



# **Green Audit 2022-23**

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# GREEN AUDIT

**(Biodiversity Audit)**

**2022-23**

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एन सी ई आर टी  
NCERT

**REGIONAL INSTITUTE OF EDUCATION**  
(National Council of Educational Research and Training)

**Bhubaneswar, Odisha**

# GREEN AUDIT TEAM



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## Principal's Desk

### **Prof. Prakash Chandra Agarwal**

Principal and Chairperson  
Green Audit Team



It is a matter of honour for me being Principal of this esteemed Institution having a glorious academic legacy. I am determined to fully utilize my entire potential, experience and energy to ameliorate the standard of RIE, Bhubaneswar to an eminent centre of learning and educational research. I feel extremely proud of the commendable and praiseworthy accomplishments made by this Institute under the umbrella of National Council of Educational Research and Training (NCERT). Under the guidance and support of the Director, NCERT, my endeavour would be to promote various ventures for facilitation. Being the head of this institute, I shall try my best to fulfill the objectives and expectations of Ministry of Education, Government of India. I admire the diligent efforts of all staffs and ardently hope that they would continue their endeavour to place this institute to national as well as international level. The Institute has all the advanced equipment for teaching learning resources and physical infrastructure like library with relevant books, competitive books, computer lab, Wi-Fi etc. But above all it is having a rich varied faunal and floral diversity. The biodiversity is so well preserved that it is home to various rare species as well. We understand completely that Global warming resulting into rise in the temperature of earth which in turn is causing rise in sea levels, catalysing extreme weather condition, acidic rains and an eminent catastrophe is in the making. The cascading effects of climate change are jeopardizing the larger sections as food and water are becoming scarce. Therefore, we decided to take up directed actions which are in line with the United Nation's Sustainability development goal, precisely UNSDG-13 (United Nations Sustainable Development Goal-13). We have contributed towards the development of new concept, ways to conserve biodiversity of the campus. We are constantly taking action to align ourselves towards the UNFCCC's (United Nations Framework Convention on Climate Change) goal of limiting global temperature rise. The Green Audit Team of the Institute playing a key role in making this possible. Indeed, I feel highly encouraged with my dedicated faculties and students for their sincere collaboration and unflinching support to turn this Institute into a hub of academic excellence.

**Prof. P. C. Agarwal**  
Principal

## Forewords

Green Auditing empowers the organization to frame a better environmental performance through more efficient resource management and environmental protection initiatives. It also provides a basis for improved suitability, to create a green campus etc. Through this initiative an effort is made to enhance the alertness for environmental guidelines and duties, impart environmental education for developing an environmental ethic and value system in youngsters. Though green auditing includes areas such as water management auditing, energy management auditing, waste management auditing, green campus management auditing and auditing for carbon footprint etc., in this report the thrust is more on green campus auditing as all other matters have been included in another audit report called environmental auditing. Thanks to Professor Animesh Kumar Mohapatra and his team for taking all the pain of preparing the document on green auditing. Hope this initiative will help the Institute in becoming more accountable, more aware about its roles and responsibilities to ensure a green campus environment.

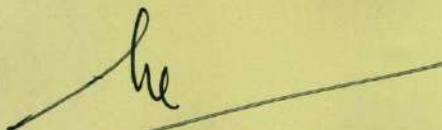
**Prof. Ritanjali Dash**  
Coordinator, IQAC

**Regional Institute of Education**  
**Bhubaneswar, Odisha**  
(National Council of Educational Research and Training, New Delhi)

### **Certificate of Green Audit**

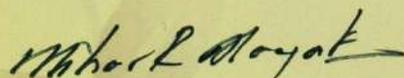
This is to certify that the green audit was conducted by Regional Institute of Education, Bhubaneswar in accordance with the applicable standards prescribed by the Ministry of Environment, Forests and Climate Change, Government of India during the academic year 2022-23. The audit has assessed the quality, quantity and distribution of the phytodiversity and faunal diversity of the campus along with management. The audit observed sustainable improvement in the efforts by the Institute on the green front and involvement of all stakeholders, viz., Institute management, administration, faculty, student and alumni etc. Elaborate audit process involving different stakeholders itself workout to be an educative programme for the campus community. The audit gives a 'Biodiversity Plan' which the Institute can follow to conserve. This green audit gives a true and fair view in conformity with biodiversity auditing principles accepted in India.

#### **External experts**

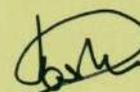


**Dr. Sudarsan Panda**

IFS, Former Principal Chief Conservator of Forest, Odisha



**Dr. Nihar Ranjan Nayak**  
Member Secretary  
Odisha Biodiversity Board  
Bhubaneswar



**Sri Prabhat Das**  
Programme Officer  
Center for Environmental Studies  
Bhubaneswar

## PREFACE

Modernization and industrialization are the two important outputs of the twenty-first century that have made human life more luxurious and comfortable. Simultaneously, they are responsible for voracious use of natural resources, exploitation of forests and wildlife, producing massive solid waste, polluting the scarce and sacred water resources, and finally making our mother Earth ugly and inhospitable. Today, people are getting more familiar with global issues like global warming, greenhouse effect, ozone depletion, climate change, etc. Now, it is considered as a final call by mother Earth to walk on the path of sustainable development. The time has come to wake up, unite and combat together for a sustainable environment.

The Green audit process was began in the 1970s with an intention of identifying the activities carried out in a given institution. This was initiated against the background of growing concern over changing climate and related aspects. Green audit is a tool to identify the range of environmental impacts and assess the compliance of the operations on the development and regular activities within an organization. It may also assess the compatibility of the operations within an organization or a company with existing applicable laws and regulations and the expectations of their various stakeholders.

This report has been prepared as a part of evaluation by NAAC under the theme of “Green Audit” in order to assess the green cover of the campus. Today we can see how rapid the climate is changing and has adversely affected the biodiversity of the planet. Considering the need of conservation and preservation, the team of Green Audit audited the institute campus on the basis of some standard parameters.

The team regularly visited the campus, collected data, compiled it by following a scientific approach during the suggested duration for the period of 12 months. The comprehensive report prepared by the team is presented in this report. The main objective is to prepare a report to study and analyse major roles, contribution, development and function of various conservational measures of biodiversity of the campus.

The reports starts with the brief introduction of the institute and covers the elaborate description of green cover, its constituents and documentation of the wide range of species of flora and fauna. Lastly the report also highlights the management strategies, policies, awareness programme conducted by the institute time to time and also recommendations to make it possible with future perspective.

The information presented here in the report is obtained directly from the field and different repositories of the institute which is maintained by staffs and students, collectively.

**Prof. Animesh Kumar Mohapatra**  
Convenor, Green Audit Team

# ACKNOWLEDGEMENT

We would like to offer our heartfelt salutation to almighty God for the unbroken health and vigour bestowed upon us, all throughout the span of compiling in accomplishing the target.

We are deeply indebted and would like to express our deepest appreciation to Hon'ble **Prof. Dinesh Kumar Saklani**, Director, NCERT, New Delhi for his untiring encouragement and support for all kinds of academic endeavours.

We would like to express our special thanks of gratitude to our Hon'ble **Principal Prof. Prakash Chandra Agarwal**, Regional Institute of Education, NCERT, Bhubaneswar for providing us an opportunity to work on the theme "Green Audit".

We have paucity of words in expressing our warmest regards to **Prof. Animesh Kumar Mohapatra**, Department of Zoology, Regional Institute of Education, NCERT, Bhubaneswar for providing opportunities to do wonderful work which helped in doing a lot of research and documenting lot of new species. He not only provided us with his priceless guidance but always encouraged in all respects. He also provided guidance to identify various faunal species of the campus.

Sincere gratitude to **Prof. Ritanjali Dash**, Coordinator, IQAC and Head, DEE for extending support and providing valuable information for the completion the report. The endeavour would not have been possible without the support of **Prof. S. K. Dash**, Head, DESM.

We would like to acknowledge **Mr. Pushkar Behera**, Administrative officer and his entire brigade of Establishment section and Accounts section for their timely support for bringing out this report.

We would like to express our great appreciation to **Ms. Priyambada** and **Ms. Laxmi Kumari** (M.Sc. Ed. Life Science 2014-16 batch) for their valuable efforts in collecting data, documenting and listing the faunal diversity of the campus under the guidance of Prof. Animesh Kumar Mohapatra which turned out to be very useful in estimating, analysing, planning and development of this report.

We offer our thankful wishes to **External Evaluation Teams** for giving their valuable time and suggestions that helped in rectifying, formatting, compiling data and coming up with the final report. Special thanks to **Mr. Taruna Kumar Sahu**, LDC for technical support for developing this report.

**Green Audit Team**



# UNIT- 1

## OUR INSTITUTE

## ABOUT THE INSTITUTE

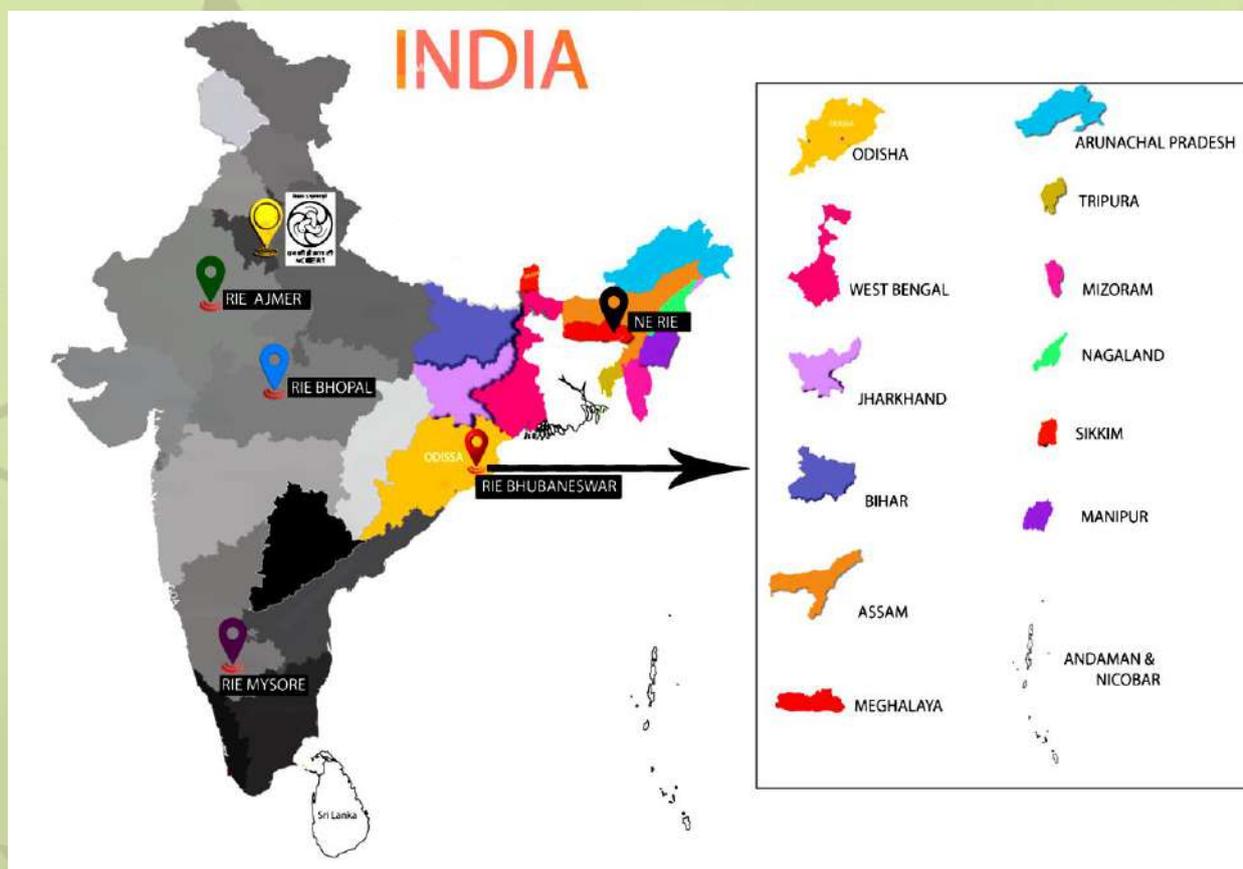
Regional Institute of Education, Bhubaneswar is a prestigious organization leading by National Council of Educational Research and Training, New Delhi. It is one of the five such institutes in the country of NCERT, which has been providing academic and technical support to the states of Odisha, West Bengal, Bihar, Jharkhand, Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura and the Union Territory of Andaman & Nicobar Island. The College started functioning from August 5, 1963 with four- year courses in science and technology of 40 seats each. Since then, the 5th August is celebrated as the Foundation Day of the institution. The Regional Institutes were started with the objective of qualitative improvement of school education through innovative pre-service and in-service teacher education programmes and relevant research, development and extension activities.



In 1954, the Central Advisory Board of Education endorsed the recommendations of the Secondary Education Commission, after which the Government of India initiated the establishment of multipurpose secondary schools. In the meantime, some conceptual, logistic and systemic problems in the implementation of the scheme of multipurpose school were discovered by the Ministry of Education in 1958. Hence, they recommend “an integrated teacher training programme for the multipurpose schools be undertaken in four regional training colleges which would prepare teachers for the multipurpose schools through in-service and pre-service training programmes both in the practical and in the scientific subjects”. Hence The Regional Colleges project was transferred to the NCERT which was established in 1961. The –work on the project began in January 1962 by a team comprising officers of the Government of India.

Likewise, The Regional Institutes of Education (RIEs) located in Ajmer (northern region), Bhopal (western region), Bhubaneswar (eastern region) and Mysore (southern region), Shillong (north-eastern region) cater to the educational needs of teachers/teacher educators in the States and UTs under their jurisdiction. Approximately one hundred acres of land were provided by the home states free of cost for the Colleges. A Demonstration Multipurpose School (DMS) is attached to each RIE at Ajmer, Bhopal, Bhubaneswar and Mysore, Shillong as a laboratory for preparation of teachers and for trying out innovative practices in school education and teacher education.

## **RIE BHUBANESWAR HAS BEEN PROVIDING BOTH ACADEMIC AND TECHNICAL SUPPORT TO THE EASTERN AND NORTH EASTERN STATES:**



*MAP showing all RIEs and states under RIE BBSR*

### **GEOGRAPHICAL LOCATION**

This Institute stands on Sachivalaya marg, Bhubaneswar about 5 km away from the city Railway Station and 7 km away from Biju Pattnaik International Airport. Known as “Temple City” of India for its rich heritage of temples like the Lingaraj, Mukteswar, Rajarani, Kedar Gouri and Baital, etc. This Institution has a land area of 98.62 acre serene and sylvan surrounding, this Wi-Fi campus houses the establishments of the Institutes comprising the Academic and Administrative blocks, Library, Computer Application Centre, Auditorium, Canteen, Hostels (03 for women, 01 for men and 01 for in-service participants), D.M. School for its innovative practices, Residential Quarters, Guest House, Dispensary, Post Office, State Bank of India along with play grounds. RIE is a coeducational residential institute having students from diverse languages and cultures of its hinterland representing a miniature India.

## Address

Regional Institute of Education,  
Sachivalaya Marg, Near Nicco Park, UNIT- 9,  
Bhubaneswar, Odisha 751022

## Coordinates

20.2872° N

85.8329° E

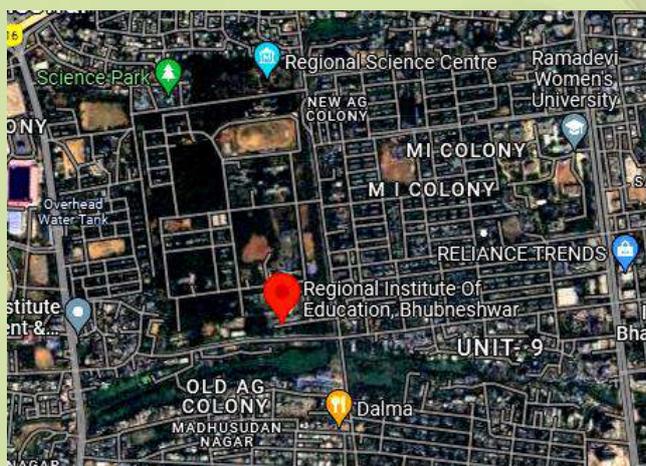


Image 1: Aerial view of the institute (from google map)

## ACADEMIC PROGRAMMES

- Four-year Integrated B.Sc. B.Ed.
- Four-year Integrated B.A. B.ED.
- Two-year B.Ed. (Science)
- Two-year B.Ed. (Arts)
- Two-year M.Ed. ▪ One year M. Phil (Education)
- Ph. D. Course Work (Education) ▪ Ph. D. Supervision (in all subjects)
- Diploma in Guidance and Counselling (Distance & Face-to-Face Mode)

## GLIMPS OF THE INSTITUTION







## LAND PATTERN ANALYSIS

Regional Institute of Education (RIE), a constituent unit of National Council of Educational ~ 2718 ~ Journal of Pharmacognosy and Photochemistry Research and Training, New Delhi, established in 1963 with total geographic area of approx. 98.4 ac (407000 sq.mt.) stands in the heart of the capital city. About 39.6 percent of this institute geographical area is having wilderness having average annual rainfall of 1,492 mm (58.73 in) with average temperature ranging between 20°C and 36°C.

