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Identification of woody perennials in OUAT campus, Bhubaneswar, India

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Abstract

A field appraisal on tree diversity of OUAT campus, Bhubaneswar was conducted from March 1, 2017 to May 1, 2017. Thorough surveillance was carried out in all areas at the university campus. All plants were identified by botanical name, common name and family with the help of available literature, manuals and online resources. Total 118 tree species belonging to 38 families were recorded. Fabaceae was reported as dominant family. The information reported here in this article is of paramount significance for researchers, involved in studying and planning of sustainable utilization of plant resources.

Keywords: woody perennials, OUAT campus, identification, diversity, sustainable utilisation

Introduction

The diversity of plant species in a particular area develops an interest to know more about it [1]. Diversity is the summation of gene, species and community [2]. India is one of the mega-diversity countries, where 24.5 % of its geographical area is covered with forests. Distribution of all types of flora and fauna are elements of biodiversity and influenced by various climatic conditions such as temperature, availability of moisture in the form of humidity and precipitation, and variation in physiographical conditions – soil, altitude, slope, etc [3, 6]. To assess and measure biodiversity richness of an area, a taxonomic study of the flora is very much essential which can be achieved by floristic survey [7]. The floristic studies are considered as backbone of phytodiversity analysis, conservation planning and natural resource management [8]. Floral analysis provides clues about changing floristic patterns, alien invasions, status of indigenous species in a phytogeographical area [7]. Several studies have been conducted to analyze the floristic composition of the man-made habitats in India and abroad [9, 12]. College and university campuses are often defined by their canopy of trees, including unusual specimens and stately old landmark trees that remain in memory long after students graduate. In the present study, only woody perennials of OUAT campus, Bhubaneswar were identified and documented to explore the diversity of trees and for sustainable utilisation of available plant resources. These findings will pave the way towards sustainable development in this era of indiscriminate collection of plants and their products. Besides this, results of this study will give a bird's eye view on existing diversity of woody perennials in and around OUAT campus area.

Materials and Methods

Study area: The OUAT (Odisha University of Agriculture and Technology) Campus is located in the heart of Bhubaneswar city, at an elevation of 25.9 m above MSL. The campus is known for its excellence in education, in addition the entire campus has a fairly diverse ecological setting. It is geographically located at 20°15'53.8"N latitude and 85°48'36.9" longitude covering an area of 32.6 hectare with a perimeter of 3.09 km.

Floristic studies: The site was studied regularly from March 1, 2017 to May 1, 2017. The survey was conducted to collect information about the tree species like their identification and documentation in the form of botanical name and family. Manuals, field guides, online resources were used for identification of trees. The identification was also done based on literature study [13, 18].

Results and Discussion

As living trees are effective long-term repositories for carbon [19]. Colleges and universities can increase carbon sequestration on campus by planting trees and protecting existing trees and forests. Trees can be part of an overall strategy for campus greenhouse gas reduction.

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A symbiotic relationship exists between trees and avifauna diversity, as tree bestows shelter and food to birds and the birds in turn helps in dispersal of tree seeds. Most of the leguminous trees act as fodder for livestock e.g. *Leucaena leucocephala*, *Albizia lebbeck*, *Samanea saman*, *Pongamia pinnata*, *Glyricidia sepium* etc. Flowering trees (angiosperms) are the host plants of various butterflies e.g. *Ricinus communis* act as host plant for *Ariadne merione* (Common Castor butterfly) and *Albizia lebbeck* for *Pachilocta hector* (Crimson rose butterfly). Besides these, trees supply various NTFPs which help the rural people to uplift their livelihood. On the basis of field survey of OUAT campus trees, 118

species belonging to 38 families showed their presence which were identified and listed in Table 1. Maximum trees were present in and around College of forestry, OUAT.

Fabaceae was reported as the dominant family. Other main contributing families were Euphorbiaceae, Combretaceae and Myrtaceae. Several studies corroborates to the present findings [1, 20, 21].

The dominance of plants from Fabaceae family indicated the tough environmental conditions and the ability of these plants to develop Nitrogen fixation capacity to make nodules in their roots [1]. It also showed that these areas are nutrient deficient up to some extent especially Nitrogen [21, 22].

