



# Plant Archives

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## A PRELIMINARY STUDY ON THE LOWER AND HIGHER GROUP OF PLANTS AT NORTH ORISSA UNIVERSITY CAMPUS BARIPADA, INDIA

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### ABSTRACT

The current study focuses on enlisting the floral component of North Orissa University Campus, Baripada. The plant specimens were collected and identified by experts and various literatures. A total of 109 plant species of 58 different families listing 90 species of Dicotyledons, 18 Monocotyledons and only 1 species of Gymnosperm were recorded from the study area. The study resulted in a total of 20 species of higher plants having high medicinal values and 5 lower plant species belonging to 5 families. The results found that Fabaceae, Poaceae, Euphorbiaceae, Lentibulariaceae, and Asteraceae were the dominant families constituting the higher plant composition of the study area. A total of 70 species of woody and 39 species of non-woody plants were recorded during the study. All the plants were listed as per their native and exotic status which resulted 45 exotic species and 64 native species. The study also aimed on herbarium preparation which were submitted to the laboratory of Department of Wildlife and Biodiversity Conservation, North Orissa University later.

**Keywords** : Carnivore plant, Exotic and Native species, Floral diversity, Herbarium preparation, Medicinal plants, North Orissa University, Odisha, woody and non-woody vegetation.

### Introduction

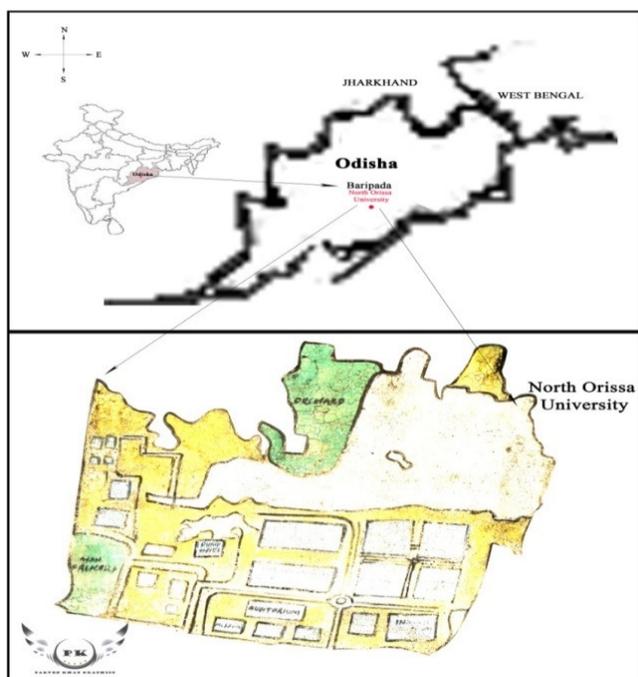
India harbors a wide variety of floral as well as faunal diversity as it is one of the 12 megadiverse (till 2020) countries of the world having 23.81% forest land of its total geographical area. Trees play a vital role in the maintenance of the ecosystems that we can't even ignore their importance. They are used for their nutritive values, aesthetic values, medicinal values, industrial purposes and preserving ecological balance, acting as moderators for the individual ecosystems by supporting many life forms in and around them. Trees are sustaining the lives we lived and the societies we form (Dutta, 2007 Silver, 1991). The present study deals with the floristic diversity of North Orissa University. The most probable naturally occurring plants of this university are moist deciduous forest types as it is very close to Similipal Biosphere Reserve. Thus, the plants show the minimum character of shading the leaves in a particular season viz.: in the winter season. Teak (*Tectona grandis*), Shisham (*Dalbergia sissoo*), Amla (*Phyllanthus emblica*), etc., are the common plants found in this campus. Also, the campus yields many garden plant species along with the wild plant varieties by plantation program held by the beautification cell of the University. Globally, around 10,000 species of higher plant and hundreds of lower groups of plant are used by human beings for many purposes such as food, fuel, fiber, rituals, medicines, household, spices, oil, and as fodder of domesticated animals (Heywood, 1992).

Though the campus is very rich in floral diversity, no study has been done previously to understand the floral component in terms of diversity and their native-exotic status. Therefore, the present study aims fulfilling an aerial perspective as there is no published record on the floristic composition of this campus to identify and document all the floral species present inside the campus to know the uncommon and rare plant species for aesthetic and conservation purposes.

### Materials and Methods

#### Study area

The study was conducted in the main campus of North Orissa University located in the northern part of Odisha covering an area of about 98 acres. It lies between 21.9299°N and 86.7658°E with the inclusion of a distance of 39Km from the Similipal Khairi Resort. All parts of the study area bear an impressive floral diversity making the campus all green throughout the year with garden lands, botanical gardens, large trees, herbs, shrubs, and grasses of different types. The university campus stands with its academic blocks, university hostels, playground, and barren lands. The whole campus is maintained with good connectivity by the crisscrossed concrete road networks.



