicinal, Economical
240	<i>Barleria cristata</i> L.	Acanthaceae	Herb	Medicinal, Ornamental, Economical
241	<i>Barleria strigosa</i> Willd.	Acanthaceae	Herb	Medicinal, Cultural, Economical
242	<i>Basella alba</i> L.	Basellaceae	Herb	Medicinal
243	<i>Biophytum sensitivum</i> (L.) DC.	Oxalidaceae	Herb	Medicinal, Economical
244	<i>Blumealacera</i> (Burm.f.) DC	Asteraceae	Herb	Medicinal
245	<i>Boerhavia diffusa</i> L.	Nyctaginaceae	Herb	Economical, Fodder, Medicinal, Ecological,
246	<i>Bothriochloa bladhii</i> (Retz.) ST Blake	Poaceae	Herb	Food, Fodder, Medicinal, Economical, Ecological
247	<i>Celosia argentea</i> L.	Amaranthaceae	Herb	Medicinal, Ecological, Ornamental, Food, Economical
248	<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Herb	Medicinal
249	<i>Chlorophytum aurandanceae</i> Baker	Asparagaceae	Herb	Medicinal, Ecological, Economical
250	<i>Chrysopogon aciculatus</i> (Retz.) Trin.	Poaceae	Herb	Fodder, Medicinal, Economical
251	<i>Cleome ruidosperma</i> DC.	Cleomaceae	Herb	Medicinal, Economical, Food
252	<i>Cleome viscosa</i> L.	Cleomaceae	Herb	Food, Medicinal, Economical, Ecological
253	<i>Commelina benghalensis</i> Forssk.	Commelinaceae	Herb	Medicinal, Economical
254	<i>Commelina diffusa</i> Burm.f.	Commelinaceae	Herb	Ecological, Medicinal, Fodder, Food
255	<i>Crinum asiaticum</i> L.	Amaryllidaceae	Herb	Medicinal, Economical
256	<i>Curculigo orchioides</i> Gaertn.	Hypoxidaceae	Herb	Medicinal, Economical
257	<i>Curcuma aromatica</i> Salisb.	Zingiberaceae	Herb	Economical, Food, Medicinal
258	<i>Curcuma caesia</i> Roxb.	Zingiberaceae	Herb	Food, Medicinal, Economical
259	<i>Cyanotis axillaris</i> (L.) D. Don ex Sweet	Commelinaceae	Herb	Medicinal, Fodder, Economical
260	<i>Cymbopogon citratus</i> (DC.) Stapf	Poaceae	Herb	Medicinal, Economical, Food
261	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Herb	Medicinal, Fodder
262	<i>Cyperus compressus</i> L.	Cyperaceae	Herb	Fodder, Medicinal, Ecological, Economical
263	<i>Cyperus difformis</i> L.	Cyperaceae	Herb	Economical, Food, Oil, Ecological
264	<i>Cyperus rotundus</i> L.	Cyperaceae	Herb	Economical, Ecological, Medicinal, Food

264	<i>Dendrocalamus strictus</i> (Roxb.) Nees	Poaceae	Herb	Economical, Timber, Medicinal, Food
265	<i>Dichanthium annulatum</i> (Forssk.) Stapf	Poaceae	Herb	Food, Medicinal, Economical, Fodder
266	<i>Dicliptera acuminata</i> (Ruiz & Pav.) Juss.	Acanthaceae	Herb	Medicinal, Economical
267	<i>Dipteracanthus prostratus</i> (Poir.) Nees	Acanthaceae	Herb	Medicinal, Economical
268	<i>Dracaena trifasciata</i> (Prain) Mabb.	Asparagaceae	Herb	Medicinal, Economical
269	<i>Drimia indica</i> (Roxb.) Jessop	Asparagaceae	Herb	Medicinal, Economical
270	<i>Ecbolium viride</i> (Forssk.) Alston	Acanthaceae	Herb	Medicinal, Economical
271	<i>Eclipta prostrata</i> (L.) L.	Asteraceae	Herb	Medicinal, Ecological, Fodder