Table 1: List of woody perennials in OUAT campus, Bhubaneswar, India

Botanical name	Common name	Family
<i>Acaciaauriculiformis</i> A. Cunn.	Australlian /Earpodwattle	Fabaceae
<i>Acacia catechu</i> (L.f.) P.J.H. Hurter & Mabb.	Khair/Cutch tree	Fabaceae
<i>Acacia mangium</i> Willd.	Hickory wattle/Mangium	Fabaceae
<i>Acacianilotica</i> (Linn.) Willd.	Babool/Gum Arabic	Fabaceae
<i>Adenothera pavonina</i> L.	Red Lucky seed	Fabaceae
<i>Aeglemarmelos</i> L.	Bael	Rutaceae
<i>Ailanthus excelsa</i> Roxb.	Tree of heaven	Meliaceae
<i>Albizia lebbeck</i> (Linn.) Willd.	Black sirish	Fabaceae
<i>Alstoniascholaris</i> (L.) R.Br.	Devil's tree	Apocynaceae
<i>Anogeissus acuminata</i> (Roxb.) Guillemain <i>et al.</i>	Button tree	Combretaceae
<i>Anogeissus latifolia</i> (Roxb.) Wall.	Axle wood	Combretaceae
<i>Araucaria cookie</i> (Salisb.) Franco.	Monkey puzzle	Araucariaceae
<i>Areca catechu</i> L.	Betel nut	Arecaceae
<i>Artocarpus heterophyllus</i> Lam.	Jack fruit	Moraceae
<i>Azadirachta indica</i> A. Juss.	Neem	Meliaceae
<i>Bauhinia purpurea</i> Linn.	Purple bauhinia	Fabaceae
<i>Bauhinia vahlii</i> (Wight & Arn., 1834) Benth.	Siali	Fabaceae
<i>Bauhinia variegata</i> Linn.	Poor man's orchid tree / Kachnar/ butterfly tree	Fabaceae
<i>Bixa orellana</i> L.	Annatto/Lipstick tree	Bixaceae
<i>Bombax ceiba</i> Linn.	Red silk cotton / Indian kapok	Malvaceae
<i>Borassus flabellifer</i> L.	Palmyra palm	Arecaceae
<i>Brideliaretusa</i> (L.) A.Juss.	Khasai	Euphorbiaceae
<i>Buteamonosperma</i> (Lamk.) Taub	Flame of forest/Bengal kino	Fabaceae
<i>Caeselpinia coriaria</i> (Jacq.) Willd.	Divi-divi	Fabaceae
<i>Callistemon citrinus</i> (Curtis) Skeels	Bottle brush	Myrtaceae
<i>Callophyllum innophyllum</i> L.	Polang / Mast wood	Guttiferae/Clusiaceae
<i>Capparis brevispina</i> L.	Indian capper tree	Capparaceae
<i>Caryota urens</i> L.	Fish tail palm	Arecaceae
<i>Cassia fistula</i> Linn.	Indian laburnum/Golden shower	Fabaceae
<i>Cassia roxburghii</i> Linn.	Red Indian laburnum	Fabaceae
<i>Cassia siamea</i> Linn.	Kassod tree	Fabaceae
<i>Cassia surattensis</i> Linn.	Sunshine tree	Fabaceae
<i>Casuarina equisetifolia</i> L.	Whistling/Australian pine/Red beef wood	Casuarinaceae
<i>Ceiba pentandra</i> (L.) Gaertn.	White silk cotton /Kapok	Malvaceae
<i>Cinnamomum tamala</i> (Buch-Ham) T.Nees & C.H.Eberm.	Bayleaf	Lauraceae
<i>Cinnamomum zeylanicum</i> J. Presl.	Dalchini	Lauraceae
<i>Cocos nucifera</i> L.	Coconut	Arecaceae
<i>Crateva adansonii</i> DC.	Temple tree	Capparaceae
<i>Dalbergia sissoo</i> (Roxb.) DC	Shisham	Fabaceae
<i>Delonix regia</i> (Boj.ex Hook) Raf.	Gulmohur / Flame tree	Fabaceae
<i>Dilleniaindica</i> L.	Elephant apple	Dilleniaceae
<i>Dyopsis lutescens</i> (H. Weendl.) Beentje & J. Dransf.	Golden cane palm	Areaceae
<i>Erythrina variegata</i> L.	Indian coral tree/Tiger's claw tree	Fabaceae
<i>Eucalyptus tereticornis</i> Hook.	Forest red gum / eucalyptus hybrid	Myrtaceae
<i>Ficus amplissima</i> Rees.	Bat fig	Moraceae
<i>Ficus bengalensis</i> Linn.	Banyan tree	Moraceae
<i>Ficus benjamina</i> Linn.	Weeping fig	Moraceae
<i>Ficus religiosa</i> Linn.	Peepal	Moraceae
<i>Glyricidia sepium</i> (Jacq.) Steud.	Quick-stick/Mother of Cocoa	Fabaceae
<i>Gmelina arborea</i> Roxb.	White teak	Lamiaceae
<i>Gustavia robusta</i>	Heaven lotus	Lecythidaceae
<i>Heveabrasiliensis</i> Mull. Arg.	Para rubber	Euphorbiaceae
<i>Holoptelea integrifolia</i> Planch.	Indian elm	Ulmaceae