**Fig. 1 :** Academic map of North Orissa University Main Campus (Source: NOU Office)

### Methodology

The survey was conducted from 19th September 2019 to 10th March 2020 covering post-monsoon, winter and early summer in the study area. The results showed a total of 109 tree species as a whole. Basic methods were used to identify the different species and to know about species richness of the campus area using transect survey, random walk, quadrat plotting and individual counting of trees. The specimen collection was done by following a set of literatures. The identification and analysis were done by the help of experts. The appraisal was made for richness, diversity, and constraints of each flora components. Both direct (transect survey) and indirect sampling methods (collection of specimens by means of photographs for identification) were done to understand the diversity of flora (trees, herbs, shrubs and grasses) inside the campus. The survey covered the autumn (Post-monsoon) (20° to 30° average temperature), and winter (15° to 28° average temperature) seasons. Pictorial data were collected by using Nikon D3300 with a kit lens. The survey was carried out by the authors for a minimum of 3 hours during each sampling day (morning 06:00 AM and evening 05:00 PM) for seven days at each sampling site. Micro lenses were used for the microscopic study of lower plants. For the identification of higher plant species, twigs were collected with fruit and flower whereas for lower plant cells were taken to the laboratory for identification. The canopy cover, abundance, and density were measured from each plot (10×10 m<sup>2</sup>). The species diversity and species richness of different patches were obtained using the species-area curves. The specimens (dried leaves, roots, flowers, seeds, twigs, inflorescences, bark etc.) were collected and identified in the laboratory with the help of taxonomic literatures and then the plant parts were kept for the preparation of herbarium.

### Results

An inclusive floristic survey of North Orissa university campus found its head in this report. Centering on the current detailed floristic survey of the campus, the authors found a

total of 109 species of higher plants belonging to 58 families including carnivore plants and Medicinal plants. Out of these 48 species of trees, 30 species of herbs, 19 species of shrubs, 11 species of grasses and 1 species of sedge showed their presence on the campus belonging to higher group of plants (Table-1). The survey found that Fabaceae was the dominant family harboring about 14 species of trees, shrubs, and herbs. The other contributing families were Poaceae (grass) constituting 11 species, Euphorbiaceae, and Lentibulariaceae both consisting 7 species of herbs, shrubs and carnivorous plants followed by Asteraceae family constituting 6 species. Other families exist showing a negligible occurrence on the campus. Species richness and diversity of each floral group were analyzed. In the other hand, the lower plant survey resulted in 5 species of plants belonging to 5 families which had a negligible occurrence on the campus. The study also found 18 species of monocot plants from 5 families and 90 species of dicot plants from 52 families and 1 gymnosperm species from 1 family. A total of 45 exotic species and 64 native species (Table-4) were recorded during the survey. The tallest tree of the campus was *Eucalyptus globosus*. The canopy density in different patches ranged between 0.1 to 0.9 during the study period.

### Familial analysis of the flora

#### *Fabaceae*

Fabaceae was recorded as the dominant flora family including 10 tree species, 2 herb species, and 2 shrub species as a whole. It is commonly termed as bean plants. These plants are well known for their fruits (legumes) and their compound, stipulated leaves. These flowering plants harbor a great economical, medicinal, and cultural value due to their remarkable diversity. The existence of this family in a greater number may result nutrient deficiency especially Nitrogen in some patches.

#### *Poaceae*

Following Fabaceae group, Poaceae family was the second-largest family having 11 species of grasses. It shows the harsh environmental conditions of the campus especially in the water scarcity areas because the individual member of this family modified themselves to overcome the drought condition.

#### *Euphorbiaceae*

3 species of herbs and 4 species of shrubs constitute the 3rd dominant spurge family (Euphorbiaceae). It indicates the tropic conditions of the university campus. These are used in industries basically for the extraction of phytochemicals. Herbs like *Euphorbia hirta*, *Euphorbia maculate* which have high medicinal values found on the campus.

#### *Lentibulariaceae*

A pleasant number of carnivorous plants of *Utricularia* genera were also found on the campus. These were recorded according to Taylor's classification of *Utricularia* species. An impressive number of *Utricularia* species were found in some patches of the university.

#### *Asteraceae*

The campus indicates a poor variation in Asteraceae family constituting 5 species of herbs and 1 species of shrubs. This family mainly enhances the aesthetic value of

any area by their bright flowers. They also harbor high medicinal values.

### **Lamiaceae**

This family constituted with 2 species of trees and 3 species of shrubs. The 2-tree species found in the campus are *Gmelina arborea* and *Tectona grandis* have a high economic value whereas the shrubs harbor medicinal as well as aesthetic values.

### **Other miscellaneous flora families**

The least number of different flora families also contribute various deal to the University campus. It includes Amaranthaceae, Anacardiaceae, Malvaceae, Meliaceae, etc. They also contribute a lot by maintaining healthy atmosphere of the campus.

### **Species of medicinal value**

The survey also focused on the medicinal utility of various plant species found in the campus. Many plants found in the campus during the study period later analyzed and found that many of them are predominantly used for curing skin diseases to stomachache. Mostly the herbs and shrubs species contribute to medicinal values and the campus is very rich in these two types of groups. Herbs show a vital role in traditional medicines used for antiseptic agents, anti-inflammatory agents, and in treatments of infections. Various plant parts like the roots and leaves of *Andrographis paniculata* are used for curing of malaria, the parts of *Psoralia corylifolia* are used for curing various skin diseases, etc. (Table-3.4 and 5)

