

**Tree Census Report of
Dr. Hitendra Kumar Baruah Regional Botanical Resource
Centre, Gauhati University**



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**Submitted by
Dr Rubul Buragohain, Suptd.
Dr. H. K. Baruah Regional Botanical Resource Centre
Department of Botany
Gauhati University, Assam
Guwahati 781014, Assam, India**

1. Introduction

Forest is the —Lungs of the Earth and the main constitution of forest is **trees**. For all components of nature, there is a relationship between each of them to regulate the system and the system governs the phenological adaptation in the organism. It is called —ecological balance, which is auto-explanatory word to justify the role of conservation of different species. Tree is a long lived plant with an elongated woody stem on which the crown of branches and leaves develop in different shapes and sizes. With well-developed root system and large crown of leaves, trees play a significant role in reducing erosion and providing shelter to various kind of organism. In addition, they play important role in maintaining ecological balance including climate, precipitation and nutrient cycling. In addition, trees also provide variety of things like timber, fuel etc. for all living beings. A large number of tree species are also traditionally used in different systems of medicine for the treatment of varies kind of diseases. They absorb carbon di oxide (CO₂) and release oxygen (O₂) in the atmosphere and can reduce the rising temperature of the planet Earth. The forest ecosystems have always been defined by its tree diversity and thus, this life form (i.e. trees) has been selected to study diversity, phenology and phytosociology in the region. The term —Biodiversity includes a broad sense among the relationship of different organism and their distribution in an area. Biodiversity or biological diversity refers to the variety and variability in all living organisms on Earth, including the diversity within and among species and ecosystems with which they are a part.

The Gauhati University Botanical Garden is one of the largest and oldest Botanical Gardens of the North East in particular and the country in general. Pandit Jawaharlal Nehru (the then Prime Minister of India), who inaugurated the main building of the Botany Department on 29th August, 1955, also dedicated this garden for service to the nation. The UGC has sanctioned this botanical garden in 1965-1966 in the area beyond the chemistry building. In 1969-70 some important arrangement have been made to organize a well equipped herbarium, museum, glass house and Botanical Garden for which funds have been allotted by the UGC. A new post designated as Superintendent of Botanical Garden to organize and manage the Botanical garden. In 1995-1996, the department of Botany planted number of rare, endangered, medicinal and ornamental plant. A good number of economically important plants have been cultivated in the garden. The plantation of different varieties of orchids and establishment of glass house (temperature controlled) was a

remarkable achievement during that year. In 18th December 1997, the Botany Department celebrated the Golden Jubilee. In this year with the permission of executive council, GU the University Botanical Garden was renamed as Dr. H. K. Baruah Regional Botanical Resource Centre in memory of the founder Professor and Head of the Department, Late Professor H. K. Baruah, a legendary botanist of the country. In 1998 -2001, the Assam Government gave a financial assistance to develop Dr. H. K. Baruah Regional Botanical Resource Centre through which construction of a suitable permanent road for the use of visitors in the garden and renovation cactus house, green house, orchid house of the garden. A small office also constructed for the superintendent to maintain the official works.

The Garden was developed with an objective to study the rich and diverse flora of N.E. India and to conserve the rare, endangered and threaten plant species of the region and at present, it is spread over an area of ca 62 acres situated in the hills and valleys of Jalukbari hills within the University campus at an altitude ranging from 213 to 247 ft msl. There are two natural ponds within the garden covering an area more than 1 acre which are replenished by a perennial water stream originating from the peak of the Jalukbari hills. The garden was funded in 1994 by the MoEF (Govt. of India) which was a turning point for its development and converting into an experimental garden. In the year 1998 Dr Zoiinath Sarma, donated a beautiful gate with rocky patches, dedicated of his father –in- law Professor H.K. Baruah.

The present document considers definition of Tree with respect to Tree Act 1975, as perennial woody plant with girth and height of 10 cm and 2 mts. respectively. The tree census is an important scientific, technical, and educational effort. The results enable us to characterize the tree population in terms of its structure, function, and value. On the occasion of world Environment 2022 numbers of important plants like *Citrus indica* and *Mesua assamica*, *Taxus wallichiana*, *Solanum macrantha*, *Dipterocapus retusus*, *Acorus calamus* are planted which is very important from conservation point of view.