<i>Jatropha curcas</i> Linn.	Purging nut	Euphorbiaceae
<i>Jatropha integerrima</i> Jacq.	Spicy jatropha	Euphorbiaceae
<i>Kleinhovia hospital</i> L.	Guest tree	Malvaceae
<i>Lagerstoemia floribunda</i> Jack.	Malaysian crepe myrtle	Lythraceae
<i>Lagerstoemia indica</i> (L.) Pers.	Crepe myrtle	Lythraceae
<i>Lagerstoemia parviflora</i> Roxb.	Small flowered crepe myrtle/ Sidha	Lythraceae
<i>Lagerstoemia speciosa</i> (L.) Pers.	Pride of India/Queen's crepe myrtle/Rose of India	Lythraceae
<i>Lagerstoemia tomentosa</i>	White crepe myrtle	Lythraceae
<i>Lannea coromandelica</i> (Hout.) Merr.	Indian ash tree	Anacardiaceae
<i>Leucaena leucocephala</i> (Lam.) de Wit.	Ipil Ipil / Subabool	Fabaceae
<i>Litchichinensis</i>	Litchi	Sapindaceae
<i>Madhuca indica</i>	Indian Butter tree/Mahua	Sapotaceae
<i>Mangifera indica</i> L.	Mango	Anacardiaceae
<i>Manilkara hexandra</i> L.	Ceylon ironwood/Khirni	Sapotaceae
<i>Manilkara zapota</i> (L.) P. Royen	Sapota	Sapotaceae
<i>Melia azaderach</i> Linn.	Persian liliac	Meliaceae
<i>Mesua ferrea</i> L.	Iron wood	Guttiferae/Clusiaceae
<i>Michelia champaca</i> (L.) Baill.	Golden champak	Magnoliaceae
<i>Mimospus elengi</i> L.	Bullet wood	Sapotaceae
<i>Morinda tinctoria</i> Roxb.	Aal or Indian mulberry	Rubiaceae
<i>Moringa oleifera</i> Lam.	Drum stick	Moringaceae
<i>Murrayakoengii</i> (L.) Sprengel.	Curry leaf	Rutaceae
<i>Murraya paniculata</i> (L.) Jack.	Kamini	Rutaceae
<i>Neolomarckia kadamba</i> (Roxb.) Bosser.	Kadamb/Common bur-flower tree/Wild cinchona	Rubiaceae
<i>Nyctanthes arbor-tristis</i> (Linn.) Willd	Tree of sorrow	Oleaceae
<i>Peltopherum ferrugineum</i> (DC.) K. Heyne.	Copper pod	Fabaceae
<i>Petrea volubilis</i> L.	Purple or Queen's wreath	Lamiaceae
<i>Phyllanthus embellica</i> L.	Indian goose berry	Euphorbiaceae
<i>Pithecellobium dulce</i> (Roxb.) Benth.	Jungle jalebi	Fabaceae
<i>Plumeriarubra</i> Linn.	White frangipani/Pagoda tree	Apocyanaceae
<i>Polyalthia cerasoides</i> (Roxb.) Hook.f & Thomson.	Patapashu in Odia / Narela in malayalam	Annonaceae
<i>Polyalthia longifolia</i> L.	False ashoka/Mast tree/Indian fir	Annonaceae
<i>Pongamia pinnata</i> (L.) Pierre	Pongam tree	Fabaceae
<i>Psidium guajava</i> Linn.	Guava	Myrtaceae
<i>Pterocarpus marsupium</i> Roxb.	Indian kino/Malabar kino	Fabaceae
<i>Pterocarpus santalinus</i> L.f.	Red sandalwood	Fabaceae
<i>Pterospermum xylocarpum</i> Schreb.	No English name (Giringa in Odia/Tada in telugu)	Malvaceae
<i>Pterospermum acerifolium</i> (L.) Willd.	Kanak champa/Dinner plate tree/Muchkand	Malvaceae
<i>Putranjiva roxburghii</i> Wall.	Child life tree	Putranjivaceae
<i>Ravenala madagascariensis</i> Sonn.	Traveller's palm	Strelitziaceae
<i>Ricinus communis</i> L.	Castor	Euphorbiaceae
<i>Roystonea regia</i> (Kunth) O.F. Cook.	Royal palm/Bottle palm	Arecaceae
<i>Sabal mauritiiiformis</i>	Savannah palm	Arecaceae
<i>Samanea saman</i> (Jacq.) Merr.	Rain tree/5 o'clock plant	Fabaceae
<i>Santalum album</i> L.	White sandalwood	Santalaceae
<i>Saraca asoca</i> (Roxb.) Willd.	Ashok	Fabaceae
<i>Schleichera oleosa</i> (Lour.) Oken.	Kusum/ Lac tree	Sapindaceae
<i>Semecarpus anacardium</i> L.f.	Marking nut	Anacardiaceae
<i>Shorea robusta</i> Roth.	Sal	Dipterocarpaceae
<i>Simarouba glauca</i> DC.	Paradise tree	Simaroubaceae
<i>Spathodea campanulata</i> P. Beauv.	Fountain tree/African tulip	Bignoniaceae
<i>Sterculia foetida</i> L.	Wild almond	Sterculiaceae
<i>Streblus asper</i> Lour.	Sandpaper tree	Moraceae
<i>Strychnos nux-vomica</i> L.	Poison nut	Loganiaceae
<i>Swietenia macrophylla</i>	Mahogany	Meliaceae
<i>Syzigium cumini</i> (L.) Skeels.	Indian black berry/Black plum	Myrtaceae
<i>Tamarindus indica</i> L.	Tamarind	Fabaceae
<i>Tectonagrandis</i> L.f.	Teak	Lamiaceae
<i>Terminalia arjuna</i> (Roxb.) Wight & Arn.	Arjun	Combretaceae
<i>Terminalia bellerica</i> (Gaertn.) Roxb.	Bahera/belleric myrobalan	Combretaceae
<i>Terminalia catappa</i> L.	Indian almond	Combretaceae
<i>Terminalia chebula</i> Retz.	Haradh/Chebolic myrobalan	Combretaceae
<i>Thevetia peruviana</i>	Yellow oleander/tiger apple	Apocyanaceae
<i>Trema orientalis</i> (L.) Blume.	Charcoal tree	Cannabaceae
<i>Ziziphus jujube</i> Mill.	Ber	Rhamnaceae