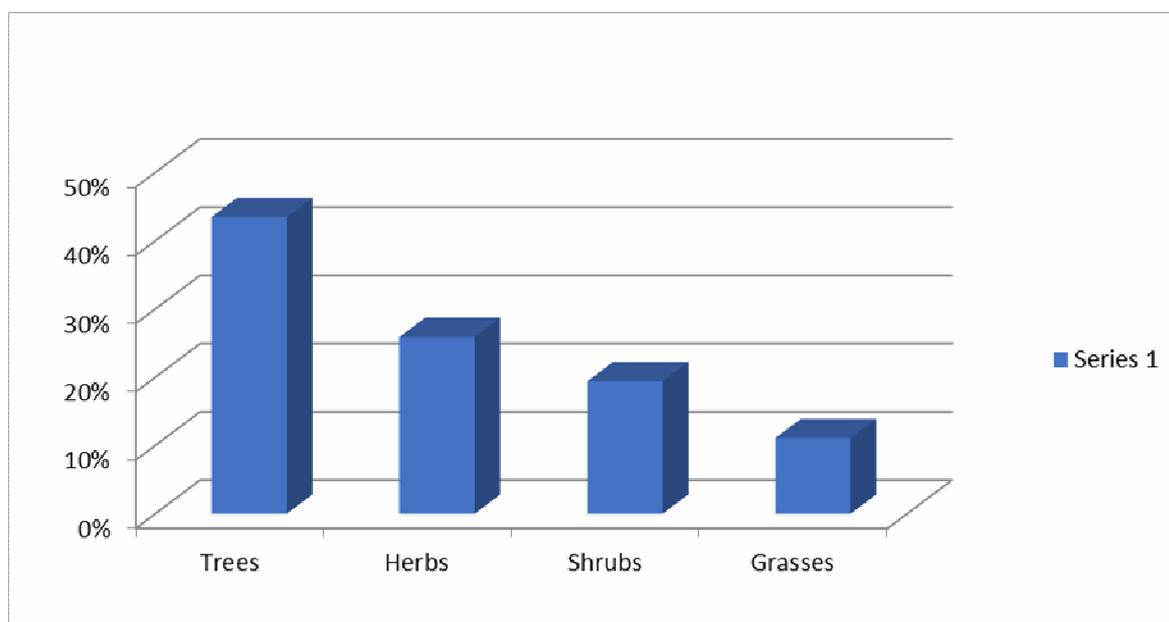
### **Discussion**

The impressive amount of floral diversity of North Orissa University forms a crucial point for the assemblage of a number of faunal species. Flora plays an important role in ecosystems for maintaining the ecological balance viz., they provide important ecosystem services like many native plants are cultivated for food, animal feed, and fiber. Plants play an important role to maintain the natural food chains in nearly all ecosystems. By the process of photosynthesis, plants

obtain the energy from the sun and providing both food and habitat to other organisms. For example, insects feed upon plants, which may be eaten by birds and other animals, which are eaten in return by birds of prey and other vertebrates, and so on. Generally, native plants support other native species more effectively in comparison to non-native plants. In the study area, Fabaceae is the most dominant family followed by Poaceae, Euphorbiaceae, and the rest which showed a diverse floral profile of the campus. In case of lower plants, only a few attempts were done to analyze and interpret the distribution pattern so far as to compare the wide distribution of individual species. The variation of plants showed fluctuate climatic condition of the University campus across seasons. The floral diversity ensures a vital resistance of many vertebrates as well as invertebrate fauna. Diversity is responsible for balancing the ecosystem, protecting watersheds, mitigating erosion, moderating climate and so on.

### **Conclusion**

A unique floristic survey was initiated to document all the floral diversity and richness of individual groups of North Orissa University campus. The current observations showed the distribution, status, medicinal value of plants of the campus resulting in a satisfactory number of each group individuals though there are still more species to be explored from the hostel campuses. The composition of flora of this university campus depicts a superficial plant species to maintain the ecological balance and further sustainable development. This type of floristic study is very much essential to know the aesthetic, ecological, and medicinal value of plants. As we know, the campus is rich in introduced plant varieties, it is necessary to set up a botanical garden in the campus and cultivate and protect the indigenous plants. The plant species are facing a critical situation for some anthropogenic pressures and the regular construction works. NOU can replace exotic plant species with native plant species. The suggestion is given as because a vast diversity of exotic plant species is a threat to the faunal and native plant species of the campus. Hence, timely and strict conservational measures are to be taken to protect these plant species from becoming rare or endangered.