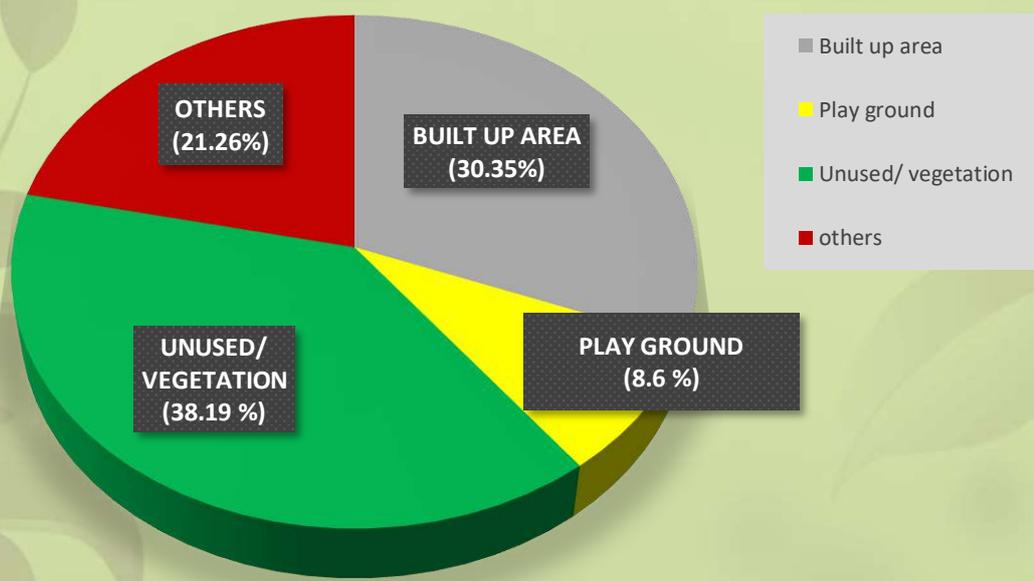


Figure 1: Pie chart showing land pattern of the institute



Image 2: Aerial view of RIE campus

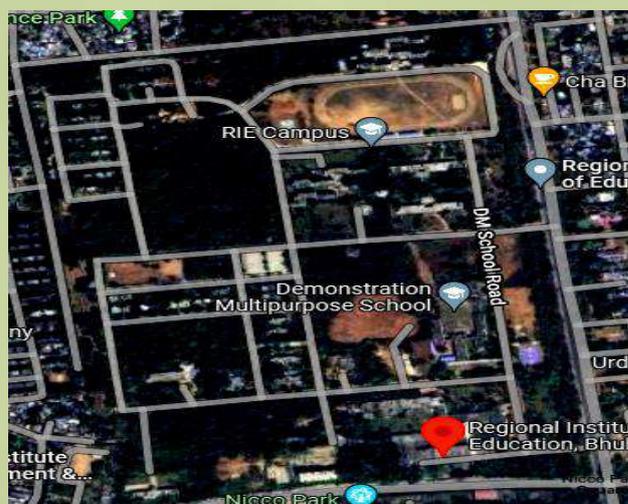


Image 3: Satellite image of RIE campus

Institute name	Land description	Area (in acres)
<b>Regional Institute of Education, Bhubaneswar</b>	Total area	98.4
	Built up area (Institute main building + dm school + All hostels + canteen + temple + dispensary + staff quarters).	30.35
	Play ground (Main playground + basketball courts + volley ball courts + tennis courts + children park)	8.6
	Unused/ vegetation covered	38.19
	Others	21.26

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# UNIT- 2

## GREEN AUDIT

## **INTRODUCTION**

Green auditing is the process of identifying, quantifying and determining eco-friendly and sustainable practices of an institute. Traditionally, we are good and efficient users of natural resources. However, over the period of time excess use of resources like energy, water, chemicals are becoming habitual for everyone especially, in common areas. Now, it is necessary to check whether our processes are consuming more than the required resources? Whether we are handling waste carefully? Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion, it is necessary to verify the processes and convert them into green and clean ones. The green audit provides an approach for it. It also increases overall consciousness among the people working in institutions towards an environment.

Generally, every constituent of our society is responsible for environment crises and it is the duty of each of us to strive hard for its conservation. If we start with ourselves, it will definitely create a positive benchmark of the success in the journey of environment protection. Green audit is the prime solution of this scenario.

Green audit is the tool of management system used methodologically for protection and conservation of the environment. It is also used for the sustenance of the environment. The audit suggests different standard parameters, methods and projects for environmental protection. It can be adopted by any industry, organization, institute and even by housing complex.

Our institution has adopted the 'Green Campus' system for environmental conservation and sustainability. There are three major pillars i.e., zero environmental foot print, positive impact on occupant health and performance and 100% graduates demonstrating environmental literacy. The goal is to reduce CO<sub>2</sub> emission, energy and water use, while creating atmosphere where students can learn and be healthy.

## **SIGNIFICANCE OF GREEN AUDIT**

Green Audit is the most efficient ecological tool to solve such environmental problems. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area. Through this process, the regular environmental activities are monitored within and outside of the concerned sites which have direct and indirect impacts on the surroundings.

Rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crisis. On this background, it becomes essential to adopt the system of green audit for institutions and organizations etc. It is the most efficient and ecological way to manage and responsibility of the community in terms of economic, financial, social, environmental factors. Green audit report is one of the useful means of demonstrating an organization's commitment to openness and transparency. It also serves to identify opportunities to save money, enhance work quality, safety and morale, reduce liabilities and achieve other form of values.

Green Audit makes effective effort towards environment sustainability and energy conservation. Modernization and Industrialization are the two important outputs of the twentieth century that have made human life more luxurious and comfortable. Simultaneously, they are responsible for voracious use of natural resources, exploitation of forests and wildlife, producing massive solid waste, polluting the scarce and sacred water resources, and finally making our mother Earth ugly and inhospitable.

Today, people are getting more familiar with global issues like global warming, greenhouse effect, ozone depletion, climate change, etc. Now, it is considered as a final call by mother Earth to walk on the path of sustainable development. The time has come to wake up, unite and combat together for a sustainable environment. Considering the present environmental problems of pollution and excessive use of natural resources, Honourable Prime Minister, Shri. Narendra Modiji has declared the Mission of Swachh Bharat Abhiyan. Also, University Grants Commission has mentioned the “Green Campus, Clean Campus” mission mandatory for all higher educational institutes. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

A green audit can be one of the initiatives for such institutes to account for their energy, water resource use as well as wastewater, solid waste, hazardous waste generation. The green Audit process can play an important role in the promotion of environmental awareness and sensitization about resource use. It can create consciousness towards ecological values and ethics. Through the green audit, one can get direction about how to improve the condition of the environment.

## **LAWS AND POLICIES IMPLEMENTED BY GOVERNMENT OF INDIA**

India is one among the 17 mega-diverse countries of the world. But many plants and animals are facing the threat of extinction. To protect the critically endangered and other threatened animal and plant species, Government of India has adopted many laws and policy initiatives.

### **Important Indian Acts passed related to Environment and Bio Diversity**

- Fisheries Act 1897.
- Indian Forests Act 1927.
- Prevention of cruelty to animals 1960.
- Wildlife protection act 1972.
- Forest Conservation Act 1980.
- Environment Protection Act 1986.
- Biological Diversity Act 2002.
- Scheduled Tribes and other traditional forest dwellers (recognition of rights) act 2006.

### **Policies related to Environment and Bio Diversity**

- National Forest Policy.
- National Conservation Strategy and Policy statement on Environment and Development.
- National Policy and macro-level action strategy on Biodiversity.

- National Biodiversity Action Plan (2009).
- National Agriculture Policy.
- National Environment Policy (2006).

All the stakeholders of Regional Institution of Education, Bhubaneswar are committed for carrying out its activity and abide to all laws and policies for sustainable development.

## **OUR VISION**

- To achieve academic excellence by giving impetus and adaptive measures for enhancing effective quality sustenance and progression on all key facets of education.
- Restoring green environment in this fast-growing technology-based society.
- Development of a sustainable ecosystem for healthy livelihood of local communities.
- Minimising carbon emission rate in the local area.
- Protecting rare, endangered and threatened (RET) species.
- To provide an equal platform for higher education, employability & entrepreneurship for uneducated backward communities.
- To instill the social-economical responsibility towards environment in youngsters.

## **OUR MISSION**

- To inculcate Love/Inclination, moral, ethical and spiritual values for learning by adapting to Latest Teaching Learning Methods for Enhanced Learning & Creativity.
- To develop a sense spirit-de-corps through Co-curricular, Extra-Curricular and Outreach Activities.
- Respond to local societal needs by developing selected 'targeted research projects'.
- Initiate various research programs for academic development of pre-service and in-service academicians and school students.
- Providing quality training programs to students and research scholars in need based modern technology.
- Conducting seminars and group discussions on green practices.
- Focusing students' participation and preparing them for future employability.
- Communicating local people through various environment awareness programs.
- Identify and assess environmental risk of hazards and implement the polices for safety of stakeholders.
- To make sure that rules and regulations are taken care to avoid the interruptions in environment.
- The long-term goal of the green audit program is to collect baseline data of environmental parameters and resolve environmental issues.
- To prepare an Environmental Statement Report on green practices.

## **METHODOLOGY**

- Onsite visit.
- Systematic and comprehensive data collection.
- Review of previous records and policies.
- Group discussion held with different departments and sections.
- Documentation with physical evidences.
- Independent periodic evaluation with regulatory requirements and appropriate standards and methods for improvement by establishing cost effective green action plan.
- Systematic and comprehensive improvement and management of existing system.

## **ADVANTAGES OF GREEN AUDIT TO THE ISTITUTE**

There are many advantages of green audit to an Educational Institute.

- It would help to protect the environment in and around the campus.
- Empower the organization to frame a better environmental performance.
- Impart environmental education through systematic environmental management approach and improving environmental standards.
- Benchmarking for environmental protection initiatives.
- Development of ownership, personal and social responsibility for the institute and its environment.
- Green auditing should become a valuable tool in the management and monitoring of environmental and sustainable development programs of the institute.
- Finally, it will help to build a positive impression through green initiatives for the upcoming NAAC visit.

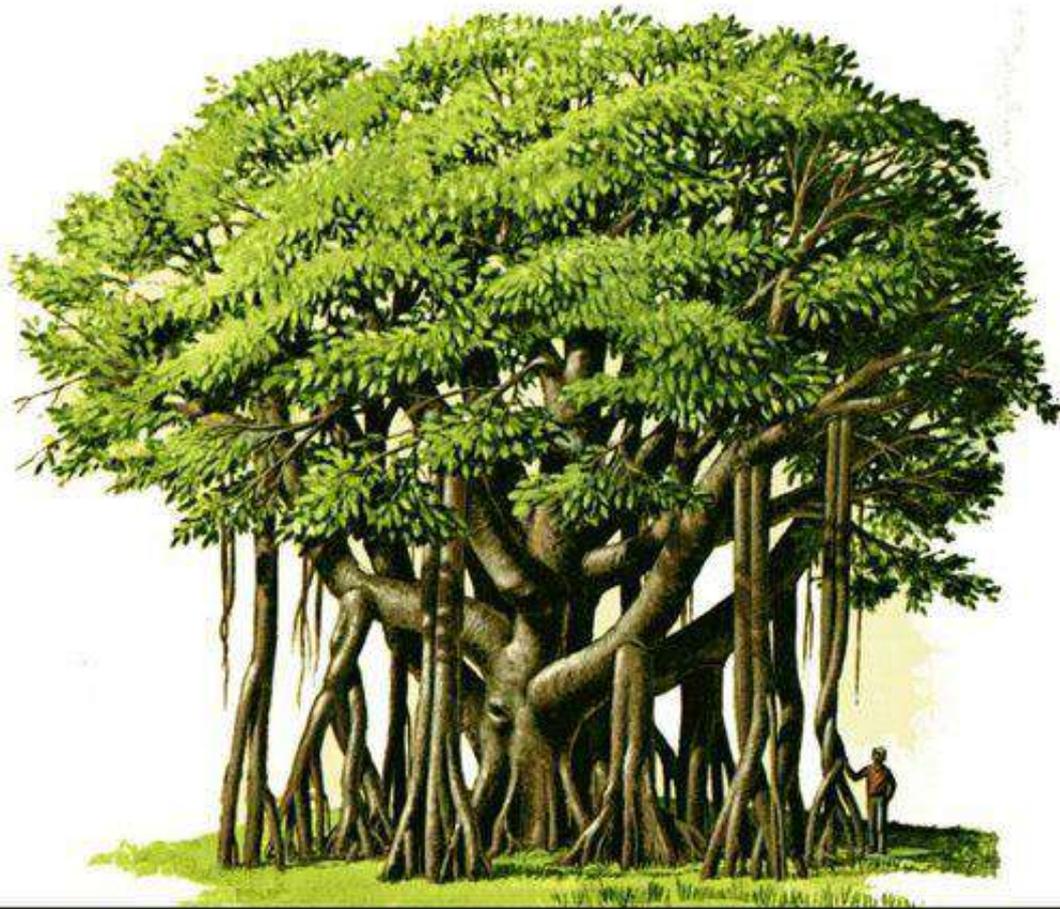
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# UNIT- 3

## PHYTO DIVERSITY

*Just see how these trees are maintaining  
every living entity!  
Their birth is successful.  
Their behavior is just like  
that of great personalities,  
for anyone who asks anything from a tree  
never goes away disappointed.  
Srimad Bhagavatam 10.22.33*



**PHYTO DIVERSITY**

## **INTRODUCTION**

Biological science has attempted to characterize living organic entities and sort out natural fluctuations over time. This has led to an understanding of its relationship with correspondence about plants and creatures. This data has helped in using the world's organic abundance to support humankind and has been vital to the course of improvement. Be that as it may, this has likewise created the cutting-edge consumerist society, which antagonistically influences the variety of organic assets upon earth on which it is based. The variety of life on earth is perfect to such an extent that assuming we use it reasonably we can continue growing new items from biodiversity for some ages. This can occur on the off chance that we oversee biodiversity as a valuable asset and forestall the termination of species.

Biodiversity gives different ecological administrations from species are fundamental at the worldwide, provincial and neighborhood level. The creation of oxygen, decrease of carbon dioxide, keeping up with the water cycle and controlling soil, water and air contamination are a few significant administrations of plants. In this way, conservation of natural assets is fundamental for the prosperity and the drawn-out endurance of humankind. To get it and evaluate wealth of the biodiversity, an ordered investigation of the greenery and woodlands is a lot of fundamental. Floristic overviews are the main means by which we can accomplish this objective. The floristic studies are considered as the foundation of the evaluation of phytodiversity, preservation the executives and feasible usage (Jayanthi and Rajendran, 2013). The greenery is useful in giving signs of changing floristic designs, new intrusions, current status, uncommon, endemic and undermined taxa (RET) in a phytogeographical region. They likewise structure an indispensable part of any asset the executives and arranging exercises at the neighborhood, local and worldwide levels. To comprehend the meaning of the current biodiversity it is important to comprehend what is esteemed of the spot and what are the advantages it gives and its pertinence to what's to come.

Therefore, there is a lot of demand for database of plants and animals all over the world especially from biodiversity rich countries as there are a number of economically and medicinally important plants available, which are untapped till now. In view of this, we selected Regional Institute of Education, Bhubaneswar campus as an experimental area for studying the flora of campus.