Pictures of few woody perennials in OUAT campus



Delonix regia



Tamarindus indica



Peltopherum ferrugineum



Swietenia mahogany



Sterculia foetida



Morinda tinctoria



Crateva adansonii



Melia azadirach



Calophyllum inophyllum



Madhuca indica



Alstonia scholaris



Santalum album



Bixa orellena



Terminalia catappa



Trema orientalis



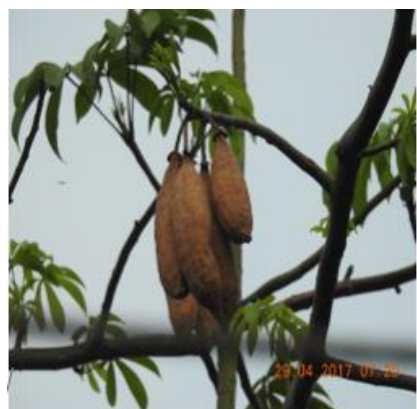
Pithecellobium dulce



Ricinus communis



Gliricidia sepium



Ceiba pentandra



Leucaena leucocephala



Ficus religiosa



Araucaria cookii



Acacia catechu



Aegle marmelos



Moringa oleifera



Terminalia arjuna



Kleinhovia hospita



Tectona grandis



Pongamia pinnata



Ficus bengalensis



Ficus benjamina



Plumeria rubra



Azadirachta indica



Callistemon citrinus



Hevea brasiliensis



Litchi chinensis



Gustavia robusta



Lagerstroemia indica



Lagerstroemia speciosa



Jatropha curcas



Jatropha integerrima



Spathodea campanulata



Samanea saman



Cassia surratensis



Cassia siamea



Gmelina arborea



Saraca asoca



Polyalthia longifolia



Pterospermum xylocarpum



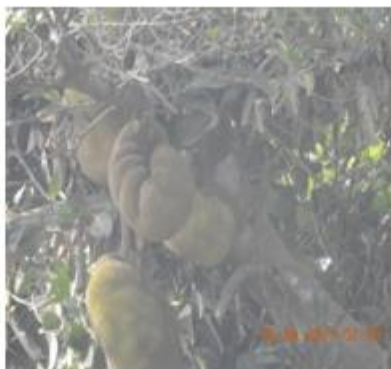
Pterospermum acerifolium



Pterocarpus marsupium



Mesua ferrea



Artocarpus heterophyllus



Bauhinia vahlii



Cinnamomum zeylanicum



Acacia mangium



Mimospus elengi



Manilkara zapota



Manilkara hexandra



Mangifera indica

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