**Fig. 1:** Percentage occurrence of each group of Higher plants

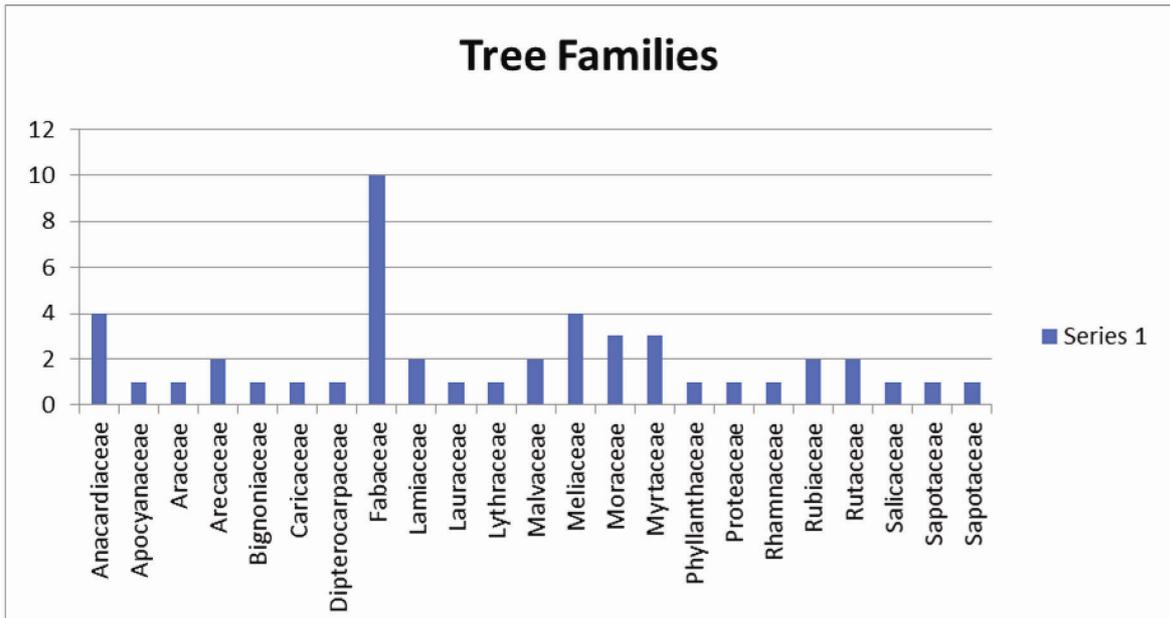


Fig. 2 : Species richness of tree families recorded from the campus

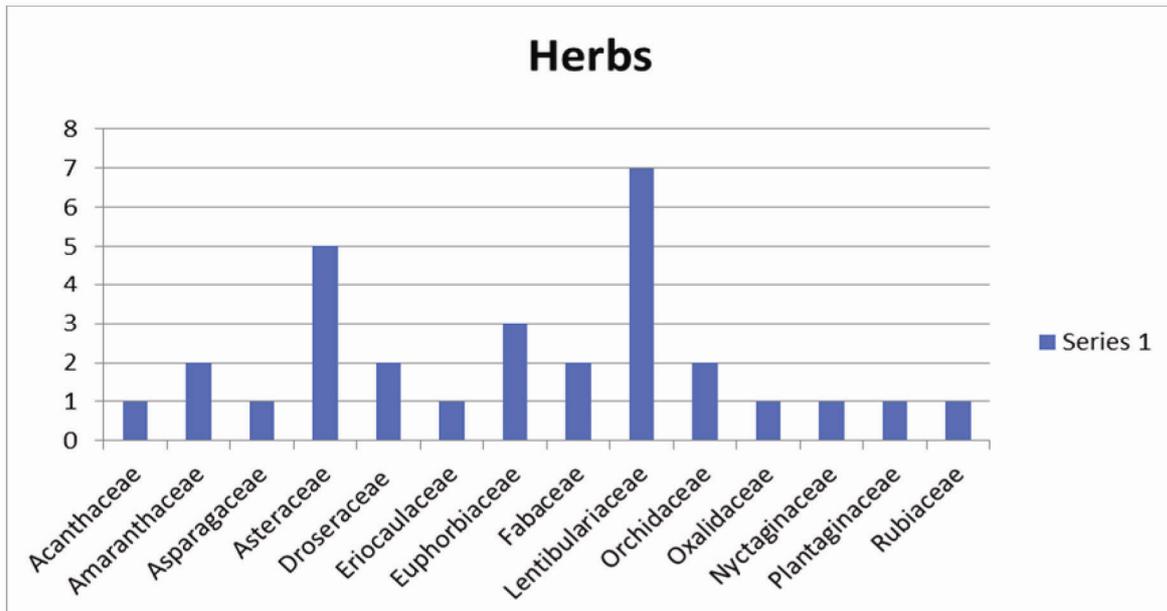


Fig. 3 : Species richness of Herb Families recorded from the campus