## **METHODOLOGY**

The flora in the campus is critically surveyed in different localities of the campus during late rainy season. Identification of flora was done with the help of literature available in college library. Digital photographs were taken for some of the flora.

## **OBSERVATIONS**

The eco-friendly college campus is associated with rich flora of trees, shrubs, herbs, palms and climbers and some interesting fauna. The biotic survey of the campus was carried out in different localities of the campus. There are many socio-economical valuable plants grown in the campus. Most of the trees are naturally grown and some of the trees, shrubs and palms are planted obviously to control pollution and for the beautification of the campus.

College management is regularly taking traditional care (sprinkler and drip irrigation) for the conservation of campus flora and fauna. On the other hand, advanced equipment is using for trimming of trees and grass lawns, which gives extra beautification and healthy atmosphere to the campus.

Campus flora consists of 124 trees, 74 shrubs, 293 herbs, 69 twiners, slender twiners and climbers. Besides angiosperm, the campus continuous with belt of various families of pteridophytes (9 nos. with 8 nos. of gymnosperms found. Water tanks were constructed for keeping aquatic fauna and flora. Most of the trees are old and tall with thick, green canopy which is suitable for the growth of the lower group plants like lichens, bryophytes and different types of mushrooms on the bark of the trees in late rainy season.

**Table : 1. List of Mushrooms found in the campus.**

SL.No.	Scientific Name	Family	Common name	Edibility
1	<i>Auricularia auricular-juade</i>	Auriculariaceae	Wood ear	Edible
2	<i>Dacryopinax spathularia</i>	Sweet Osmanthus Ear	Dacrymycetaceae	Non edible
3	<i>Daldinia concentrica</i>	Cramp balls	Xylariaceae	Non edible
4	<i>Ganoderma lucidium</i>	Lingzhi mushroom	Ganodermataceae	Non edible
5	<i>Grifola frondosa</i>	Sheep's Head	Meripilaceae	Edible
6	<i>Lentinus fusipes</i>	White rot Fungus	Polyporaceae	Edible
7	<i>Macrolepiota procera</i>	Parasol mushroom	Agaricaceae	Edible
8	<i>Marasmius elegans</i>	Velvet parachute	Marasmiaceae	Non-Edible
9	<i>Microcarpus xanthopus</i>	Yellow footed polypore	Polyporaceae	Edible
10	<i>Schizophyllum commune</i>	Split gill	Schizophyllaceae	Non edible
11	<i>Termitomyces errhizus</i>	Termite mushroom	Lyophyllaceae	Edible
12	<i>Tremetes versicolor</i>	Turkey tail	Polyporaceae	Non edible

**Table : 2. List of Pteridophytes found in the campus**

SL.No.	Scientific Name	Family
1	<i>Adiantum caudatum</i>	Pteridaceae
2	<i>Adiantum philippense</i>	Pteridaceae
3	<i>Aleuritopteris bicolor</i>	Pteridaceae
4	<i>Anemia wightiana</i>	Schizaeaceae
5	<i>Dryopteris spp.</i>	Dryopteridaceae
6	<i>Lygodium flexosum</i>	Lygodiaceae
7	<i>Ophioglossum reticulatum</i>	Ophioglossaceae
8	<i>Pteris vittata</i>	Pteridaceae
9	<i>Selaginella Spp.</i>	Selaginellaceae

**Table : 3. List of Gymnospermic Flora studied in the campus.**

<b>SL.No.</b>	<b>Scientific Name</b>	<b>Family</b>	<b>Odia Name/common name</b>
1	<i>Araucaria columnaris</i> J.R. Forst. Hook.	Araucariaceae	Christmas tree
2	<i>Cycas revoluta</i> Thunb.	Cycadaceae	Sago palm
3	<i>Cycas sphaerica</i> Roxb.	Cycadaceae	Sago palm
4	<i>Juniperus communis</i> f. <i>pygmaea</i> (K. Koch) Adams &Tashev	Cupressaceae	Juniper
5	<i>Microzamiafawcetti</i>	Zamiaceae	Microzamia
6	<i>Thuja occidentalis</i> Linn.	Cupressaceae	Thuja
7	<i>Zamia furfuracea</i> L.f.	Zamiaceae	Zamia
8	<i>Pinus roxburghii</i> Sarg.	Pinaceae	Pine



*Auricularia auricula-juade*



*Daeryopinax spathularia*



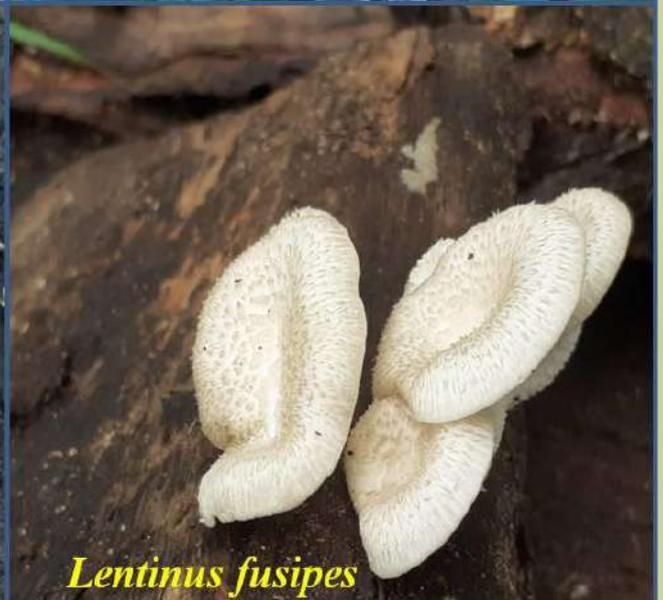
*Daldinia concentrica*



*Ganoderma lucidum*



*Grifola frondosa*



*Lentinus fusipes*

**Fig 1.: Different varieties of mushroom diversity in R.I.E. campus , Bhubaneswar**



Fig 2.: Different varieties of mushroom diversity in R.I.E. campus , Bhubaneswar

## ANGIOSPERMIC FLORA

A complete number of 552 plant species were accounted for having a place with 311 genera of 109 families from the RIE Grounds, Bhubaneswar. Of these monocots were addressed by 82 species having a place with seven genera and eight families, while dicots contributed by 299 species having a place with 275 genera and 101 families (Table-4)

**Table : 4. List of angiospermic flora studied the campus locality.**

Sl.No.	Scientific Name	Family	Odia Name	Habit
1	<i>Abelmoschus esculentus</i> (Linn.) Moench	Malvaceae	Bhendi	Undershrub
2	<i>Abelmoschus moschatus</i> Medic.	Malvaceae	Banabhendi	Undershrub
3	<i>Abrus precatorius</i> Linn.	Fabaceae	Kaincha	Climber
4	<i>Abutilon indicum</i> (Linn.) Sweet	Malvaceae	Pedipedica	Shrub
5	<i>Acacia auriculiformis</i> A.Cunn.ex.Benth	Mimosaceae	Jaranasaka	Small tree
6	<i>Acacia nilotica</i> (Linn.) Delile.	Mimosaceae	Babul	Tree
7	<i>Acanthospermum hispidum</i> DC	Asteraceae	Gokhra	Herb
8	<i>Achyranthes aspera</i> Linn.	Amaranthaceae	Apamaranga	Herb
9	<i>Acorus calamus</i> L.	Acoraceae	Bacha	Herb
10	<i>Aegle marmelos</i> (Linn.) Corr.	Rutaceae	Bela	Tree
11	<i>Aerva lanata</i> (Linn.) Juss.	Amaranthaceae	Paunsia	Herb
12	<i>Agave americana</i> (Auct).non Linn.	Agavaceae	Muruga	Shrub
13	<i>Agave desmettiana</i> Jacobi	Asparagaceae	Muruga	Shrub
14	<i>Ageratum conyzoides</i> Linn.	Asteraceae	Pokasungha	Herb
15	<i>Ailanthus excelsa</i> Roxb.	Simaroubaceae	Ghodaneem	Tree
16	<i>Albizia lebbeck</i> (Linn.) Benth.	Mimosaceae	Sirisha	Tree
17	<i>Allamanda cathartica</i> Linn.	Apocynaceae	Lata kaniara	Climber
18	<i>Alocasia macrorrhizos</i> (Linn.) G.Don.	Araceae	Manasaru	Herb
19	<i>Aloe vera</i> (L.) Burm.f.	Asphodelaceae	Ghinkumari	Shrub
20	<i>Alstonia scholaris</i> (Linn.) R.Br.	Apocynaceae	Chhatiana	Tree
21	<i>Alternanthera philoxiroides</i>	Amaranthaceae	Madaranga	Herb
22	<i>Alternanthera pungens</i> Kunth.	Amaranthaceae	Madaranga	Herb
23	<i>Alternanthera sessilis</i> (Linn.)R.Br.ex Dc	Amaranthaceae	Madaranga	Herb
24	<i>Alysicarpus vaginallis</i> (Linn.)DC	Fabaceae	NA	Herb
25	<i>Amaranthus caudatus</i> Linn.	Amaranthaceae	Khadasago	Herb
26	<i>Amaranthus spinosus</i> Linn.	Amaranthaceae	Kantaleutia	Herb
27	<i>Amaranthus tricolor</i> Linn.	Amaranthaceae	Neutia	Herb
28	<i>Amaranthus viridis</i> Linn.	Amaranthaceae	Leutia	Herb
29	<i>Ampelocissus latifolia</i> (Roxb.) Planch	Vitaceae	Kanjina	Climber

30	<i>Anacardium occidentale</i> Linn.	Anacardiaceae	Kaju	Tree
31	<i>Ananas cosmosus</i> (L.) Merr.	Bromeliaceae	Sapuri	Herb
32	<i>Andrographis paniculata</i> (Burm.f.) Wall.ex.Nees.	Acanthaceae	Chireita, Bhuinnimba	Herb
33	<i>Anisomeles indica</i> (Linn.) Kuntz.	Lamiaceae	Bhutamari	Herb
34	<i>Annona reticulata</i> Linn.	Annonaceae	Ramaphala	Tree
35	<i>Annona squamosa</i> Linn.	Annonaceae	Sitaphala	Tree
36	<i>Anogeissus acuminata</i> (Roxb.ex DC) Guill & Pett.	Combretaceae	Phasi	Tree
37	<i>Anogeissus latifolia</i> (Roxb.ex DC) WalLinn. ex.Guill &Perr.	Combretaceae	Dhaura. Dhau	Tree
38	<i>Anthocephalous chinensis</i> (Lam.) A.Rich	Rubiaceae	Kadamba	Tree
39	<i>Antigonon leptopus</i> Hook. & Arn.	Polygonaceae	Snehalata	Climber
40	<i>Areca catechu</i> L.	Arecaceae	Gua	Tree
41	<i>Argemone mexicana</i> Linn.	Papaveraceae	Odashamari	Herb
42	<i>Argyreia nervosa</i> (Burm.f.) Boj.	Convolvulaceae	Brudhadarak	Climber
43	<i>Aristida setacia</i> Retz.	Poaceae	Khadikaghasa	Herb
44	<i>Aristolochia indica</i> Linn.	Aristolochiaceae	Hansalata	Climber
45	<i>Artabotrys hexapetalus</i> (Linn.) Bhandari	Annonaceae	Chinichampa	Shrub
46	<i>Artocarpus heterophyllus</i> Lam.	Moraceae	Panasha	Tree
47	<i>Asparagus racemosus</i> Willd.	Asparagaceae	Satabari	Climber
48	<i>Atylosia cajanifolia</i> Haines	Fabaceae	Banakandulo	Shrub
49	<i>Atylosia scarabaeoides</i> Linn.) Benth.	Fabaceae	Banakolathia	Climber
50	<i>Averrhoa carambola</i> Linn.	Averrhoaceae	Karamanga	Tree
51	<i>Azadirachta indica</i> A.juss.	Meliaceae	Nimba	Tree
52	<i>Bacopa monnieri</i> (Linn.) (Pennell)	Scrophulariaceae	Brahmi	Herb
53	<i>Bambusa arundinacea</i> (Retz) Willd.	Poaceae	Kanta baunsa	Herb
54	<i>Bambusa vulgaris</i> Schrad.	Poaceae	Sundarkani	Herb
55	<i>Barleria cristata</i> Linn.	Acanthaceae	Daskerenta	Undershrub
56	<i>Barleria prionitis</i> Linn.	Acanthaceae	Daskerenta	Undershrub
57	<i>Barleria strigosa</i> Willd.	Acanthaceae	Banamalli	Undershrub
58	<i>Basella alba</i> Linn.	Basellaceae	Poi	Climber
59	<i>Bauhinia acuminata</i> Linn.	Caesalpiniaceae	Kanchan	Shrub
60	<i>Bauhinia purpurea</i> Linn.	Caesalpiniaceae	Barda sag	Tree
61	<i>Bauhinia vahlii</i> Wt. & Arn.	Caesalpiniaceae	Siali lata	Climber
62	<i>Bauhinia variegata</i> Linn.	Caesalpiniaceae	Kanchan	Tree
63	<i>Benicasa hispida</i> (Thunb.) Cogn.	Cucurbitaceae	Panikakharu	Climber
64	<i>Benkara malaberica</i> (Lam.) Tir.	Rubiaceae	Firki kanta	Shrub
65	<i>Biophytum sensitivum</i> (Linn.) DC.	Oxalidaceae	Chotalajakuli	Herb

66	<i>Bismarckia nobilis</i> Hildebr. & H.Wendl.	Arecaceae	Bismark palm	Tree
67	<i>Bixa orellana</i> Linn.	Bixaceae	Sindura	Tree
68	<i>Blanvillea acmella</i> (Linn.) Philipson	Asteraceae	NA	Herb
69	<i>Blepharis maderaspatensis</i> (L.)Roth	Acanthaceae	NA	Herb
70	<i>Blumea lacera</i> (Burm.f)DC.	Asteraceae	Pokasungha	Herb
71	<i>Boerhavia diffusa</i> Linn.	Nyctaginaceae	Purunisaga	Herb
72	<i>Bombax ceiba</i> Linn.	Bombacaceae	Simili	Tree
73	<i>Borassus flabellifer</i> L.	Arecaceae	Tala	Tree
74	<i>Bougainvillea glabra</i> Choisy	Nyctaginaceae	Kagajaphula	Scandent shrub
75	<i>Bougainvillea spectabilis</i> Willd.	Nyctaginaceae	Kagajaphula	Scandent shrub
76	<i>Brachiaria mutica</i> (Forssk.) Stapf.	Poaceae	Ghasa	Herb
77	<i>Brachiaria distachya</i> (L.) Stapf.	Poaceae	NK	Herb
78	<i>Brachiaria mutica</i> (Forssk.) Stapf.	Poaceae	Bansapali	Herb
79	<i>Brachiaria ramosa</i> (L.) Stapf.	Poaceae	Bansapalli	Herb
80	<i>Brassica juncea</i> (Linn.) Czern	Brassicaceae	Rai sorish	Herb
81	<i>Brassica napus</i> Linn.	Brassicaceae	Sorish	Herb
82	<i>Breynia retusa</i> (Denn.) Alston.	Euphorbiaceae	Jajana	Shrub
83	<i>Bridelia tomentosa</i> Blume	Phyllanthaceae	Kasi	Tree
84	<i>Bulbostylis barbata</i> (Rottb.) C.B.Clarke	Cyperaceae	NK	Herb
85	<i>Butea monosperma</i> (Lam.) Taub.	Fabaceae	Palasha	Tree
86	<i>Caesalpinia pulcherima</i> (Linn.) Sw.	Caesalpinaceae	Krushnachuda	Shrub
87	<i>Caesulia axilaris</i> (Roxb.)	Asteraceae	Jamjuria	Herb
88	<i>Cajanus cajan</i> (Linn.) Huth	Fabaceae	Harada	Shrub
89	<i>Caladium bicolor</i> (Aiton.) Vert.	Araceae	Jesus heart	Herb
90	<i>Callistemon citrinus</i> (Curtis) Stapf.	Myrtaceae	Bottle brush	Tree
91	<i>Calophyllum inophyllum</i> Linn.	Clusiaceae	Polanga	Tree
92	<i>Calotropis gigantea</i> R.Br.	Asclepiadaceae	Arakha	Shrub
93	<i>Calotropis procera</i> (Ait.) R.Br.	Asclepiadaceae	Dhala arakha	Shrub
94	<i>Canna indica</i> L.	Cannaceae	Sarbojaya	Herb
95	<i>Capscicum annum</i> Linn.	Solanaceae	Lanka	Herb
96	<i>Capscicum frutescens</i> Linn.	Solanaceae	Lanka	Herb
97	<i>Cardamine scutata</i> Linn.	Brassicaceae	NA	Herb
98	<i>Cardiospermum helicacabum</i> Linn.	Sapindaceae	Photka	Climber
99	<i>Carica papaya</i> Linn.	Caricaceae	Amrutabhanda	Small tree
100	<i>Carissa spinarum</i> L.	Apocynaceae	Khirkoli	Shrub
101	<i>Caryota urens</i> L.	Arecaceae	Salapa	Tree
102	<i>Cascabela thevetia</i> (Linn.) Lippold	Apocynaceae	Kaniara	Tree