272	<i>Elephantopus scaber</i> L.	Asteraceae	Herb	Medicinal
273	<i>Eragrostis japonica</i> (Thunb.) Trin.	Poaceae	Herb	Fodder, Medicinal, Economical
274	<i>Eranthemum capense</i> L.	Acanthaceae	Herb	Medicinal, Economical, Ornamental
275	<i>Eranthemum nervosum</i> Dalzell & A. Gibson	Acanthaceae	Herb	Economical, Medicinal, Ornamental, Timber
276	<i>Eulaliopsis binata</i> (Retz.) C.E. Hubb.	Poaceae	Herb	Medicinal, economical
277	<i>Evolvulus alsinoides</i> L.	Convolvulaceae	Herb	Medicinal, Fodder, Food, Ecological, Cultural
278	<i>Evolvulus nummularis</i> L.	Convolvulaceae	Herb	Food, Medicinal, Economical
279	<i>Ficus racemosa</i> Willd.	Euphorbiaceae	Herb	Medicinal, Fodder, Economical, Orna- mental
280	<i>Globba sessiliflora</i> Sims	Zingiberaceae	Herb	Medicinal, Cultural, Economical
281	<i>Gomphrena celosioides</i> Mart.	Amaranthaceae	Herb	Medicinal, Economical
282	<i>Habenaria plantaginea</i> Lindl.	Orchidaceae	Herb	Economical, Medicinal, Ornamental
283	<i>Hackelochloa granularis</i> (L.) Kuntze	Poaceae	Herb	Fodder, Medicinal, Food, Ecological
284	<i>Hemigraphis latebrosa</i> (B. Heyne ex Roth) Nees	Acanthaceae	Herb	Medicinal, Economical, Ecological
285	<i>Heteropogon contortus</i> (L.) P. Beauv. ex Roem. & Schult.	Poaceae	Herb	Fodder, Economical, Medicinal, Eco- logical
286	<i>Hybanthus enneaspermus</i> (L.) F. Muell.	Violaceae	Herb	Economical, Medicinal
287	<i>Ipomoea aquatica</i> Forssk	Convolvulaceae	Herb	Economical, Food, Economical
288	<i>Kallstroemia maxima</i> (L.) Hook. & Arn.	Zygophyllaceae	Herb	Economical
289	<i>Knoxia sumatrensis</i> (Retz.) DC.	Rubiaceae	Herb	Medicinal, Economical
290	<i>Leucas aspera</i> (Willd.) Link	Lamiaceae	Herb	Medicinal, Ecological, Economical
291	<i>Lindernia ciliata</i> (Colsm.) Pennell	Linderniaceae	Herb	Medicinal, Economical
292	<i>Merremia tridentata</i> (L.) Hallier f.	Convolvulaceae	Herb	Medicinal, Economical, Ecological
293	<i>Mimosa pudica</i> L.	Fabaceae	Herb	Economical, Medicinal
294	<i>Mollugo pentaphylla</i> (L.) Spreng.	Molluginaceae	Herb	Fodder, Medicinal, Economical
295	<i>Ocimum gratissimum</i> L.	Lamiaceae	Herb	Medicinal, Food, Economical
296	<i>Oplismenus burmanni</i> (Retz.) P. Beauv.	Poaceae	Herb	Fodder, Medicinal, Social, Economical
297	<i>Ouret sanguinolenta</i> (L.) Kuntze	Amaranthaceae	Herb	Medicinal, Economical
298	<i>Oxalis corniculata</i> L.	Oxalidaceae	Herb	Medicinal, Food, Economical
299	<i>Panicum brevifolium</i> L.	Poaceae	Herb	Medicinal, Economical
300	<i>Panicum notatum</i> Retz.	Poaceae	Herb	Medicinal, Fodder, Food, Economical
301	<i>Parthenium hysterophorus</i> L.	Asteraceae	Herb	Medicinal, Economical, Social
302	<i>Phyllanthus amarus</i> Schumach. & Thonn.	Phyllanthaceae	Herb	Medicinal, Environmental, Food, Eco- nomical

303	<i>Plesmonium margaritifera</i> (Roxb.) Schott	Araceae	Herb	Medicinal, Economical