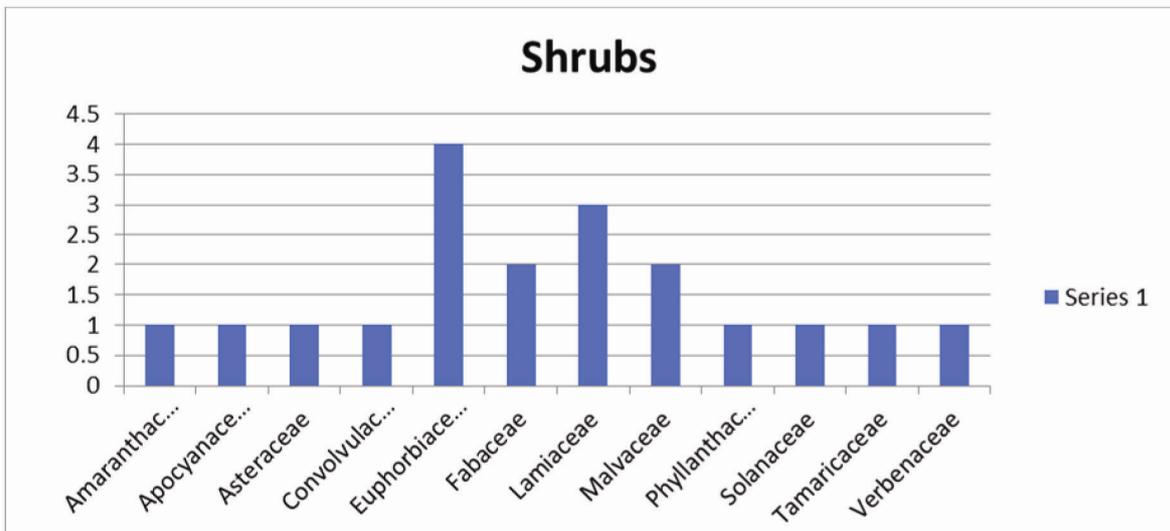
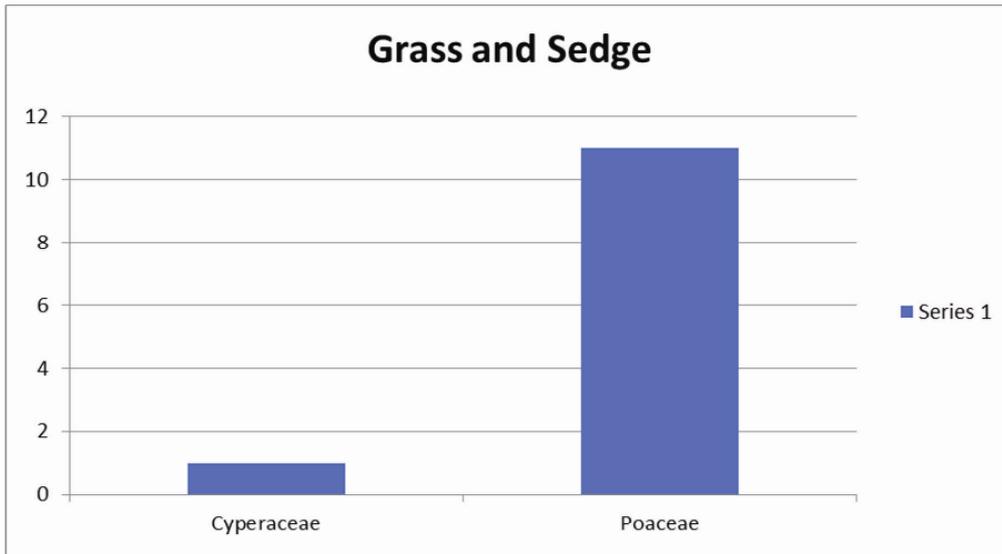
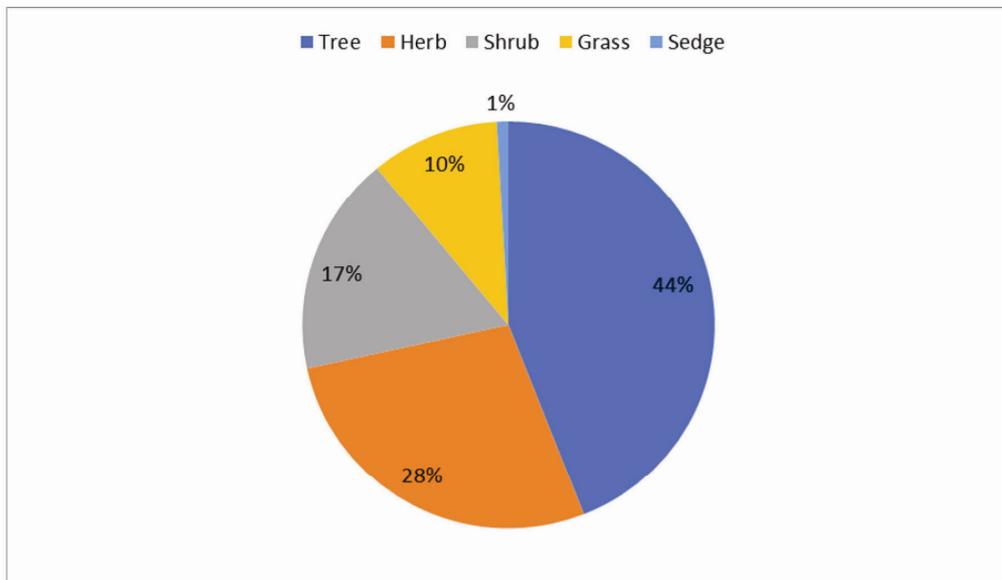


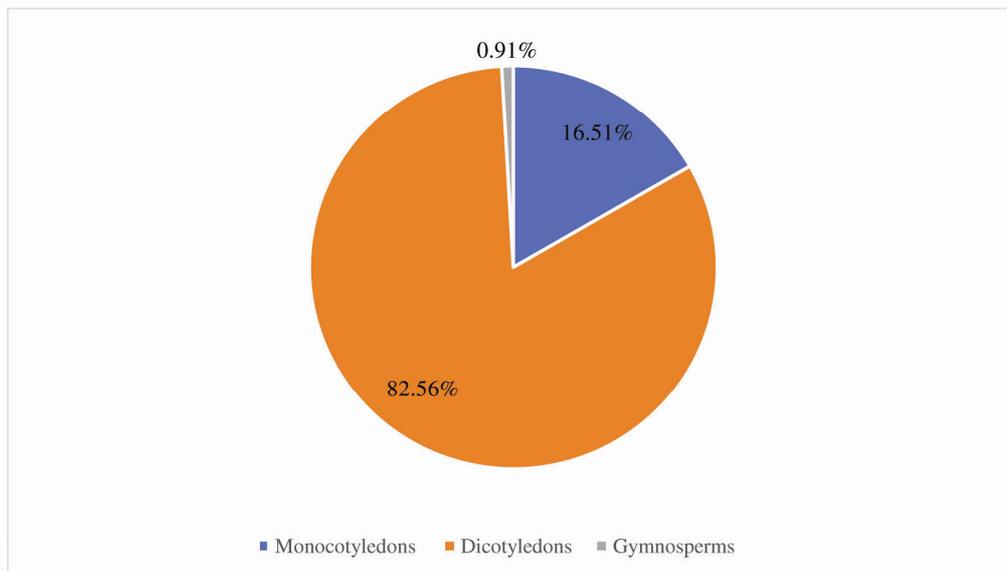
Fig. 4 : Species richness of Shrub families recorded from the campus