103	<i>Cassia alata</i> Linn.	Caesalpiniaceae	Dadamari	Shrub
104	<i>Cassia auriculata</i> Linn.	Caesalpiniaceae	NA	Large shrub
105	<i>Cassia fistula</i> Linn.	Caesalpiniaceae	Sunari	Small tree
106	<i>Cassia obtusifolia</i> Linn.	Caesalpiniaceae	NA	Shrub
107	<i>Cassia occidentalis</i> Linn.	Caesalpiniaceae	Kalachakunda	Shrub
108	<i>Cassia siamea</i> Lam.	Caesalpiniaceae	Chakunda	Tree
109	<i>Cassia sophera</i> Linn.	Caesalpiniaceae	Ghodachakunda	Shrub
110	<i>Cassia tora</i> Linn.	Caesalpiniaceae	Chakunda	Herb
111	<i>Casuarina equisetifolia</i> Linn.	Casuarinaceae	Jhaun	Tree
112	<i>Catharanthus roseus</i> (Linn.) G.Don	Apocynaceae	Sadabihari	Herb
113	<i>Ceiba pentandra</i> (Linn.) Gaertn	Bombacaceae	Kapa	Tree
114	<i>Celosia argentea</i> Linn.	Amaranthaceae	Nahanga	Herb
115	<i>Centella asiatica</i> (Linn.)Urban	Apiaceae	Thalkudi	Herb
116	<i>Centipeda minima</i> (Linn.)A.Braun & Asch.	Asteraceae	Nakachinka	Herb
117	<i>Cereus pterogonus</i> Lem.	Cactaceae	Siju	Shrub
118	<i>Cestrum nocturnum</i> Linn.	Solanaceae	Hena	Shrub
119	<i>Cheilocostus speciosus</i> (J.Koenig) C.D.Specht	Costaceae	Keukanda	Herb
120	<i>Chenopodium album</i> Linn.	Chenopodiaceae	Bathua saga	Herb
121	<i>Chloris barbata</i> Sw.	Poaceae	NK	Herb
122	<i>Chlorophytum arundinaceum</i> Baker	Asparagaceae	Musli	Herb
123	<i>Chromolaena odorata</i> (Linn.)R.King & H.Robing	Asteraceae	Phulagandhuri	Herb
124	<i>Chrozophora rottleri</i> (GeiseLinn.)Juss.	Euphorbiaceae	NA	Herb
125	<i>Chrysopogon aciculatus</i> (Retz.) Trin.	Poaceae	Guguchia	Herb
126	<i>Cinnamomum tamala</i> Nees.	Lauraceae	Tejapatra	Tree
127	<i>Cinnamomum verum</i> Presl.	Lauraceae	Dalchini	Tree
128	<i>Cissampelos pareira</i> Linn.	Menispermaceae	Akanabindhi	Climber
129	<i>Cissus quadrangulus</i> Linn.	Vitaceae	Hadabhanga	Climber
130	<i>Citrullus lannatus</i> (Thunb.) Matsum & Nakai	Cucurbitaceae	Tarabuj	Climber
131	<i>Citrus aurantifolia</i> (Christm. Panz.) Swingle.	Rutaceae	Kaghzi lembu	Thorny shrub
132	<i>Citrus grandis</i> (L.) Osbeck	Rutaceae	Tava	Tree
133	<i>Citrus limon</i> (L.)Burm.f.	Rutaceae	Tava	Tree
134	<i>Citrus medica</i> Linn.	Rutaceae	Tabha	Tree
135	<i>Cleome gyandra</i> Linn.	Capparaceae	Anasorisha	Herb
136	<i>Cleome monophylla</i> Linn.	Capparaceae	Anasorisha	Herb
137	<i>Cleome rutidosperma</i> Dc.	Capparaceae	NA	Herb

138	<i>Cleome viscosa</i> Linn.	Capparaceae	Hulhul	Herb
139	<i>Clerodendrum indicum</i> (Linn.) Kuntze	Verbenaceae	Nagri	Shrub
140	<i>Clerodendrum inerme</i> (Linn.) Gaertn	Verbenaceae	Kharkhari	Shrub
141	<i>Clerodendrum philippinum</i> Schauer	Verbenaceae	Banamalli	Shrub
142	<i>Clerodendrum splendens</i> G.Don	Verbenaceae	Genguti	Climber
143	<i>Clerodendrum thomsonii</i> Balf.f.	Verbenaceae	Bladder heart	Climber
144	<i>Clerodendrum viscosum</i> Vent.	Verbenaceae	Genguti	Shrub
145	<i>Clerodendrum infortunatum</i> L.	Lamiaceae	Bladder heart	Climber
146	<i>Clitoria biflora</i> Linn.	Fabaceae	Aparajita	Twiner
147	<i>Clitoria ternatea</i> Linn.	Fabaceae	Aparajita	Climber
148	<i>Coccinia grandis</i> (Linn.) Voigt	Cucurbitaceae	Kundru	Climber
149	<i>Cocculus hirsutus</i> (Linn.) Diels.	Menispermaceae	Dahidahiya	Climber
150	<i>Cocos nucifera</i> L.	Arecaceae	Nadiagachha	Tree
151	<i>Commelina benghalensis</i> L.	Commelinaceae	Kansiri	Herb
152	<i>Commelina erecta</i> L.	Commelinaceae	Kansiri	Herb
153	<i>Commelina longifolia</i> Lam.	Commelinaceae	Pani Kansiri	Herb
154	<i>Commelina paludosa</i> BI.	Commelinaceae	Kansiri	Herb
155	<i>Corchorus aestuans</i> auct.non forssk.	Tiliaceae	Bananalita	Herb
156	<i>Corchorus capsularis</i> Linn.	Tiliaceae	Jhota	Herb
157	<i>Coriandrum sativum</i> Linn.	Apiaceae	Dhania	Herb
158	<i>Couroupita guianensis</i> AubLinn.	Lecythidiaceae	Nagalinga	Tree
159	<i>Crateva magna</i> (Lour.) DC	Capparaceae	Baruna	Tree
160	<i>Crinum asiaticum</i> L.	Amaryllidaceae	Arsa, Hatikanda	Herb
161	<i>Crinum latifolium</i> L	Amaryllidaceae	Pani kenduri	Shrub
162	<i>Crossandra infundibuliformis</i> (Linn.)Nees	Acanthaceae	Itimala	Herb
163	<i>Crotolaria albida</i> Heyne ex Roth	Fabaceae	Banajhunuka	Herb
164	<i>Crotolaria juncea</i> Linn	Fabaceae	Chanapata	Shrub
165	<i>Crotolaria laburnifolia</i> Linn.	Fabaceae	Jhunjhunuka	Shrub
166	<i>Crotolaria pallida</i> Ait	Fabaceae	Jhunjhunuka	Undershrub
167	<i>Crotolaria spectabilis</i> Roth.	Fabaceae	Jhunjhunuka	Tall herb
168	<i>Croton bonplandianus</i> BailLinn.	Euphorbiaceae	Banamaricha	Herb
169	<i>Cucumis melo</i> Linn.	Cucurbitaceae	Dimbu	Climber
170	<i>Cucumis trigonus</i> Roxb.	Cucurbitaceae	BanDimbu	Climber
171	<i>Cucurbita moschata</i> (Duch.ex. Lam) Duch.	Cucurbitaceae	Kakharu	Climber
172	<i>Cucurbita maxima</i> Duch.	Cucurbitaceae	Kakharu	Climber
173	<i>Curculigo orchioides</i> Gaertn.	Hypoxidaceae	Talamuli	Herb
174	<i>Curcuma longa</i> L.	Zingiberaceae	Haladi	Herb

175	<i>Cuscuta reflexa</i> Roxb.	Cuscutaceae	Nirmuli	Herb
176	<i>Cyanotis axillaris</i> (L.) D.Don ex Sweet	Commelinaceae	Kansiri	Herb
177	<i>Cyanotis cristata</i> (L.) D.Don	Commelinaceae	Kansiri	Herb
178	<i>Cyathocline purpurea</i> (Buch-Ham.ex Don)Kuntze	Asteraceae	NA	Herb
179	<i>Cymbopogon flexuosus</i> (Nees ex Steud.) W.Watson	Poaceae	Dhanwantari	Herb
180	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Dubaghasa	Herb
181	<i>Cyperus iria</i> Linn.	Cyperaceae	Muthaghasa	Herb
182	<i>Cyperus polystachyos</i> Roxb.	Cyperaceae	Muthaghasa	Herb
183	<i>Cyperus articulatus</i> L.	Cyperaceae	Mutha	Herb
184	<i>Cyperus compressus</i> Jacq.	Cyperaceae	Muthaghasa	Herb
185	<i>Cyperus cuspidatus</i> Kunth.	Cyperaceae	Muthaghasa	Herb
186	<i>Cyperus difformis</i> L.	Cyperaceae	Muthaghasa	Herb
187	<i>Cyperus diffusus</i> Vahl	Cyperaceae	Muthaghasa	Herb
188	<i>Cyperus distans</i> L.f.	Cyperaceae	Muthaghasa	Herb
189	<i>Cyperus imbricatus</i> Retz.	Cyperaceae	Muthaghasa	Herb
190	<i>Cyperus iria</i> L.	Cyperaceae	Muthaghasa	Herb
191	<i>Cyperus rotundus</i> L.	Cyperaceae	Muthaghasa	Herb
192	<i>Cyperus compactus</i> Retz.	Cyperaceae	Mutha	Herb
193	<i>Cyperus dubius</i> Rottb.	Cyperaceae	Muthaghasa	Herb
194	<i>Cyperus paniceus</i> (Rottb.) Boeckeler	Cyperaceae	Mutha	Herb
195	<i>Dactyloctenium aegyptium</i> (L.) Willd.	Poaceae	Kakuriaghasa	Herb
196	<i>Dalbergia sisoo</i> Roxb.	Fabaceae	Sishu	Tree
197	<i>Datura innoxia</i> Mill.	Solanaceae	Dudura	Shrub
198	<i>Datura metel</i> Linn.	Solanaceae	Kaladudura	Shrub
199	<i>Datura stramonium</i> Linn.	Solanaceae	Dhaladudura	Shrub
200	<i>Delonix regia</i> (Boj.ex.Hook.) Raf.	Caesalpiniaceae	Krushnachuda	Tree
201	<i>Dendrocalamus strictus</i> (Roxb.) Nees	Poaceae	Salia baunsa	Tall herb
202	<i>Desmodium gangeticum</i> (Linn.) Dc	Fabaceae	Salaparni	Shrub
203	<i>Desmodium triflorum</i> (Linn.) Dc	Fabaceae	Kuradia gachha	Herb
204	<i>Dicilptera bupleuroides</i> Nees.	Acanthaceae	NA	Herb
205	<i>Digitaria abludens</i> (Roem. & Schult) veldk	Poaceae	Chir-chira	Herb
206	<i>Digitaria ciliaris</i> (Retz.) Koeler	Poaceae	NK	Herb
207	<i>Dillenia indica</i> Linn.	Dilleniaceae	Oau	Tree
208	<i>Dioscorea alata</i> L	Dioscoreaceae	Khambaalu	Climber
209	<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Pita alu	Climber
210	<i>Dioscorea hamiltonii</i> Hook.f.	Dioscoreaceae	Sutaalu	Climber

211	<i>Dioscorea oppositifolia</i> L.	Dioscoreaceae	Panialu	Climber
212	<i>Diospyros malabarica</i> (Desr.) Kostel	Ebenaceae	Makanda kendu	Tree
213	<i>Diospyros melanoxylon</i> Roxb.	Ebenaceae	Kendu	Tree
214	<i>Diplocyclos palmatus</i> (Linn.) Jeffrey	Cucurbitaceae	Shibalingi	Climber
215	<i>Dipteracalthus prostratus</i> (Poir.) Nees.	Acanthaceae	NA	Herb
216	<i>Dopartium junceum</i> (Roxb.) Buch, - Ham.ex Benth.	Scrophulariaceae	NA	Herb
217	<i>Drypetes roxburghii</i> (WalLinn.) Hurusawa	Euphorbiaceae	Putranjiva	Tree
218	<i>Duranta repens</i> Linn.	Verbenaceae	Bayakoli	Shrub
219	<i>Dyopsis lutescens</i> (H.Wendl.) Beentze & J.Dransf.	Arecaceae	Butterfly palm	Tree
220	<i>Ecbolium viride</i> (Forssk.) Alston .	Acanthaceae	NA	Undershrub
221	<i>Echinochloa colona</i> (L.) Link	Poaceae	Suanghasa	Herb
222	<i>Echinochloa crus-galli</i> (L.) P.Beauv.	Poaceae	Suan	Herb
223	<i>Echinochloa glabrescens</i> Munro ex Hook. f.	Poaceae	Suan ghasa	Herb
224	<i>Eclipta prostrata</i> (Linn.) Linn.	Asteraceae	Kesadura	Herb
225	<i>Elephantopus scaber</i> (Linn.)	Asteraceae	Totamuli	Herb
226	<i>Eleusine indica</i> (L.) Gaertn.	Poaceae	Anamandia	Herb
227	<i>Emilia sonchifolia</i> (Linn.) Dc	Asteraceae	Sarakara	Herb
228	<i>Enydra fluctuans</i> Lour.	Asteraceae	Hidimicha	Herb
229	<i>Epipremnum pinnatum</i> (L.) EngL.	Araceae	Money Plant	Tall climber
230	<i>Eragrostis ciliaris</i> (L.) R.Br.	Poaceae	Kujijhipa	Herb
231	<i>Ervatamia divaricata</i> (Linn.) Burkil Linn.	Apocynaceae	Tagara	Tree
232	<i>Eryngium foetidum</i> Linn.	Apiaceae	Jangli dhania	Herb
233	<i>Erythina suberosa</i> Roxb.	Fabaceae	Paladhua	Tree
234	<i>Eucalyptus citridora</i> Hook.	Myrtaceae	Nilagiri	Tree
235	<i>Euphorbia heterophylla</i> Linn.	Euphorbiaceae	NA	Herb
236	<i>Euphorbia hirta</i> Linn.	Euphorbiaceae	Chitakutei	Herb
237	<i>Euphorbia indica</i> Lam.	Euphorbiaceae	Chitakutei	Herb
238	<i>Euphorbia prostrata</i> Ait.	Euphorbiaceae	Chitakutei	Herb
239	<i>Euphorbia rosea</i> Retz.	Euphorbiaceae	NA	Herb
240	<i>Euphorbia thymifolia</i> Linn.	Euphorbiaceae	Patrasiju	Herb
241	<i>Evolvulus alsinoides</i> (Linn.) L	Convolvulaceae	Bichhamalia	Herb
242	<i>Evolvulus nummularis</i> (Linn.)L	Convolvulaceae	Sankhapuspi	Herb
243	<i>Ficus racemosa</i> Linn.	Moraceae	Dimiri	Tree
244	<i>Ficus benghalensis</i> Linn.	Moraceae	Baragachha	Tree
245	<i>Ficus hispida</i> Linn.f.	Moraceae	Dimiri	Tree