304	<i>Polygonum plebeium</i> R.Br.	Polygonaceae	Herb	Medicinal, Economical
305	<i>Polygonum stagninum</i> Buch.-Ham.exMeisn.	Polygonaceae	Herb	Medicinal, Economical
306	<i>Portulaca oleracea</i> L.	Portulacaceae	Herb	Medicinal, Economical
307	<i>Portulaca quadrifida</i> L.	Portulacaceae	Herb	Medicinal, Economical
308	<i>Salomonina ciliata</i> (L.) DC.	Polygalaceae	Herb	Medicinal, Social, Economical
309	<i>Setaria pumila</i> (Poir.) Roem. & Schult.	Poaceae	Herb	Medicinal, Food, Fodder, Economical
310	<i>Sida cordata</i> (Burm.f.) Borss.Waalk.	Malvaceae	Herb	Medicinal, Economical
311	<i>Solanum virginianum</i> L.	Solanaceae	Herb	Medicinal, Ornamental, Economical
312	<i>Spermasoce articularis</i> L.	Rubiaceae	Herb	Medicinal, Economical
313	<i>Spilanthes paniculata</i> Wall. ex DC.	Asteraceae	Herb	Medicinal, Ecological, Economical
314	<i>Sporobolus diandrus</i> (Retz.) P.Beauv.	Poaceae	Herb	Medicinal, Food, Economical
315	<i>Swertia angustifolia</i> Buch.-Ham. ex D.Don	Gentianaceae	Herb	Medicinal, Economical
316	<i>Syndrella nodiflora</i> (L.) Gaertn.	Asteraceae	Herb	Medicinal, Economical, Social, Fodder, Food
317	<i>Tephrosia purpurea</i> (L.) Pers.	Fabaceae	Herb	Medicinal, Economical, Fodder
318	<i>Thysanolaena latifolia</i> (Roxb. ex Hornem.) Honda	Poaceae	Herb	Economical, Social
319	<i>Tragia involucrata</i> L.	Euphorbiaceae	Herb	Medicinal, Economical
320	<i>Trapa natans</i> L.	Lythraceae	Herb	Food, fodder, Economical
321	<i>Uraria picta</i> (Jacq.) Desv. ex DC.	Fabaceae	Herb	Medicinal, Economical
322	<i>Urochloa distachyos</i> (L.) T.Q.Nguyen	Poaceae	Herb	Fodder, Medicinal, Economical, Ecological
323	<i>Vanda tessellata</i> (Roxb.) Hook. ex G.Don	Orchidaceae	Herb	Medicinal, Ornamental, Economical
324	<i>Vernonia cinerea</i> (L.) Less.	Asteraceae	Herb	Medicinal, Food, Economical
325	<i>Waltheria indica</i> L.	Malvaceae	Herb	Food, Fodder, Medicinal, Economical
326	<i>Zingiber zerumbet</i> (L.) Roscoe ex Sm.	Zingiberaceae	Herb	Medicinal, Economical, Ornamental

CLIMBER

327	<i>Abrus precatorius</i> L.	Fabaceae	Climber	Medicinal, Economical
328	<i>Ampelocissus latifolia</i> (Roxb.) Planch.	Vitaceae	Climber	Medicinal
329	<i>Asparagus racemosus</i> Willd.	Asparagaceae	Climber	Medicinal
330	<i>Atylosia scarabaeoides</i> (L.) Thouars	Fabaceae	Climber	Medicinal
331	<i>Bauhinia vahlii</i> (Wight & Arn.) Benth.	Fabaceae	Climber	Medicinal, Economical, Ornamental, Ecological
332	<i>Cajanus scarabaeoides</i> (L.) Thouars	Fabaceae	Climber	Economical, Food
333	<i>Calamus guruba</i> Buch.-Ham. ex Mart	Areaceae	Climber	Timber. Economical
334	<i>Calycopteris floribunda</i> Roxb.	Combretaceae	Climber	Medicinal, Economical
335	<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Climber	Medicinal, Economical
336	<i>Cayratia pedata</i> (Lam.) Juss. ex Gagnep.	Vitaceae	Climber	Medicinal, Economical