**Fig. 5 :** Species richness of Grass families recorded from the campus



**Fig. 6 :** Percentage occurrence of different groups of higher plant species



**Fig. 7 :** Percentage occurrence of Monocots, Dicots and Gymnosperms

**Table 1 :** Number of families and number of individual plant species

Higher Plants group	Number of families	Number of species
Tree	24	48
Herb	14	30
Shrub	12	19
Grasses	1	11
Sedges	1	1

**Table 2 :** Number of families and number of species of Dicots, Monocots and Gymnosperms

Name of groups	No. of families	No. of Species
Monocot	5	18
Dicot	52	90
Gymnosperm	1	1
<b>Total</b>	<b>58</b>	<b>109</b>

**Table 3 :** List of Medicinal plants recorder from the campus

S.no.	Family	Scientific name	Vernacular name	Parts used	Habit	Distribution
1	Amaranthaceae	<i>Achyranthes aspera</i>	Apamaranga	Rt, S	Herb	WD
2	Asphodelaceae	<i>Aloe vera</i>	Aloevera	Gel, latex	Succulent plant	SD
3	Apocynaceae	<i>Calotropis gigantea</i>	Arakha	Lv	Shrub	SD
4	Asteraceae	<i>Tridax procumbens</i>	Bisalyakarani	Lv	Herb	WD
5	Bombacaceae	<i>Bombax ceiba</i>	Semal	Rt, Lv, WH	Tree	SD
6	Euphorbiaceae	<i>Jatropha gossypifolia</i>	Baigoba	Oil	Shrub	SD
7	Euphorbiaceae	<i>Euphorbia hirta</i>	Asthma plant	Lv	Herb	SD
8	Euphorbiaceae	<i>Croton bnlplandianus</i>	Ban tulshi	WP	Shrub	SD
9	Fabaceae	<i>Bauhinia purpurea</i>	Barada	Rt, Lv	Tree	SD
10		<i>Cassia fistula</i>	Sunari	Fr	Tree	SD
11		<i>Senna tora</i>	Chakunda	Lv	Shrub	WD
12	Lamiaceae	<i>Vitex negundo</i>	Begunia	Lv	Shrub	SD
13		<i>Clerodendrum infortunatum</i>	Bhant	Lv	Shrub	SD
14	Myrtaceae	<i>Eucalyptus globulus</i>	Blue gum	Lv	Tree	SD
15	Meliaceae	<i>Azadiracta indica</i>	Neem	WP	Tree	SD
16		<i>Soymida febrifuga</i>	Indian Redwood	Bark	Tree	I
17	Nyctaginaceae	<i>Boerhaavia diffusa</i>	Punarnava	WP	Herb	SD
18	Rutaceae	<i>Aegle marmelos</i>	Bela	Fr, Lv	Tree	I
19		<i>Murraya paniculata</i>	Banamallika	Lv, Rt, Bk	Shrub	SD
20	Solanaceae	<i>Solanum virginianum</i>	Ankaranti	Lv	Herb	I

**Table 4 :** List of Higher plant diversity in NOU campus

Family	Scientific Name	Common Name	Status N/E	Habit	Distribution SD/WD /I/R
<b>Acanthaceae</b>	1. <i>Andrographis paniculata</i>	Green chiretta	Native	Herb	WD
<b>Amaranthaceae</b>	2. <i>Achyranthes aspera</i>	Chaff flower	Exotic	Herb	UC
	3. <i>Aerva lanata</i>	Mountain knotgrass	Exotic	Herb	WD
<b>Anacardiaceae</b>	4. <i>Alternanthera sessilis</i>	Sessile joyweed	Native	Shrub	UC
	5. <i>Anacardium occidentale</i>	Cashew tree	Native	Tree	SD
	6. <i>Buchanania lanzan</i>	Cuddapah almond	Native	Tree	I
	7. <i>Mangifera indica</i>	Mango tree	Native	Tree	WD
<b>Apocynaceae</b>	8. <i>Spondia smombin</i>	Hog plum	Exotic	Tree	SD
	9. <i>Alstonia scholaris</i>	Blackboard tree	Exotic	Tree	SD
<b>Araceae</b>	10. <i>Calotropis gigantea</i>	Crown Flower	Native	Shrub	UC
<b>Araceae</b>	11. <i>Pothos scandens</i>	Climbing aroid	Native	Tree	I
<b>Arecaceae</b>	12. <i>Elaeis guineensis</i>	Oil palm	Exotic	Tree	I
	13. <i>Syagrusroman zoffiana</i>	Queen palm	Exotic	Tree	I
<b>Asparagaceae</b>	14. <i>Chlorophytum comosum.</i>	Spider plant	Exotic	Herb	UC
<b>Asteraceae</b>	15. <i>Chromolaena odorata</i>	Siam weed	Exotic	Shrub	C
	16. <i>Cyanthillium cinereum</i>	Little ironweed	Native	Herb	C
	17. <i>Emilia sonchifolia</i>	Cupid's saving brush	Native	Herb	C
	18. <i>Parthenium hysterophorus</i>	Santamaria feverfew	Exotic	Herb	C
	19. <i>Tridax procumbens</i>	Coatbuttons	Native	Herb	C
	20. <i>Xanthium strumarium</i>	Rough cocklebur	Exotic	Herb	SD