246	<i>Ficus religiosa</i> Linn.	Moraceae	Aswatha	Tree
247	<i>Fimbristylis acuminata</i> Vahl.	Cyperaceae	Suan	Herb
248	<i>Fimbristylis aestivalis</i> (Retz.) Vahl	Cyperaceae	Suanli	Herb
249	<i>Fimbristylis argentea</i> (Rottb.) Vahl	Cyperaceae	Suan	Herb
250	<i>Fimbristylis miliacea</i> (Linn.) Vahl	Cyperaceae	Beruan	Herb
251	<i>Fimbristylis quinquangularis</i> (Vahl) Kunth	Cyperaceae	Beruan	Herb
252	<i>Fuirena ciliaris</i> (L.) Roxb.	Cyperaceae	NK	Herb
253	<i>Furcraea foetida</i> (L.) Haw.	Asparagaceae	Muruga	Shrub
254	<i>Glinus lotoides</i> Linn.	Molluginaceae	Ghoda pitasaga	Herb
255	<i>Glinus oppositifolius</i> (Linn.) A.Dc.	Molluginaceae	Pitagima, Pitasaga	Herb
256	<i>Gliricidia sepium</i> (Jacq.) Kunth.	Fabaceae	NA	Tree
257	<i>Gloriosa superba</i> L.	Asparagaceae	Panchangulia	Climber
258	<i>Gmelina arborea</i> Roxb.	Verbenaceae	Gambhari	Tree
259	<i>Gnaphalium polycaulon</i> (Pers.)	Asteraceae	NA	Herb
260	<i>Gomphrena celosioides</i> Mart.	Amaranthaceae	Godibana	Herb
261	<i>Gomphrena globosa</i> Linn.	Amaranthaceae	Godiphula	Herb
262	<i>Gossypium arboreum</i> Linn.	Malvaceae	Kapa	Large shrub
263	<i>Gossypium hirsutum</i> Linn.	Malvaceae	Kapa	Undershrub
264	<i>Grangea madraspatna</i> (Linn.) Poir	Asteraceae	Agnikumari	Herb
265	<i>Grevellia robusta</i> A.cunn. Ex R.Br.	Proteaceae	Swetachandrika	Tree
266	<i>Gymnema sylvestre</i> (Retz) R.Br. Ex. Sch.	Asclepiadaceae	Gudamari	Climber
267	<i>Haldina cordifolia</i> (Roxb.) Ridsd	Rubiaceae	Kuruma	Tree
268	<i>Hedyotis corymbosa</i> (Linn.) Lam.	Rubiaceae	Gharapodia	Herb
269	<i>Heliconia rostrata</i> Ruiz & Pavon	Heliconiaceae	Heliconia	Rhizomatic herb
270	<i>Helicteres isora</i> Linn.	Sterculiaceae	Mudimudica	Shrub
271	<i>Heliotropium indicum</i> Linn.	Boraginaceae	Hatisundha	Herb
272	<i>Hemidesmus indicus</i> (Linn.) R.Br.	Asclepiadaceae	Anantamula	Climber
273	<i>Heteropogon contortus</i> (L.) P.Beauv. ex Roem. & Schult.	Poaceae	Sinkulia	Herb
274	<i>Hibiscus lobatus</i> (Murray) Kuntz.	Malvaceae	Lobed leaf mallow	Shrub
275	<i>Hibiscus mutabilis</i> Linn.	Malvaceae	Sthalapadma	Shrub
276	<i>Hibiscus rosa sinensis</i> Linn.	Malvaceae	Mandara	Shrub
277	<i>Hippeastrum reginae</i> (L.) Herb	Amaryllidaceae	Lily	Herb
278	<i>Holarrhena rubra</i> Linn.	Apocynaceae	Pitakeruan	Tree
279	<i>Hybanthus enneaspermus</i> (Linn.) F.v. Muell	Violaceae	Madan mastak	Herb
280	<i>Hydrilla verticillata</i> (L.f.) Royle.	Hydrocharitaceae	Chingudiadala	Aquatic Herb

281	<i>Hydrocotyle sibthorpioides Lam</i>	Apiaceae	Mandukaparni	Herb
282	<i>Hygrophila auriculata (Schum.) Heine</i>	Acanthaceae	Koilekha	Herb
283	<i>Hyophorbe lagenicaulis (L.H. Bailey) H.E. Moore</i>	Areceaceae	Bottle palm	Tree
284	<i>Hyptis suaveolens (Linn.) Poit.</i>	Lamiaceae	Gangatulasi	Herb
285	<i>Ichnocarpus frutescens (Linn.) R.Br</i>	Apocynaceae	Suanlai	Climber
286	<i>Impatiens balsamina Linn.</i>	Balsaminaceae	Haragoura	Herb
287	<i>Indigofera cassoides Rott.ex DC</i>	Fabaceae	Girli	Shrub
288	<i>Indigofera linnaei Ali.</i>	Fabaceae	NA	Herb
289	<i>Indigofera tinctoria Linn.</i>	Fabaceae	NA	Herb
290	<i>Indoneesiella echioides (Linn.) Sreemadh.</i>	Acanthaceae	Bada bhuinima	Herb
291	<i>Ipomoea aquatica Forssk</i>	Convolvulaceae	Kalama saga	Herb
292	<i>Ipomoea batatas (Linn.) Lam.</i>	Convolvulaceae	Kandamula	Climber
293	<i>Ipomoea cairica (Linn.) Sweet</i>	Convolvulaceae	NA	Climber
294	<i>Ipomoea carnea Jacq.</i>	Convolvulaceae	Amari	Shrub
295	<i>Ipomoea hederifolia Linn.</i>	Convolvulaceae	Panikoda	Climber
296	<i>Ipomoea obscura (L.) Ker Gawl.</i>	Convolvulaceae	Small morning glory	Climber
297	<i>Ipomoea palmata Forssk.</i>	Convolvulaceae	Banakamala	Climber
298	<i>Ipomoea pes-tigridis Linn.</i>	Convolvulaceae	Bileipada	Climber
299	<i>Ipomoea quamoclit Linn.</i>	Convolvulaceae	Kunjalata	Climber
300	<i>Ipomoea nil (L.) Roth</i>	Convolvulaceae	Japanese morning glory	Climber
301	<i>Ixora coccinea Linn.</i>	Rubiaceae	Rangani	Shrub
302	<i>Ixora pavetta Andr.</i>	Rubiaceae	Telakurma	Large shrub
303	<i>Jasminum arborescens Roxb.</i>	Oleaceae	Jui	Shrub
304	<i>Jasminum aungustifolium (Linn.) Willd.</i>	Oleaceae	Banamallica	Climbing shrub
305	<i>Jasminum auriculatum Vahl.</i>	Oleaceae	Jui	Scandent shrub
306	<i>Jasminum grandiflorum Linn.</i>	Oleaceae	Jaiphula	Scandent shrub
307	<i>Jasminum sambac (Linn.) Ait.</i>	Oleaceae	Malli	Scandent shrub
308	<i>Jatropha gossypifolia Linn.</i>	Euphorbiaceae	Baigaba	Shrub
309	<i>Juncus prismatocarpus R Br.</i>	Juncaceae	NA	Herb
310	<i>Justicia adhatoda Linn</i>	Acanthaceae	Basanga	Shrub
311	<i>Justicia diffusa Willd.</i>	Acanthaceae	NA	Herb
312	<i>Justicia gendarussa Burm.f.</i>	Acanthaceae	Kukurdanti	Shrub
313	<i>Kaempferia galanga L</i>	Zingiberaceae	Ramakedaea	Shrub

314	<i>Kalanchoe pinnata (Lam.) Pers.</i>	Crassulaceae	Amaraoi	Herb
315	<i>Kigelia africana (Lam.) Benth.</i>	Bignoniaceae	NA	Tree
316	<i>Knoxia sumatrensis (Retz.) DC.</i>	Rubiaceae	NA	Herb
317	<i>Kyllinga triceps Roxb.</i>	Cyperaceae	Muthaghasa	Herb
318	<i>Kyllinga brevifolia Rottb.</i>	Cyperaceae	Mutha ghasa	Herb
319	<i>Lablab purpureus (L.) Sweet.</i>	Fabaceae	Simba	Climber
320	<i>Lagenaria siceraria (Mol.) Standl.</i>	Cucurbitaceae	Lau	Climber
321	<i>Lagerstroemia parviflora Roxb.</i>	Lytharaceae	Sidha	Tree
322	<i>Lagerstroemia reginae Roxb.</i>	Lytharaceae	Patali	Tree
323	<i>Lagerstromia indica Linn.</i>	Lytharaceae	Chennaphula	Shrub
324	<i>Lannea coromandelica (Houtt.) Merr.</i>	Anacardiaceae	Mahi	Tree
325	<i>Lantana camara Linn.</i>	Verbenaceae	Putus	Shrub
326	<i>Laportea interurputa (Linn.) Chew.</i>	Urticaceae	Bichuati	Herb
327	<i>Lathyrus sativus Linn.</i>	Fabaceae	Kheshari	Herb
328	<i>Lawsonia inermis Linn.</i>	Lytharaceae	Manjuati	Shrub
329	<i>Leonitis nepetifolia (Linn.) R.Br.</i>	Lamiaceae	Kantasia	Herb
330	<i>Leucaena leucocephala (Lam.) de Wit.</i>	Mimosaceae	Nagarjuna	Tree
331	<i>Leucas cephalotes (Roth) Spreng.</i>	Lamiaceae	Gayasha	Herb
332	<i>Leucas indica (Linn.) R.Br.</i>	Lamiaceae	Gayasha	Herb
333	<i>Leucus aspera (Willd.) Link</i>	Lamiaceae	Gayasha	Herb
334	<i>Licula grandis H.Wendl.</i>	Arecaceae	Fan Palm	Tree
335	<i>Limnophilia heterophylla (Linn.) Penn.</i>	Scrophulariaceae	Hidimichi	Herb
336	<i>Limonia acidissima Linn.</i>	Rutaceae	Kaintho	Tree
337	<i>Lindernia ciliata (Colsm.) Pennel Linn.</i>	Scrophulariaceae	Khetakura	Herb
338	<i>Lindernia crustacea</i>	Scrophulariaceae	Khetakura	Herb
339	<i>Lippia javanica (Burm.f.) Spreng.</i>	Verbenaceae	Bhutuni, Naguari	Shrub
340	<i>Litchi chinensis Sonner.</i>	Sapindaceae	Lichu	Tree
341	<i>Litsea glutinosa (Lour.) Robins.</i>	Lauraceae	Medha	Tree
342	<i>Ludwigia adscendens (Linn.) Hara</i>	Onagraceae	Jagal	Herb
343	<i>Ludwigia octavalvis (N.Jacq) Raven</i>	Onagraceae	Bilalabanga	Herb
344	<i>Ludwigia perennis Linn.</i>	Onagraceae	Latkara	Herb
345	<i>Ludwigia prostrata Roxb.</i>	Onagraceae	NA	Herb
346	<i>Luffa acutangula (Linn.) Roxb.</i>	Cucurbitaceae	Janhi	Climber
347	<i>Luffa aegyptica MilLinn.</i>	Cucurbitaceae	Pita tarada	Climber
348	<i>Lycopersicon esculentum Mill.</i>	Solanaceae	Tamato	Herb
349	<i>Madhuca indica Gmel.</i>	Sapotaceae	Mahula	Tree
350	<i>Malvastrum coromandelianum (Linn.) Garcke</i>	Malvaceae	NA	Herb

351	<i>Mangifera indica</i> Linn.	Anacardiaceae	Amba	Tree
352	<i>Manilkara zapota</i> (Linn.) P. Royen	Sapotaceae	Sapeta	Tree
353	<i>Mariscus compactus</i> (Retz.) Bold.	Cyperaceae	NA	Herb
354	<i>Mariscus paniceus</i> (Rottb.) VahLinn.	Cyperaceae	NA	Herb
355	<i>Martynia annua</i> Linn.	Martyniaceae	Baghanakhi	Undershrub
356	<i>Mazus pumilus</i> (Burm.f.) steenis.	Scrophulariaceae	NA	Herb
357	<i>Mecardonia procumbens</i> (MilLinn.) SmalLinn.	Scrophulariaceae	NA	Herb
358	<i>Melia azedarach</i> Linn.	Meliaceae	Mahanimba	Tree
359	<i>Melinis repens</i> (Willd.) Zizka	Poaceae	NK	Herb
360	<i>Mellitous alba</i> Desv.	Fabaceae	Bana methi	Herb
361	<i>Mellitous indica</i> (Linn.) Allinn.	Fabaceae	Bana methi	Herb
362	<i>Melochia corchorifolia</i> Linn.	Sterculiaceae	Telpuri	Herb
363	<i>Mentha arvensis</i> Linn.	Lamiaceae	Podina	Herb
364	<i>Mentha spicata</i> Linn.	Lamiaceae	Podina	Herb
365	<i>Merremia tridentata</i> (Linn.) HalLinn.f.	Convolvulaceae	NA	Climber
366	<i>Merremia umbellata</i> (Linn.) Hall.f.	Convolvulaceae	Paninai	Climber
367	<i>Mesua ferrea</i> Linn	Clusiaceae	Nageswar	Shrub
368	<i>Michelia champaca</i> Linn.	Magnoliaceae	Champa	Tree
369	<i>Micrococca mercurialis</i> (Linn.) Benth	Euphorbiaceae	NA	Herb
370	<i>Mikania micrantha</i> Kunth.	Asteraceae	Salamari	Climber
371	<i>Millingtonia hortensis</i> Linn f.	Bignoniaceae	Akashmalli	Tree
372	<i>Mimosa himalayana</i> Gamble.	Mimosaceae	Kirkichi	Prickly Shrub
373	<i>Mimosa pudica</i> Linn.	Mimosaceae	Lajakuli	Herb
374	<i>Mimusops elengi</i> Linn.	Sapotaceae	Baula	Tree
375	<i>Mirabilis jalapa</i> Linn.	Nyctaginaceae	Rangani	Herb
376	<i>Mitracarpus villosus</i> (SW.) DC	Rubiaceae	NA	Herb
377	<i>Molineria capitulata</i> (Lour.) Herb	Hypoxidaceae	NK	Herb
378	<i>Mollugo pentaphylla</i> Linn.	Molluginaceae	Pitasaga	Herb
379	<i>Momordica charantia</i> Linn.	Cucurbitaceae	Kalara	Climber
380	<i>Monstera adansonii</i> Schott.	Araceae	Swiss plant	Climber
381	<i>Morinda tinctoria</i> Roxb.	Rubiaceae	Aachu	Tree
382	<i>Moringa oleifera</i> Lam.	Moringaceae	Sajana	Small tree
383	<i>Mucuna pruriens</i> (Linn.) DC.	Fabaceae	Baidanka	Twiner
384	<i>Murdannia nudiflora</i> (L) Brenan	Commelinaceae	Kanduli	Herb
385	<i>Murdannia vaginata</i> (L.) Brueck.	Commelinaceae	NK	Herb
386	<i>Murraya koenigii</i> (Linn.) Spreng.	Rutaceae	Bhrusunga	Tree
387	<i>Murraya paniulata</i> (Linn.) Jacq.	Rutaceae	Kamini	Shrub