2. Scope of the study

- a To make an inventory of tree individuals and tree species in the proposed project site
- b. To create a distribution / vegetation map of the whole area representing Tree individuals

- c. To undertake ecological analysis and calculate the following: a. IVI (Importance Value Index calculation) i. Frequency and relative frequency ii. Density and relative density iii. Dominance and relative dominance b. Simpson's biodiversity Index calculation
- d. Assessment of species protected by specific legislation (Rare, endangered, critically endangered, endemic and vulnerable)
- e. To enumerate importance of the Tree species/individuals observed

3. Materials and Methodology:

The census is carried out by individual tree counting. The data collection was done from all units in the population and a 'complete enumeration' of the population was done. The census technique was specifically used to collect accurate information of the population. Identification of Tree species encountered were identified on field on the basis of their morphological characters - Bark shape, texture, and colour, Leaves flower and fruit colour, shape, size, internal morphology, odour and arrangement of reproductive features. Morphological characteristics were used to identify the Tree species to the species level. The Flora of Assam, and Flora of British India were used as references and online database of The International Plant Names Index (IPNI) was used to find international scientific name of the Tree species. Some of the Tree species that could not be identified on field were collected or photographed for off-field analysis.

In this preliminary report we have covered 60% of the total area. Some of the species are not clearly identified because of deciduous nature i.e. no leaf was found.

Results:

Total 85 tree species have been recorded so far. Highest individuals are found in the species *Caryota urens* with 107 nos followed by *Millettia pinnata* with 58 nos, *Putranjiva roxburghii* with 28 nos, *Lagerstroemia speciosa* with 27 nos and *Monoon longifolium* with 25 nos are recorded. The highest species belongs to Fabaceae with 12 and Moraceae with 8 shows maximum number of species. All the IVI and Density of the species are not completed because still 40% area yet to be accessed. Due to heavy rainfall and snake and other reptile activity the study has been stopped for time being. The List of all the tree species with code families and total nos of each individual has been documented. A list of threatened species is also given below.

Table1: List of the plants with code, families and total no of individuals.

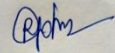
Sl no	Plants name	Code	Families	Total no of individuals
1	<i>Acacia auriculiformis</i>	AA	Fabaceae	2
2	<i>Adenanthera parviflora</i>	AP	Fabaceae	4
3	<i>Agathis robusta</i>	AR	Araucariaceae	2
4	<i>Ailanthus excelsa</i>	AE	Simaroubaceae	1
5	<i>Albizia lebbbeck</i>	AL	Fabaceae	3
6	<i>Albizia lucidor</i>	ALu	Fabaceae	2
7	<i>Alstonia scholaris</i>	AS	Apocynaceae	2
8	<i>Anacardium occidentale</i>	AO	Anacardiaceae	1
9	<i>Aquilaria malaccensis</i>	AM	Thymelaeaceae	7
10	<i>Areca catechu</i>	AC	Arecaceae	12
11	<i>Artocarpus chaplasha</i>	AC	Moraceae	4
12	<i>Artocarpus heterophyllus</i>	AH	Moraceae	7
13	<i>Averrhoa bilombi</i>	AB	Oxalidaceae	1
14	<i>Averrhoa carambola</i>	AC	Oxalidaceae	4
15	<i>Azadirachta indica</i>	AI	Meliaceae	2
16	<i>Baccurea sapida</i>	BS	Euphorbiaceae	3
17	<i>Bauhinia variegata</i>	BV	Fabaceae	2
18	<i>Bombax ceiba</i>	BC	Malvaceae	2
19	<i>Caryota urens</i>	CU	Arecaceae	107
20	<i>Canarium strictum</i>	CS	Burseraceae	1
21	<i>Cassia nodosa</i>	CN	Fabaceae	4
22	<i>Cassia fistula</i>	CF	Fabaceae	12
23	<i>Chukrassia tabularis</i>	CT	Meliaceae	5
24	<i>Cinnamomum tamala</i>	CTa	Lauraceae	3
25	<i>Cocos nucifera</i>	CN	Arecaceae	2
26	<i>Cycas pectinata</i>	CP	Cycadaceae	6
27	<i>Delonix regia</i>	DR	Fabaceae	4
28	<i>Dillenia indica</i>	DI	Dilleniaceae	4
29	<i>Elaeocarpus floribundus</i>	EF	Elaeocarpaceae	3
30	<i>Elaeocarpus rugosus</i>	ER	Elaeocarpaceae	3
31	<i>Embelica officinalis</i>	EO	Euphorbiaceae	1
32	<i>Eriobotrya japonica</i>	EJ	Rosaceae	1
33	<i>Erythrina indica</i>	EI	Fabaceae	2
34	<i>Ficus auriculata</i>	FA	Moraceae	1
35	<i>Ficus elastica</i>	FL	Moraceae	1
36	<i>Ficus hispida</i>	FH	Moraceae	5
37	<i>Ficus racemosa</i>	FRb	Moraceae	3
38	<i>Ficus religiosa</i>	FRa	Moraceae	4