<b>Bignoniaceae</b>	21. <i>Oroxylum indicum</i>	Midnight horror	Native	Tree	I
<b>Caricaceae</b>	22. <i>Carica papaya</i>	Papaya	Exotic	Tree	SD
<b>Convolvulaceae</b>	23. <i>Ipomoea carnea</i>	The pink morning glory	Native	Shrub	UC
<b>Cycadaceae</b>	24. <i>Cycas revoluta</i>	Sago palm	Exotic	Tree	UC
<b>Cyperaceae</b>	25. <i>Carex hirta</i>	Sedge	Exotic	Sedge	WD
<b>Dipterocarpaceae</b>	26. <i>Shorea robusta</i>	Sal tree	Native	Tree	SD
<b>Droseraceae</b>	27. <i>Drosera burmannii</i>	Tropical sundew	Native	Carnivore plants	SD
	28. <i>Drosera indica</i>	Carnivore plant	Exotic	Carnivore plants	I
<b>Eriocaulaceae</b>	29. <i>Syngonanthus sp</i>	Spider plant	Exotic	Herb	C
<b>Euphorbiaceae</b>	30. <i>Codiaeum variegatum</i>	Garden corton	Exotic	Shrub	C
	31. <i>Croton bonplandianum</i>	Ban tulsi	Native	Herb	C
	32. <i>Euphorbia hirta</i>	Asthma plant	Native	Herb	C
	33. <i>Euphorbia maculata</i>	Spotted spurge	Exotic	Herb	C
	34. <i>Jatropha gossypifolia</i>	Bellyache bush	Exotic	Shrub	R
	35. <i>Microstachys chamaelae</i>	Creeping sebastiana	Native	Shrub	C
	36. <i>Tragia involucrata</i>	Indian stinging nettle	Native	Shrub	C
<b>Fabaceae</b>	37. <i>Bauhunia purpurea</i>	Purple bauhunia	Exotic	Tree	C
	38. <i>Cassia fistula</i>	Golden shower tree	Native	Tree	C
	39. <i>Senna siamea</i>	Siamese cassia	Exotic	Tree	SD
	40. <i>Dalbergia sisoo</i>	Rosewood	Native	Tree	SD
	41. <i>Leucaena leucocephala</i>	Subabul	Exotic	Tree	SD
	42. <i>Mimosa pudica</i>	Shame plant	Native	Shrub	C
	43. <i>Peltophorum pterocarpum</i>	Yellow-flame	Native	Tree	SD
	44. <i>Psoralea corylifolia</i>	Babchi	Native	Herb	UC
	45. <i>Samanea saman</i>	Rain tree	Exotic	Tree	SD
	46. <i>Saraca asoca</i>	Ashoka tree	Native	Tree	I
	47. <i>Senegalia catechu</i>	Khair	Native	Tree	SD
	48. <i>Senna occidentalis</i>	Banachakunda	Exotic	Shrub	UC
	49. <i>Tephrosia purpurea</i>	Common wasteland weed	Native	Herb	C
	50. <i>Vachellia nilotica</i>	Babul	Native	Tree	SD
<b>Lamiaceae</b>	51. <i>Clerodendrum infortunatum</i>	Hill glory bower	Exotic	Shrub	SD
	52. <i>Gmelina arborea</i>	Gambhari	Native	Tree	SD
	53. <i>Mesosphaerum suaveolens</i>	Pignut	Exotic	Shrub	C
	54. <i>Tectona grandis</i>	Teak	Native	Tree	SD
	55. <i>Volkameria inermis</i>	Glory bower	Exotic	Shrub	UC
<b>Lauraceae</b>	56. <i>Cinnamomum cassia</i>	Dalchini	Native	Tree	I
<b>Lentibulariaceae</b>	57. <i>Utricularia polygaloids</i>	Carnivore plants	Native	Carnivore plants	C
	58. <i>Utricularia hirta</i>	Carnivore plants	Natiive	Carnivore plants	C
	59. <i>Utricularia caerulea</i>	Carnivore plants	Native	Carnivore plants	R
	60. <i>Utricularia bifida</i>	Carnivore plants	Native	Carnivore plants	C
	61. <i>Utricularia exolata</i>	Carnivore plants	Native	Carnivore plants	R
	62. <i>Utricularia minutissima</i>	Carnivore plants	Native	Carnivore plants	R
	63. <i>Utricularia aurea</i>	Carnivore plants	Native	Carnivore plants	R
<b>Lythraceae</b>	64. <i>Lagerstroemia speciosa</i>	Pride of India	Native	Tree	SD
<b>Malvaceae</b>	65. <i>Bombax ceiba</i>	Cotton tree	Exotic	Tree	SD
	66. <i>Hildegardia populifolia</i>	Populifolia	Native	Tree	I
	67. <i>Sida acuta</i>	Common wireweed	Exotic	Shrub	C
	68. <i>Urena lobata</i>	Caesar weed	Exotic	Shrub	C
<b>Meliaceae</b>	69. <i>Azadirachta indica</i>	Neem	Native	Tree	WD
	70. <i>Melia azedarach</i>	Mahaneem	Exotic	Tree	I
	71. <i>Soymida febrifuga</i>	Indian Redwood	Native	Tree	I
	72. <i>Swietenia macrophylla</i>	Mahogany	Exotic	Tree	I