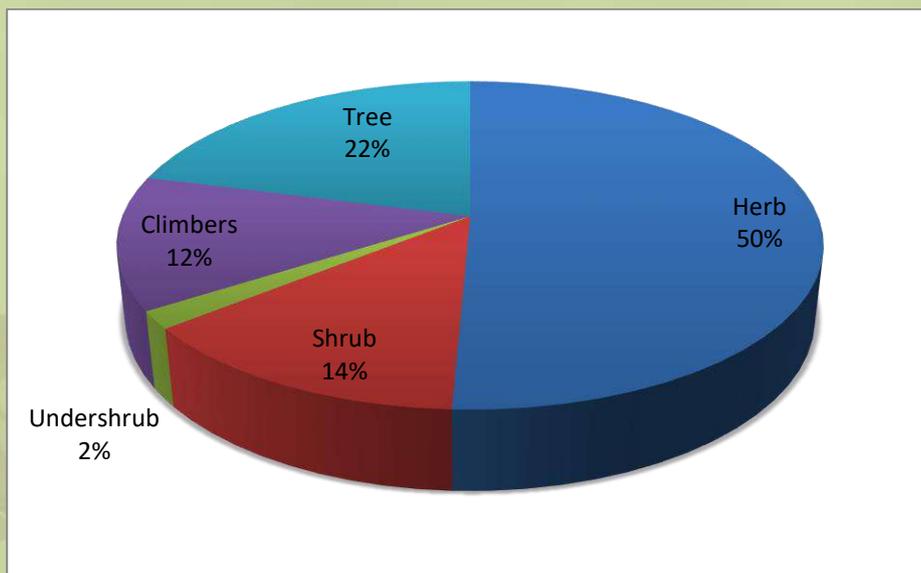
388	<i>Musa paradisiaca</i> Linn	Musaceae	Kadali	Rhizomatic herb
389	<i>Mussenda roxburghii</i> Roxb.	Rubiaceae	Mussenda	Shrub
390	<i>Nelumbo nucifera</i> Gaertn.	Nymphaeaceae	Padmaphula	Herb
391	<i>Nerium oleander</i> Linn.	Apocynaceae	Karabira	Shrub
392	<i>Nyctanthes arbor-tristis</i> Linn.	Oleaceae	Gangasiuli	Tree
393	<i>Nymphaea nouchali</i> Burm.f.	Nymphaeaceae	Nilakain	Herb
394	<i>Nymphaea pubescens</i> Willd.	Nymphaeaceae	Nali Kain	Herb
395	<i>Ocimum basilicum</i> Linn.	Lamiaceae	Durlabha	Herb
396	<i>Ocimum cannum</i> Sims	Lamiaceae	Gangatulasi	Herb
397	<i>Ocimum gratissimum</i> Linn.	Lamiaceae	Bantulasi	Herb
398	<i>Ocimum sanctum</i> Linn.	Lamiaceae	Tulasi	Herb
399	<i>Oplismenus burmanni</i> (Retz.) P.Beauv.	Poaceae	Baunsaghasa	Herb
400	<i>Opuntia stricta</i> (Haw.) Haw.	Cactaceae	Nagapheni	Shrub
401	<i>Oroxylum indicum</i> (Linn.) Vent.	Bignoniaceae	Phanaphana	Tree
402	<i>Oryza rufipogon</i> Griff.	Poaceae	Balungadhana	Herb
403	<i>Oryza sativa</i> L.	Poaceae	Dhana, Chaula	Herb
404	<i>Oxalis corniculata</i> Linn.	Oxalidaceae	Ambiliti	Herb
405	<i>Oxalis dehradunensis</i> Raizada	Oxalidaceae	Ambiliti	Herb
406	<i>Paederia foetida</i> Linn.	Rubiaceae	Prasaruni	Climber
407	<i>Pandanus amaryllifolius</i> Roxb	Pandanaceae	Annapurna	Shrub
408	<i>Pandanus fascicularis</i> L.	Pandanaceae	Kia	Shrub
409	<i>Panicum notatum</i> Retz.	Poaceae	Dalaghasa	Herb
410	<i>Panicum ramosum</i> Linn.	Poaceae	NA	Herb
411	<i>Parthenium hysterophorus</i> Linn.	Asteraceae	Gajarghasa	Herb
412	<i>Paspalum distichum</i> L.	Poaceae	Kodua	Herb
413	<i>Paspalum scrobiculatum</i> L.	Poaceae	NA	Herb
414	<i>Passiflora foetida</i> Linn.	Passifloraceae	Radhatamala	Climber
415	<i>Passiflora suberosa</i> Linn.	Passifloraceae	Krushna tamala	Climber
416	<i>Pedaliium murex</i> Linn.	Pedaliaceae	Badagokhara	Herb
417	<i>Peltophorum pterocarpum</i> (DC.) Baker e K.Heyne	Caesalpiniaceae	Radhachuda	Tree
418	<i>Pennisetum glaucum</i> (L) R. Br.	Poaceae	NK	Herb
419	<i>Pennisetum pedicellatum</i> Trin.	Poaceae	Nahanga	Herb
420	<i>Pennisetum purpureum</i> Schumach	Poaceae	NK	Herb
421	<i>Pentapetes phoenicea</i> Linn.	Sterculiaceae	Katlata	Herb
422	<i>Peperomia pellucida</i> (Linn.) Kunth.	Piperaceae	Ghusuripana	Herb
423	<i>Pergularia daemia</i> (Forssk.)Chiov.	Asclepiadaceae	Uturuli	Climber
424	<i>Peristrophe paniculata</i> (Forssk.)	Acanthaceae	Atrilal	Herb

	<i>Brummitt</i>			
425	<i>Perotis indica (L.) Kuntze</i>	Poaceae	NK	Herb
426	<i>Perotis indica (Linn.) Kuntze</i>	Poaceae	NA	Herb
427	<i>Phaseolus lunatus L.</i>	Fabaceae	Bana barbati	Climber
428	<i>Phoenix acaulis Roxb.</i>	Arecaceae	Bhuin Khajuri	Tree
429	<i>Phoenix dactylifera L.</i>	Arecaceae	Khajuri	Tree
430	<i>Phoenix sylvestris (L.) Roxb.</i>	Arecaceae	Khajuri	Tree
431	<i>Phyla nodiflora (Linn.) Greene.</i>	Verbenaceae	Gosingi	Herb
432	<i>Phyllanthus fraternus Webster</i>	Euphorbiaceae	Bhuin aonla	Herb
433	<i>Phyllanthus acidus (Linn.) Skeels</i>	Euphorbiaceae	Narakoli	Tree
434	<i>Phyllanthus emblica Linn.</i>	Euphorbiaceae	Anola	Tree
435	<i>Physalis angustata</i>	Solanaceae	Tipai	Herb
436	<i>Physalis minima Linn.</i>	Solanaceae	Tipai	Herb
437	<i>Piper betle Linn.</i>	Piperaceae	Pana	Climber
438	<i>Pisum sativum L.</i>	Fabaceae	Matar	Herb
439	<i>Pithocellobium dulce (Roxb.) Benth.</i>	Mimosaceae	Bilatikayan	Tree
440	<i>Plumbago zeylanica Linn.</i>	Plumbaginaceae	Dhala chitaparu	Shrub
441	<i>Plumeria rubra Linn.</i>	Apocynaceae	Kathachampa	Small tree
442	<i>Polyalthia longifolia (Sorn.) Thw.</i>	Annonaceae	Debadaru	Tree
443	<i>Polyanthes tuberosa L.</i>	Asparagaceae	Rajanaigandha	Herb
444	<i>Polygonum plebium R.Br.</i>	Polygonaceae	Muthisaga	Herb
445	<i>Pongamia pinnata (Linn.) Pierre.</i>	Fabaceae	Karanja	Tree
446	<i>Portulaca oleracea Linn.f</i>	Portulacaceae	Badabalbalua	Herb
447	<i>Portulaca quardifida Linn.</i>	Portulacaceae	Balbalua saga	Herb
448	<i>Premna latifolia Roxb.</i>	Lamiaceae	NA	Tree
449	<i>Prosopis cineraria (Linn.) Druce</i>	Mimosaceae	Sami	Tree
450	<i>Psidium guajava Linn.</i>	Myrtaceae	Pijuli	Tree
451	<i>Pterocarpus santalinus Linn.f.</i>	Fabaceae	Raktachandan	Tree
452	<i>Pterospermum acerifolium (Linn.) Willd.</i>	Sterculiaceae	Muchukunda	Tree
453	<i>Pterospermum xylocarpum (Gaertn) Sant &amp; Wagh</i>	Sterculiaceae	Giringa	Tree
454	<i>Punica granatum Linn.</i>	Punicaceae	Dalimba	Tree
455	<i>Putanjiva roxburghii</i>	Euphorbiaceae	Putajiva	Tree
456	<i>Pycnus polystachyos (Rottb.) P.Beauv</i>	Cyperaceae	Muthaghasa	Herb
457	<i>Pyrostegia venusta (Ker.-Gawler) Miers.</i>	Bignoniaceae	Amonaphula	Climber
458	<i>Quisqualis indica Linn.</i>	Combretaceae	Madhumalati	Climber
459	<i>Raphanus sativus Linn.</i>	Brassicaceae	Mula	Herb
460	<i>Rauvolfia serpentina (Linn.) Benth</i>	Apocynaceae	Patalagaruda	Undershrub

461	<i>Rauwolfia tetraphylla</i> Linn.	Apocynaceae	Patalagaruda	Shrub
462	<i>Ravenala madgascariensis</i> Sonn.	Strelitziaceae	Traveller tree	Rhizomatic herb
463	<i>Rhoeo discolor</i> Hance.	Commelinaceae	NK	Herb
464	<i>Richardia scabra</i> Linn.	Rubiaceae	NA	Herb
465	<i>Ricinus communis</i> Linn.	Euphorbiaceae	Jada , Gaba	Shrub
466	<i>Rosa clinophylla</i> Thory	Rosaceae	Jangli golap	Shrub
467	<i>Roystonea regia</i> (Kunth.) O.F.Cook.	Arecaceae	Royal Palm	Tree
468	<i>Ruellia prostata</i> Poir.	Acanthaceae	NA	Herb
469	<i>Ruellia tuberosa</i> Linn.	Acanthaceae	NA	Herb
470	<i>Rumex vesicarius</i> Linn.	Polygonaceae	Khatapalanga	Herb
471	<i>Rungia pectinata</i> (Linn.)Nees	Acanthaceae	Sankhasaga	Herb
472	<i>Saccharum officinarum</i> Linn.	Poaceae	Akhu	Herb
473	<i>Saccharum spontaneum</i> L.	Poaceae	Kasatandi	Herb
474	<i>Samanea saman</i> (Jacq.) Merr.	Mimosaceae	Badachakunda	Tree
475	<i>Sansevieria roxburghiana</i> Schult. & Schult.f.	Asparagaceae	Muruga	Herb
476	<i>Sansevieria trifasciata</i> Prain.	Asparagaceae	Muruga	Shrub
477	<i>Santalum album</i> Linn.	Santalaceae	Chandan	Tree
478	<i>Saraca asoca</i> (Roxb.) de Wilde.	Caesalpiniaceae	Asoka	Tree
479	<i>Scadoxus multiflorus</i> (Martyn)Raf.	Amaryllidaceae	Globe lily	Herb
480	<i>Scoparia dulcis</i> Linn.	Scrophulariaceae	Banaganjei	Herb
481	<i>Semecarpus anacardium</i> Linn.f.	Anacardiaceae	Bhalia	Tree
482	<i>Senegalia pennata</i> (L.) Maslin.	Mimosaceae	Gila	Small tree
483	<i>Sesamum orientle</i> Linn.	Pedaliaceae	Rasi	Herb
484	<i>Sesbania grandiflora</i> (Linn.) Poir.	Fabaceae	Agasti	Tree
485	<i>Shorea robusta</i> Gaertn	Dipetrocarpaceae	Sal	Tree
486	<i>Sida acuta</i> Burm.f.	Malvaceae	Bajramuli	Herb
487	<i>Sida cordata</i> (Burm.f) Borssum.	Malvaceae	Bajramuli	Herb
488	<i>Sida cordifolia</i> Linn.	Malvaceae	Bisiripi	Herb
489	<i>Sida rhombifolia</i> Linn.	Malvaceae	Sahadeva	Herb
490	<i>Simarouba glauca</i> DC.	Simaroubaceae	Mahatila	Tree
491	<i>Solanum nigrum</i> Linn.	Solanaceae	Nununia	Herb
492	<i>Solanum torvum</i> Sw.	Solanaceae	Dengabheji	Shrub
493	<i>Solanum virginianum</i> Linn.	Solanaceae	Akaranti	Herb
494	<i>Solena amplexicaulis</i> Lam.	Cucurbitaceae	Ban kunduri	Climber
495	<i>Spathodea campanulata</i> P. Beauv.	Bignoniaceae	Turi	Tree
496	<i>Spermocoe articularis</i> Linn.f	Rubiaceae	Sanagharapodia	Herb
497	<i>Spermocoe mauritiana</i> Oesa Gideon.	Rubiaceae	Sanagharapodia	Herb

498	<i>Sphaeranthus indica</i> (Linn.)	Asteraceae	Bhuinkadamba	Herb
499	<i>Spilanthes achmella auct.non</i> (Linn.) Murray	Asteraceae	Badaakarkara	Herb
500	<i>Spilanthes paniculata</i> (WalLinn.)ex DC	Asteraceae	Akarakara	Herb
501	<i>Spondias pinnata</i> (Linn.f.) Kurz.	Anacardiaceae	Ambda	Tree
502	<i>Stachytarpheta jamaicensis</i> (L.) Vahl.	Verbenaceae	Karaputia	Herb
503	<i>Swietenia mahagoni</i> Jacq	Meliaceae	Mehegani	Tree
504	<i>Synedrella nodiflora</i> (Linn.)(Gaertn.)	Asteraceae	NA	Herb
505	<i>Syzygium cumini</i> (Linn.) Skeels	Myrtaceae	Jamu	Tree
506	<i>Talinum portulacifolium</i> (Forssk.) Asch.	Talinaceae	Takpui, Flame flower	Herb
507	<i>Tamarindus indica</i> Linn.	Caesalpiniaceae	Tentuli	Tree
508	<i>Tecoma stans</i> (Linn.)Kunth	Bignoniaceae	Tecoma	Tree
509	<i>Tectona grandis</i> Linn.f.	Verbenaceae	Saguan	Tree
510	<i>Tephrosia purpurea</i> (Linn.) Pers.	Fabaceae	Banakolathia	Herb
511	<i>Terminalia alata</i> Heyne ex.Roth.	Combretaceae	Asana	Tree
512	<i>Terminalia arjuna</i> (Roxb.ex.Dc)Wt. & Arn	Combretaceae	Arjuna	Tree
513	<i>Terminalia bellirica</i> (Gaertn) Roxb.	Combretaceae	Bahada	Tree
514	<i>Terminalia cattapa</i> Linn.	Combretaceae	Pesta badam	Tree
515	<i>Terminalia chebula</i> Retz.	Combretaceae	Harida	Tree
516	<i>Thespesia populnea</i> (Linn.) SoLinn.excorr	Malvaceae	Habeli	Tree
517	<i>Thunbergia fragrans</i> Roxb.	Acanthaceae	Chakrakedar	Slender twiner
518	<i>Thunbergia laurifolia</i> Lindl.	Acanthaceae	Chakrakedar	Slender twiner
519	<i>Tinospora cordifolia</i> (Willd.) Hook.f & Thoms.	Menispermaceae	Guluchilata	Climber
520	<i>Tradescantia spathaceae</i> Sw.	Commelinaceae	Rhoeo	Herb
521	<i>Tragia involucrata</i> Linn.	Euphorbiaceae	Bichhuati	Herb
522	<i>Trema orientalis</i> (Linn.) Bl.	Ulmaceae	Kharkas	Small tree
523	<i>Trianthema portulacastrum</i> Linn.	Aizoaceae	Dhalapurunisaga	Herb
524	<i>Tribulus terrestris</i> Linn.	Zygophyllaceae	Gokhara	Herb
525	<i>Trichosanthes cucumerina</i> Linn.	Cucurbitaceae	Bana Potala	Climber
526	<i>Tridax procumbens</i> Linn.	Asteraceae	Bisalyakarani	Herb
527	<i>Trigonella foenum-graecum</i> Linn.	Fabaceae	Banamethi	Herb
528	<i>Triticum aestivum</i> L	Poaceae	Gaham	Herb
529	<i>Triumfetta pentrandra</i> A.Rich.	Tiliaceae	Jatajatia	Herb
530	<i>Turnera subulata</i> Linn.	Turneraceae	NA	Herb
531	<i>Turnera ulmifolia</i> Linn.	Turneraceae	Basanti	Herb
532	<i>Typhonium trilobatum</i> (L.) Schott	Araceae	Anasaru	Herb