39	<i>Ficus rumphii</i>	FRc	Moraceae	5
40	<i>Garcinia cowa</i>	GI	Clusiaceae	3
41	<i>Garcinia pedunculata</i>	GP	Clusiaceae	2
42	<i>Gmelina arborea</i>	GA	Lamiaceae	3
43	<i>Gravillea robusta</i>	GR	Proteaceae	2
44	<i>Hevea brasiliensis</i>	HB	Euphorbiaceae	2
45	<i>Holorhena antidysenterica</i>	HA	Apocynaceae	1
46	<i>Lagerstroemia speciosa</i>	LF	Lythraceae	27
47	<i>Lannea coromandelica</i>	LC	Anacardiaceae	2
48	<i>Litchi chinensis</i>	LC	Sapindaceae	1
49	<i>Litsea monopetala</i>	LM	Lauraceae	3
50	<i>Mallotus philippinensis</i>	MP	Euphorbiaceae	2
51	<i>Mangifera indica</i>	MI	Anacardiaceae	2
52	<i>Melia azadirach</i>	MA	Meliaceae	2
53	<i>Mesua ferrea</i>	MF	Calophyllaceae	4
54	<i>Michelia champaca</i>	Mc	Magnoliaceae	4
55	<i>Mimusops elengi</i>	ME	Sapotaceae	3
56	<i>Monoon longifolium</i>	ML	Annonaceae	25
57	<i>Moringa oliefera</i>	MO	Moringaceae	1
58	<i>Neolamarkia cadamba</i>	NC	Rubiaceae	4
59	<i>Oroxylum indicum</i>	OI	Bignoniaceae	3
60	<i>Parkia timoriana</i>	PT	Fabaceae	3
61	<i>Peltophorum pterocarpum</i>	PP	Fabaceae	13
62	<i>Persea bombycina</i>	PB	Lauraceae	2
63	<i>Phoebe goalparensis</i>	PG	Lauraceae	3
64	<i>Pinus roxburghii</i>	PR	Pinaceae	3
65	<i>Millettia pinnata</i>	PA	Fabaceae	54
66	<i>Putranjiva roxburghii</i>	Pra	Putranjivaceae	28
67	<i>Roystenia regia</i>	RR	Arecaceae	2
68	<i>Samanea saman</i>	SS	Fabaceae	8
69	<i>Santalum album</i>	SA	Santalaceae	5
70	<i>Sapindus mukorossi</i>	SM	Sapindaceae	2
71	<i>Saraca asoca</i>	SA	Fabaceae	1
72	<i>Shorea robusta</i>	SR	Dipterocarpaceae	8
73	<i>Spathodea campanulata</i>	SC	Bignoniaceae	4
74	<i>Streblus asper</i>	SA	Moraceae	5
75	<i>Sygzium cumini</i>	SC	Myrtaceae	4
76	<i>Sygzium jambos</i>	SJ	Myrtaceae	2
77	<i>Sygzium samarangense</i>	SS	Myrtaceae	1

78	<i>Tamarindus indica</i>	TI	Fabaceae	1
79	<i>Taxus wallichiana</i>	TW	Taxaceae	1
80	<i>Tectona grandis</i>	TG	Lamiaceae	5
81	<i>Terminalia arjuna</i>	TA	Combretaceae	4
82	<i>Terminalia chebula</i>	TC	Combretaceae	3
83	<i>Terminalia myriocarpa</i>	TM	Combretaceae	1
84	<i>Tetrameles nudiflora</i>	TN	Tetramelaceae	4
85	<i>Zizyphus jujuba</i>	ZJ	Rhamnaceae	1

Table 2. List of threatened species found in our centre

Sl no	Name of the species	Family	Status
1	<i>Aquilularia malacensis</i>	Thymelaceae	CR
2	<i>Calamus nambariensis</i>	Arecaceae	CR
3	<i>Coptis teeta</i>	Ranunculaceae	(experimented)
4	<i>Dipterocarpus retusus</i>	Dipterocarpaceae	EN
5	<i>Dipteris wallichii</i>	Dipteridaceae	Rare and Endemic to NE India
6	<i>Elaeocarpus rugosus</i>	Elaeocarpaceae	VU
7	<i>Mesua assamica</i>	Calophyllaceae	EN
8	<i>Nepenthes khasiana</i>	Nepenthaceae	EN
9	<i>Phoe goalparensis</i>	Lauraceae	Endemic
10	<i>Rauwolfia serpentina</i>	Apocynaceae	VU
11	<i>Taxus wallichiana</i>	Taxaceae	EN
12	<i>Tupistra nagarum</i>	Asparagaceae	Rare and EN
13	<i>Vanilla borrneansis</i>	Orchidaceae	Rare and Endemic
14	<i>Cycas pectinata</i>	Cycadaceae	VU
15	<i>Tectona grandis</i>	Lamiaceae	EN



Dr. Rubul Buragohain
Suptd. Dr. H.K.B.R.B.R.C.
Department of Botany, Gauhati University

DR Rubul Buragohain. (28/7/2023)
Suptd. DR H.K. Baruah Regional Botanical Resource
Centre, Dept. of Botany, Gauhati University.