Myrtaceae	73. <i>Eucalyptus globosus</i>	Tasmanian blue gum	Exotic	Tree	SD
	74. <i>Psidium guajava</i>	Guava tree	Exotic	Tree	I
	75. <i>Syzygium cumini</i>	Java plum	Native	Tree	I
Moraceae	76. <i>Ficus religiosa</i>	Sacred fig	Native	Tree	I
	77. <i>Ficus benghalensis</i>	Banyan fig	Native	Tree	C
	78. <i>Artocarpus heterophyllus</i>	Parasa	Native	Tree	I
Nyctaginaceae	79. <i>Boerhaavia diffusa</i>	Punarnava	Native	Herb	C
Orchidaceae	80. <i>Aerides odorata</i>	Orchids	Native	Epiphytic herbs	UC
	81. <i>Vanda tessellata</i>	Orchids	Native	Epiphytic herbs	R
Oxalidaceae	82. <i>Oxalis stricta</i>	Common yellow wood sorrel	Exotic	Herb	SD
Phyllanthaceae	83. <i>Phyllanthus emblica</i>	Indian gooseberry	Native	Tree	SD
	84. <i>Phyllanthus niruri</i>	Gale of the wind	Exotic	Shrub	SD
Plantaginaceae	85. <i>Scoparia dulcis</i>	Goat weed	Native	Herb	C
Poaceae	86. <i>Saccharum spontaneum</i>	Kans grass	Native	Grass	I
	87. <i>Phyllostachys urea</i>	Fishpole bamboo	Exotic	Grass	I
	88. <i>Cynodon dactylon</i>	Bermuda grass	Exotic	Grass	WD
	89. <i>Panicum repens</i>	Torpedo grass	Native	Grass	WD
	90. <i>Digitaria ischaemum</i>	Crab grass	Native	Grass	SD
	91. <i>Andropogon virginicus</i>	Broomsedge bluestem	Exotic	Grass	SD
	92. <i>Stenotaphrum secundatum</i>	St. Augustine grasses	Exotic	Grass	WD
	93. <i>Eremochloa ophiroides</i>	Lawn grass	Exotic	Grass	SD
	94. <i>Cryspogon zizanioides</i>	Vetiver	Native	Grass	SD
	95. <i>Pennisetum pedicellatum</i>	Desho grass	Exotic	Grass	UC
96. <i>Heteropogon contortus</i>	Black speargrass	Native	Grass	WS	
Proteaceae	97. <i>Gravillea excelsior</i>	Flame gravillea	Exotic	Tree	SD
Rhamnaceae	98. <i>Zizipus mauritiana</i>	Indian jujube	Native	Tree	SD
Rubiaceae	99. <i>Mitagyna parviflora</i>	Kaim	Native	Tree	SD
	100. <i>Neolamarckiacadamba</i>	Kadam	Native	Tree	SD
	101. <i>Spermacoecalata</i>	Winged false buttonweed	Exotic	Herb	C
Rutaceae	102. <i>Aegle marmelos</i>	Wood apple	Native	Tree	SD
	103. <i>Murraya paniculata</i>	Orange jessamine	Native	Tree	UC
Salicaceae	104. <i>Flacourtia indica</i>	Indian plum	Exotic	Tree	I
Sapotaceae	105. <i>Mimusops elengi</i>	Baula	Native	Tree	SD
Simaroubaceae	106. <i>Simarouba glauca</i>	Paradise tree	Exotic	Tree	SD
Solanaceae	107. <i>Solanum virginianum</i>	Kantakari	Native	Shrub	UC
Tamaricaceae	108. <i>Tamarix dioica</i>	Laljhou	Native	Shrub	C
Verbenaceae	109. <i>Lantana camara</i>	Gandhi fula	Native	Shrub	SD

**Abbreviations:** WD- Widely Distributed, UC- Uncommon, I- Individual, C- Common, R- Rare, SD-Spartially Distributed, S- Seed, Rt- Root, Lv- Leave, WH- Heart wood, WP- Whole plant, Fr- Fruit, Bk- Bark

**Table 5 :** List of Lower plants diversity of NOU Campus

Family	Scientific Name	Common Name
Marchantiaceae	<i>Marchantia polymorpha</i>	Common live wort
Nostocaceae	<i>Nostoc commune</i>	Star jelly
Parmeliaceae	<i>Usnea barbata</i>	Beard lichens
Polyporaceae	<i>Microporus xanthopus</i>	Yellow footed polypore
Psathyrellaceae	<i>Coprinopsis lagopus</i>	Harefoot mushroom

### Conflicts of Authors

The authors declare that none of them have a conflict of interest.

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