533	<i>Urena lobata</i> Linn.	Malvaceae	Bana kapasia	Herb
534	<i>Vanda roxburghii</i> R.Br.	Orchidaceae	Rasna	Herb
535	<i>Vanda tessellata</i> (Roxb.) Hook. ex G.Don	Orchidaceae	Rasna	Herb
536	<i>Vernonia cineria</i> (Linn.) Less	Asteraceae	Badipokasungha	Herb
537	<i>Vigna umbellata</i> (Thunb) Ohwi & Ohwi	Fabaceae	Bana muga	Climber
538	<i>Vitex negundo</i> Linn.	Verbenaceae	Begunia	Shrub
539	<i>Waltheria indica</i> Linn	Sterculiaceae	Bila nalita	Herb
540	<i>Wedelia chinensis</i> (Osbeck.) Merr	Asteraceae	Bhrungaraja	Herb
541	<i>Withania somnifera</i> (Linn.) Duna Linn.	Solanaceae	Aswagandha	Herb
542	<i>Woodfordia fruticosa</i> (Linn.) Kurz	Lytharaceae	Dhatuki	Shrub
543	<i>Xanthium indicum</i> Koenig	Asteraceae	Jhagada	Herb
544	<i>Xenostagia tridentata</i> (L.) D.F. Austin & Staples	Convolvulaceae	Arrow leaf morning glory	Climber
545	<i>Zea mays</i> L.	Poaceae	Makka	Herb
546	<i>Zephyranthes citrina</i> Baker	Amaryllidaceae	Rain lily	Herb
547	<i>Zephyranthes candida</i> (Lindl) Herb.	Amaryllidaceae	Rain lily	Herb
548	<i>Zephyranthes grandiflora</i> Lindl Linn.	Amaryllidaceae	Rain lily	Herb
549	<i>Zephyranthes minuta</i> (Kunth) D. Dietr.	Amaryllidaceae	Rain lily	Herb
550	<i>Zingiber zerumbet</i> (L.) Roscoe ex Sm.	Zingiberaceae	Gada	Herb
551	<i>Zingiber officinale</i> Roscoe	Zingiberaceae	Ada	Herb
552	<i>Zizyphus mauritiana</i> Lam.	Rhamnaceae	Barakoli	Tree
553	<i>Zizyphus oenoplia</i> (Linn.) Mill.	Rhamnaceae	Kantei Koli	Thorny Shrub



**Plate 3.** Analysis of habitwise distribution of plant species in the campus



*Benkaramolabarica*



*Acacia auriculiformis*



*Aegle marmelos*



*Ailanthus excelsa*



*Alangium salviifolium*



*Albizia lebbek*



*Alstonia scholaris*



*Anacardium occidentale*

**Plate 4.** List of tree species studied in the campus, R.I.E., Bhubaneswar



*Annona reticulata*



*Averrhoa carambola*



*Azadirachta indica*



*Borassus flabellifer*



*Bridelia retusa*



*Cleistanthus collinus*



*Couroupitaguianensis*



*Cocos nucifera*

**Plate 5.** List of tree species studied in the campus, R.I.E., Bhubaneswar



*Dalbergia sissoo*



*Delonix regia*



*Dillenia indica*



*Ficus benghalensis*



*Grevillea pteridifolia*



*Kigelia africana*

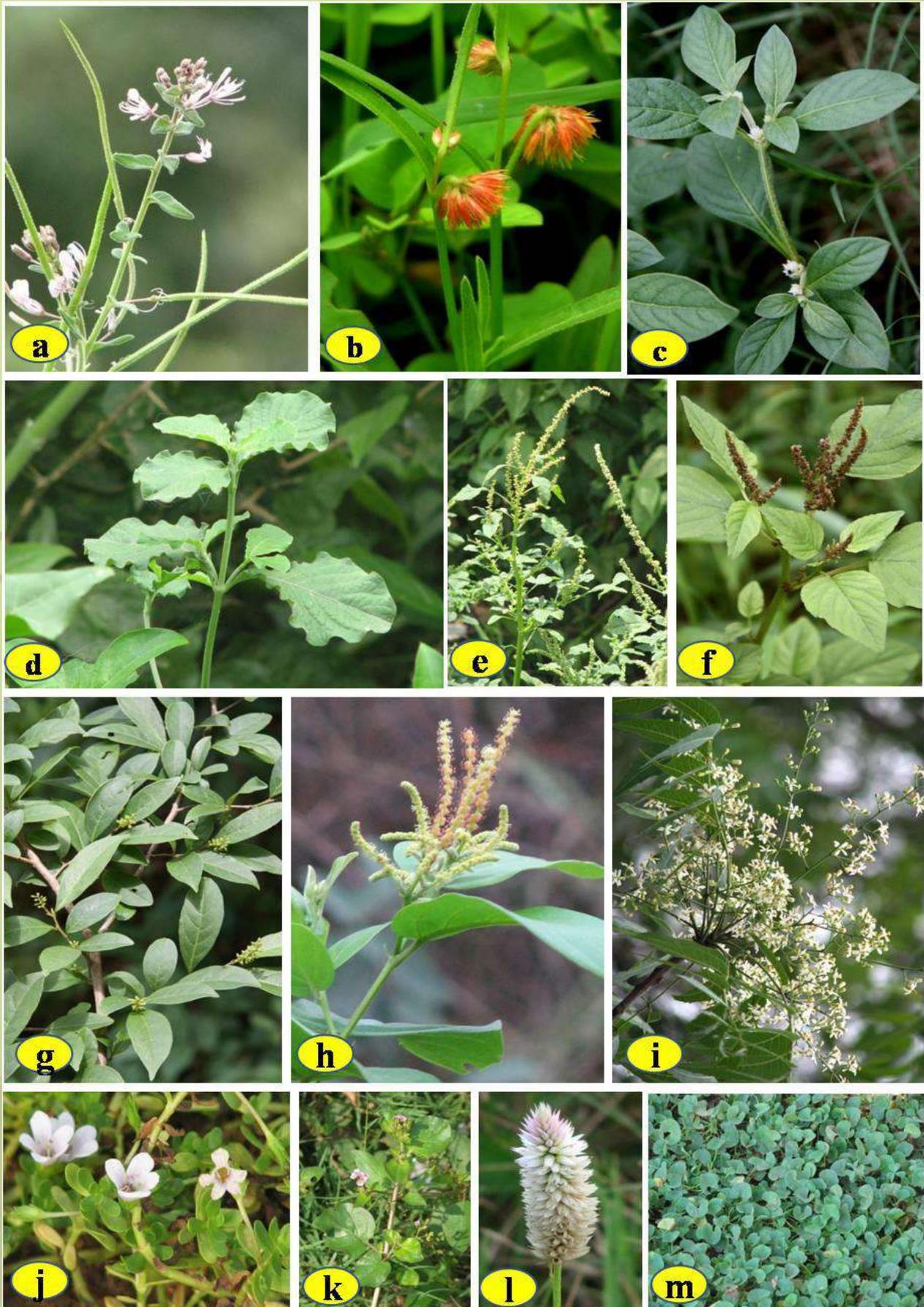


*Litsea glutinosa*



*Ziziphus jujuba*

**Plate 6.** List of tree species studied in the campus, R.I.E., Bhubaneswar



**Plate7.** List of plant species studied in the campus, R.I.E., Bhubaneswar- (a) *Cleome monophylla* (b) *Allmania nodiflora* (c) *Alternanthera philoxeroides* (d) *Achyranthes aspera* (e) *Amaranthus spinosus* (f) *Amaranthus viridis* (g) *Antidesma acidum* (h) *Antidesma ghaessembilla* (i) *Azadirachta indica* (j) *Bacopa monnieri* (k) *Boerhaviadiffusa* (l) *Celosia argentea* and (m) *Centella asiatica*



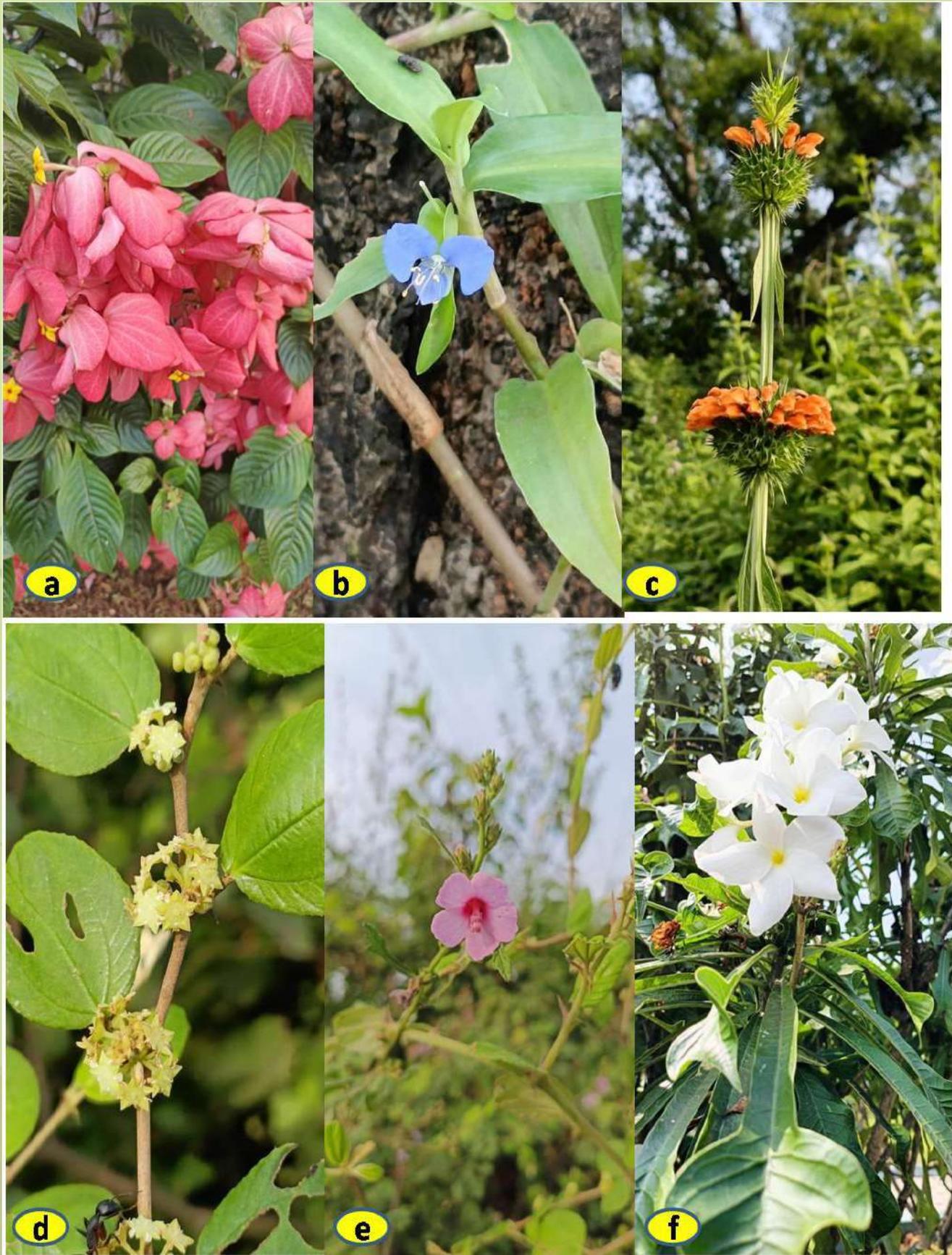
**Plate 8: List of plant species studied in the campus, R.I.E., Bhubaneswar** (a) *Chenopodium album* (b) *Cleome viscosa* (c) *Colocasia esculenta* (d) *Commelina benghalensis* (e) *Commelina erecta* (f) *Corchorus aestuans* (g) *Glinus oppositifolius* and (h) *Enydra fluctuans*



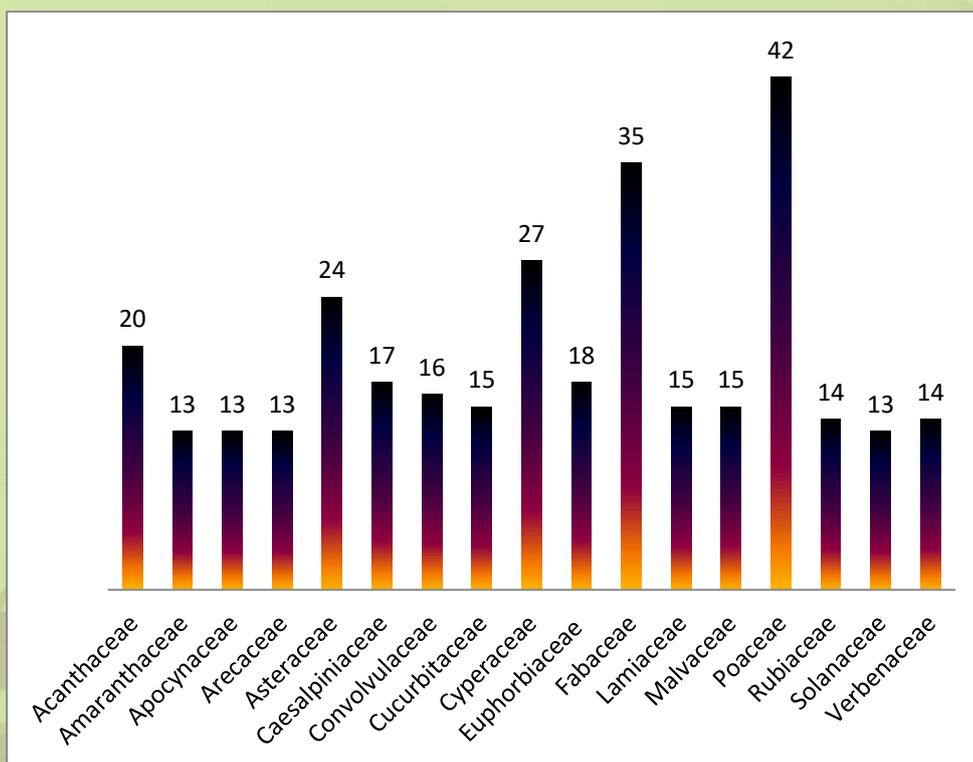
**Plate 9. Diversity of campus flora of R.I.E, Bhubaneswar** (a) *Trianthema portulacastrum* (b) *Suaeda maritima* (c) *Leucas cephalotes* (d) *Mollugo pentaphylla* (e) *Corchorus olitorius* (f) *Ipomoea aquatica* (g) *Cocculus hirsutus* (h) *Grangea maderaspartana* and (i) *Premna corymbosa*



**Plate 10. Diversity of campus flora of R.I.E, Bhubaneswar** a.*Bixa orellana*, b.*Psidium guajava*, c.*Lantana camara*, d.*Crossandra infundibuliformis*, e.*Eryngium foetidum*, f.*Cleome viscosa*, g.*Turnera subulata*, h.*Hibiscus mutabilis*.



**Plate. 11. Diversity of campus flora of R.I.E, Bhubaneswar** a.*Mussenda roxburghii*, b.*Commelina erecta* L. c.*Leucas nepetifolia*,d. *Zizyphus mauritiana* Lam.e.*Urena lobata*, f. *Plumeria* sp.



**Plate 12.**Ten dominant families with their number of plant species

#### Rare , Endangered and Threatened (RET) species.

Worldwide, as per IUCN, around 10% of world's vascular plant species (20000-25000nos.) are under varying degrees of threat. About 10% of India's flowering plant species (15000sp.),i.e 1500 taxa come under the category of threatened/endangered plants. The state of Odisha accounted for around 100 RET plant species including endemic species to the tune of 20 which need to be studied and conserved. Regional Institute of Education, Bhubaneswar , has taken all effort to conserve and development of these RET plant species primarily through establishment of ex-situ conservations in campus Botanical herbal garden for educational and research purposes. (Table-5)

**Table : 5.** List of RET category plants conserved in the campus

Sl.No.	Scientific Name	Family	Odia Name	Habit
1	<i>Cycas sphaerica</i> Roxb.	Cycadaceae	Araguna	Tree
2	<i>Crateva magna</i> (Lour.) DC	Capparaceae	Baruna	Tree
3	<i>Gloriosa superba</i> L.	Asparagaceae	Panchangulia	Climber
4	<i>Litsea glutinosa</i> (Lour.) Robins.	Lauraceae	Medha	Tree
5	<i>Mesua ferrea</i> Linn	Clusiaceae	Nageswar	Shrub
6	<i>Oroxylum indicum</i> (Linn.) Vent.	Bignoniaceae	Phanphana	Tree
7	<i>Pterocarpus santalinus</i> Linn.f.	Fabaceae	Raktachandan	Tree
8	<i>Rauvolfia sepentina</i> (Linn.) Benth	Apocynaceae	Patalagaruda	Undershrub
9	<i>Saraca asoca</i> (Roxb.) de Wilde.	Caesalpiniaceae	Asoka	Tree

## Trees of the campus

The presence of trees in biodiversity is essential for the sustainability of food and agricultural system. The environmental benefits of trees in urban landscapes are numerous and well established in urban forestry as well as campus diversity. The presence of trees improve air quality , cool local air, temperatures, filter and retain storm water, sequester carbon etc. The trees play an important ecological role within the urban environment, as well as support improved public health and provide aesthetic benefits to cities.