337	<i>Celastrus paniculatus</i> Willd.	celastraceae	Climber	Medicinal, Oil, Economical
338	<i>Cissampelos pareira</i> L.	Menispermaceae	Climber	Ecological, Fodder, Medicinal, Economical
339	<i>Cocculus hirsutus</i> (L.) W.Theob.	Menispermaceae	Climber	Medicinal, Economical
340	<i>Combretum malabaricum</i> (Bedd.) Sujana, Ratheesh & Anil Kumar	Combretaceae	Climber	Economical, Medicinal

341	<i>Combretum roxbergii</i> Spreng.	Combretaceae	Climber	Medicinal, Economical
342	<i>Cryptolepis dubia</i> (Burm.f.) M.R.Almeida	Apocynaceae	Climber	Medicinal, Ornamental, Economical, Food
343	<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Climber	Medicinal, Food, Economical, Ecological
344	<i>Entada phaseoloides</i> (L.) Merr.	Fabaceae	Liana	Food, Ecological, Economical
345	<i>Entada rheedii</i> Spreng.	Fabaceae	Climber	Medicinal, Food, Economical
346	<i>Erycibe paniculata</i> Roxb.	Convolvulaceae	Climber	Medicinal, Economical, Ecological
347	<i>Gloriosa superba</i> L.	Colchicaceae	Climber	Medicinal, Ecological, Economical
348	<i>Gymnema sylvestre</i> (Retz.) R.Br. ex Sm.	Apocynaceae	Climber	Medicinal, Economical
349	<i>Hemidesmus indicus</i> (L.) R.Br	Apocynaceae	Climber	Medicinal, Economical
350	<i>Ichnocarpus frutescens</i> (L.) W.T.Aiton	Apocynaceae	Climber	Medicinal, Ecological, Economical
351	<i>Ipomoea hederifolia</i> L.	Convolvulaceae	Climber	Medicinal, Ecological, Economical, Ornamental
352	<i>Mucuna pruriens</i> (L.) DC.	Fabaceae	Climber	Food, Ecological, Economical
353	<i>Paederia foetida</i> L.	Rubiaceae	Climber	Food, Fodder, Medicinal, Economical
354	<i>Passiflora foetida</i> L.	Passifloraceae	Climber	Medicinal, Fodder, Social, Ecological
355	<i>Pergularia daemia</i> (Forssk.) Chiov.	Apocynaceae	Climber	Medicinal, Economical
356	<i>Phanera vahlii</i> (Wight & Arn.) Benth.	Fabaceae	Climber	Ecological, Medicinal, Economical
357	<i>Scindapsus officinalis</i> (Roxb.) Schott	Araceae	Climber	Medicinal, Economical
358	<i>Smilax prolifera</i> Roxb.	Smilacaceae	Climber	Food, Medicinal, Economical
359	<i>Smilax zylanica</i> L.	Smilacaceae	Climber	Medicinal, Economical
360	<i>Telosma cordata</i> (Burm.f.) Merr.	Apocynaceae	Climber	Economical, Environmental, Ornamental
361	<i>Tiliacora acuminata</i> (Lam.) Miers	Menispermaceae	Climber	Medicinal, Economical
362	<i>Ventilago denticulata</i> Willd.	Rhamnaceae	Liana	Medicinal, Oil, Economical
FERN				
363	<i>Adiantum caudatum</i> L.	Pteridaceae	Herb	Medicinal, Ornamental, Economical
364	<i>Lygodium flexuosum</i> (L.) Sw.	Lygodiaceae	Herb	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 safeguard and conserve India's plant wealth for the benefit of humankind, which is a vital undertaking. 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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