During survey work of green diversity of the RIE, Bhubaneswar campus, it was studied 124 trees present in campus and having potential for different purposes like food, medicine, shelter etc. (Table :6). Out of total 124 tree species, a total number of 59 tree species are planted for different purposes while remaining are naturally grown. Presence of these trees make campus gree, clean and give a soothing , cool, pollution free atmosphere as well as helpful for conservation of ecosystem and also gives education about biodiversity.

**Table : 6. List of trees planted in RIE, Bhubaneswar campus.**

Sl.No.	Scientific Name	Family	Odia Name	Habit
1	<i>Acacia auriculiformis</i> A.Cunn.ex.Benth	Mimosaceae	Jaranasaka	Small tree
2	<i>Acacia nilotica</i> (Linn.) Delile.	Mimosaceae	Babul	Tree
3	<i>Albizia lebbbeck</i> (Linn.) Benth.	Mimosaceae	Sirisha	Tree
4	<i>Alstonia scholaris</i> (Linn.) R.Br.	Apocynaceae	Chhatiana	Tree
5	<i>Anacardium occidentale</i> Linn.	Anacardiaceae	Kaju	Tree
6	<i>Anthocephalous chinensis</i> (Lam.) A.Rich	Rubiaceae	Kadamba	Tree
7	<i>Areca catechu</i> L.	Arecaceae	Gua	Tree
8	<i>Averrhoa carambola</i> Linn.	Averrhoaceae	Karamanga	Tree
9	<i>Bauhinia purpurea</i> Linn.	Caesalpiniaceae	Barda sag	Tree
10	<i>Bauhinia variegata</i> Linn.	Caesalpiniaceae	Kanchan	Tree
11	<i>Bismarckia nobilis</i> Hildebr. & H.Wendl.	Arecaceae	Bismark palm	Tree
12	<i>Borassus flabellifer</i> L.	Arecaceae	Tala	Tree
13	<i>Caryota urens</i> L.	Arecaceae	Salapa	Tree
14	<i>Cascabela thevetia</i> (Linn.) Lippold	Apocynaceae	Kaniara	Tree
15	<i>Cassia fistula</i> Linn.	Caesalpiniaceae	Sunari	Small tree
16	<i>Cassia siamea</i> Lam.	Caesalpiniaceae	Chakunda	Tree
17	<i>Casuarina equisetifolia</i> Linn.	Casuarinaceae	Jhaun	Tree
18	<i>Cinnamomum tamala</i> Nees.	Lauraceae	Tejapatra	Tree
19	<i>Cinnamomum verum</i> Presl.	Lauraceae	Dalchini	Tree
20	<i>Cocos nucifera</i> L.	Arecaceae	Nadiagachha	Tree

21	<i>Couroupita guianensis</i> AubLinn.	Lecythidiaceae	Nagalinga	Tree
22	<i>Crateva magna</i> (Lour.) DC	Capparaceae	Baruna	Tree
23	<i>Dalbergia sisoo</i> Roxb.	Fabaceae	Sishu	Tree
24	<i>Dillenia indica</i> Linn.	Dilleniaceae	Oau	Tree
25	<i>Dypsis lutescens</i> (H.Wendl.) Beentze & J.Dransf.	Arecaceae	Butterfly palm	Tree
26	<i>Eucalyptus citridora</i> Hook.	Myrtaceae	Nilagiri	Tree
27	<i>Gliricidia sepium</i> (Jacq.) Kunth.	Fabaceae	NA	Tree
28	<i>Grevillia robusta</i> A.cunn. Ex R.Br.	Proteaceae	Swetachandrika	Tree
29	<i>Kigelia africana</i> (Lam.)Benth.	Bignoniaceae	NA	Tree
30	<i>Lagerstroemia parviflora</i> Roxb.	Lytharaceae	Sidha	Tree
31	<i>Lagerstroemia reginae</i> Roxb.	Lytharaceae	Patali	Tree
32	<i>Leucaena leucocephala</i> (Lam.) de Wit.	Mimosaceae	Nagarjuna	Tree
33	<i>Licula grandis</i> H.Wendl.	Arecaceae	Fan Palm	Tree
34	<i>Michelia champaca</i> Linn.	Magnoliaceae	Champa	Tree
35	<i>Millingtonia hortensis</i> Linn f.	Bignoniaceae	Akashmalli	Tree
36	<i>Mimusops elengi</i> Linn.	Sapotaceae	Baula	Tree
37	<i>Morinda tinctoria</i> Roxb.	Rubiaceae	Aachu	Tree
38	<i>Oroxylum indicum</i> (Linn.) Vent.	Bignoniaceae	Phanaphana	Tree

## MEDICINAL FLORA

Medicinal plants have been assuming a fundamental part in the improvement of human culture. As a wellspring of medication, Therapeutic plants have forever been at front for all intents and purposes all societies of civic establishments. Restorative plants are viewed as rich assets of customary medications and from these plants a significant number of the cutting-edge meds are delivered. For millennia therapeutic plants have been utilized to treat wellbeing problems, to add flavor and preserve food, and prevent pestilences.

A complete number of 111 plant species were accounted for having a place with 98 genera of 53 families from the RIE Grounds, Bhubaneswar (Table.7). Of these monocots were addressed by 10 species having a place with seven genera and eight families, while dicots contributed by 101 species having a place with 104 genera and 45 families. The Floristic creation shows that the vegetation of Restorative plants incorporates upwards of 51 spices, 8 bushes, 43 Trees, and 9 climbers.

**Table 7: List of medicinal plants studied in RIE campus, Bhubaneswar.**

Sl.No	Plant name	Common name	Plant parts used	Disease for which used
1.	<i>Abutilon indicum</i> (L.) Sweet	Pedi-Pedika	Root,Leaves,Seeds	Piles,Dysuria,Toothache
2.	<i>Acalypha indica</i> L.	Khokhali	Wholeplant	Cough,Scabies, Bronchitis
3.	<i>Acacia nilotica</i> (L.)Willd.SSP.Indica (Benth)	Babul	Bark,Gum	Diarrhoea,Dysentery, Diabetics,Astringent
4.	<i>Achyranthes aspera</i> L.	Apamaranga	Root	Cough,Asthma, Bronchitis
5.	<i>Aegle marmelos</i> (L.) Corr.	Bela	Fruit,leaves androot	Constipation, Indigestion, Fever, Cough,Piles,Filarisis
6.	<i>Aerva lanata</i> (L.) Juss.	Paunsia	Wholeplant	Boils,Cough,Diabetes, Lithiasis,Ulcers, Rheumatic,Swelling
7.	<i>Ageratum conyzoides</i> L.	Dengsingi	Wholeplant	Uterine haemorrhage, Rhinitis, Sinusitis,Inflammation
8.	<i>Alstonia scholaris</i> (L.) R.Br.	Chatiana	Bark, Leaves,Fruit	Diarrhoea,Asthma, Cardiactroubles
9.	<i>Anacardium occidentale</i> L.	Kajubadam	Leaves,Bark	Preventing hairloss,Snakebite,Skin disease,Dysentery
10.	<i>Andrographis paniculata</i> (Burm.f.)Wall.ex.Nees	Bhuinimba	Wholeplant	Dysentery,Fever,Tonsillitis, Hypertension, Snakebite
11.	<i>Annona reticulata</i> L.	Ramphal	Root, Bark,Stem,Fruit,Seed	Diarrhoea,Indigestion
12.	<i>Annona squamosa</i> L.	Saripha/Ata	Root, leaves,Bark,	Mental depression, Spinal disorder,Anaemia
13.	<i>Argemone Mexicana</i> L.	Odosamari	Root, seeds	Juandice,Leprosy, Conjunctivitis
14.	<i>Argyreia nervosa</i> (Burm.f.)Boj.	Mundanoi	Root,Leaves,Seed	Anorexia, Colie, Piles, Synovitis, Cerebraldisorder, Cardiac problem
15.	<i>Aristolochia indica</i> L.	Iswaramula	Root, Stem,Leaves	Ulcer,Inflammation, Colic,Cough, Leukoderma
16.	<i>Artocarpus heterophyllus</i> Lam.	Panasa	Root, Pulp,Fruit,Seed	Phyringitis,Fever,Boils, Wounds,Skindiseases
17.	<i>Asparagus racemosus</i> Willd.	Satabari	Entireplant	Rheumatism, Gastritis, Menorrhagea, Eye diseases
18.	<i>Azadirachta indica</i> A.Juss.	Nimba	Bark, Leaves, Flower, Fruit,Seed	Eczema,Scabies,Ringworm

19.	<i>Bauhinia variegata</i> L.	Kanchana	Bark, Root,Bud	Skindiseases,Cough, Leprosy,Diabetes
20.	<i>Boerhavia diffusa</i> L.	Puruni	Wholeplant	Lecorrhoea,Cardiac trouble,Jaundice,Constipation, General debility
21.	<i>Bombax ceiba</i> L.	Simuli	Root,prickles,seed,bark,young fruit, gum, leaves and flower	Menorrhagia, Urinary disorder, Fever,Abdominal disorder
22.	<i>Borassus flabellifer</i> L.	Tala	Roots, leaves, inflorescence sandfruit	Burningsensation,Colic, Constipation
23.	<i>Butea monosperma</i> (Lam.)Taub.	Palasha	Bark,leaves, Flowers seeds and gum	Anorexia,Dyspepsia,Dia rrhoea,Intestinalworms
24.	<i>Calotropis gigantea</i> R.Br.	Dhala arakha	Whole plant	Scabies,Acne,Pimples
25.	<i>Capparis zeylanica</i> L.	Kantikapali	Root, Bark,Leaves	Skin troubles
26.	<i>Cassia fistula</i> L.	Sunari	Fruit, leaves, bark and root	Tuberculous glands, Constipation, Diabetes, Burning sensation
27.	<i>Chenopodium album</i> L.	Bathua	Entire plant	Peptic ulcer, Helminthiasis, Eye disorders, Seminal weakness
28.	<i>Cissus quadrangula</i> L.	Hadavanga	Whole plant	Anorexia, Colic, Leprosy, Skin disease, Tumers, Eye disorders
29.	<i>Cleome viscosa</i> L.	Bana sorisa	Leaves and seeds	Fever, Diarrhoea, Worm infestation, Dyspepsia, Cardiace disorders
30.	<i>Clerodendrum viscosum</i> Vent.	Sweta bhaunarmala	Root and leaves	Tumour, leprosy, Skin disease, Cough, Bronchitis
31.	<i>Clitoria ternatea</i> L.	Aparajita	Roots, leaves and seeds	Ophthalmopathy tubercular glands, Helminthiasis, Elephantasis, Otagia
32.	<i>Coccinea grandis</i> (L.) Voigt.	Kunduri	Leaf	Vomiting, Uterine discharges, Leprosy, Jaundice, Cough
33.	<i>Cocos nucifera</i> L.	Nadia	Root, Fruit	Rheumatism, Back pain, Difficult pregnancy, Stomachache
34.	<i>Costus speciosus</i> (Koenig) Sm.	Kudha	Rhizome	Erache, Bile disorders, Urinary disorders
35.	<i>Curcuma longa</i> L.	Haladi	Rhizome	Hepatitis, Jaundice, Menstrual disorder, Duodenal ulcer
36.	<i>Cynodon dactylon</i> (L.) Pers.	duba	All parts	Conjunctivitis, Wounds, Leprosy, Skin disease

37.	<i>Cyperus rotundus L. var. rotundus Kern.</i>	Mutha	Tuber	Leprosy, Malaria fever, Diarrhoea, Wounds, Ulcers
38.	<i>Dalbergia sissoo Roxb.</i>	Sisso	Roots, leaves, bark and heartwood	Gonorrhoea, Menorrhagia, Colic, Piles, Burning Sensation
39.	<i>Delonix regia (Boj. Ex Hook) Raf.</i>	Krushnachuda	Stem wood, Bark, Leaves	Diabetes, Reduces blood sugar level, Anti inflammation
40.	<i>Dillenia indica L.</i>	Ou	Fruit	Antidiabetic, Laxative
41.	<i>Dioscorea pentaphylla L.</i>	Banaalu	Tubers	Syphillis, Dysentery, Piles, Aphrodisic, Worm infestation
42.	<i>Eclipta prostrata (L.) L.</i>	Keshadura	Root, Leaves	Promote hair growth, Leucorrhoea, Eruption, Graying of hair
43.	<i>Euphorbia hirta L.</i>	Chitakutei	Aerial parts	Conjunctivities, Cough, Asthma, Dysentery, Warts
44.	<i>Evolvulus alsinoides (L.) L.</i>	Bichhamalia	Whole plant	Fever, Loss of memory, Nervous debility, Syphillis, Weakness
45.	<i>Ficus benghalensis L.</i>	Bara	Bark, aerial root, leaves, fruits and latex	Rheumatism, Acidity, Stomach disorders, Lumbago, Diarrhoea, Diabetes, Vomitting, Urinary disorders
46.	<i>Ficus hispida L.f.</i>	Dimiri	Fruit	Jaundice, Leukoderma, Piles, Wounds, Haemorrhoea
47.	<i>Ficus religiosa L.</i>	Usta	Leaves, seeds, bark, fruits, tender shoots and latex	Constipation, Ulcers, Wounds, skin and lungs disease, Asthma
48.	<i>Gmelina arborea Roxb.</i>	Gambari	Root, Leaves, fruit, and bark	Stomachache, Galactogouge, Laxative, Antihelminthic
49.	<i>Heliotropium indicum L.</i>	Hatisundha	Leaves	Ring worm, Rheumatism, Ulcer Wound, Gonorrhoea
50.	<i>Hemidesmus indicus (L.) R.Br.</i>	AantaMul	Roots, leaves, stem and latex	Rheumatism, Urinary trouble, Skin disease, Diabetes Dysurea
51.	<i>Ipomoea aquatica Forssk.</i>	kalamasaga	Entire plant	Blood sugar lowering effect
52.	<i>Jatropha gossypifolia Linn.</i>	Nalibaigaba	Leaves, bark, Seeds	Boils, carbuncles, Emetic Purgative
53.	<i>Justicia adhatoda L.</i>	Basanga	Leaf, Bark	Cough, Asthma, Bronchitis, Malarial fever
54.	<i>Lawsonia inermis L.</i>	Manjuati	Leaves, Bark	Necrotic, Purgative,

				Astringent, Stimulant
55.	<i>Leucas aspera</i> (Willd.) Link	Gaisa	Leaves, Flower	Cattarah in children, Chronic skin infection, Dysmennoroea
56.	<i>Leucas cephalotes</i> (Roth.) Spreng.	Guma	Plant	Filariasis, Inflammation, Antioxidant, Liver ailment, Diabetes
57.	<i>Limonia acidissima</i> L.	Kaintha	Whole Plant	Indigestion, Filaria, Asthma, Piles, Liver sore
58.	<i>Ludwigia prostrate</i> Roxb.	Latkera	Plant	Dyspepsia, Dropsy, Cough, Cervical adenitis, Fever
59.	<i>Mallotus phillippensis</i> (Lam.) Muell.	Sinduri	Stem, Leaves, Seed	Cough, Renal disorder, Ring worm, Herpes, Scabies, Wound ulcer
60.	<i>Mangifera indica</i> L.	Amba	Leaves	Dysentery, Diabetes, Asthma
61.	<i>Marsilea minuta</i> L.	Sunsunia saga	Entire plant	Diarrhoea, Cough Bronchitis, Leprosy
62.	<i>Melia azedarach</i> L.	Mahanimba	All parts	Ascariasis, Vaginal infection, Trichomoniasis
63.	<i>Michelia champaca</i> L.	Champa	Root, Leaves, bark, Flower, Seeds, Fruit	Brain disorder, Syphillis, Gonorrhoea, Dysmenorrhoea, Helminthiasis
64.	<i>Mimosa pudica</i> L.	Lajakuli	Root, Stem, Leaves, Flowers, Fruit	Syphllis, Stomach worm, Urinary infection, Leprosy, Insomnia
65.	<i>Mirabilis jalapa</i> L.	Rangini	Root, Leaves	Diuretic, Purgative, wound healing
66.	<i>Momordica charantia</i> L.	Kalara	Leaves	Diabetes, Hypertension, Dysentery, Malignant ulcer, Leprosy
67.	<i>Moringa oleifera</i> Lam.	Sajana	Root and leaves	Rheumatism, Cardiac problem, Scurvey, Circulatory, Stimulant
68.	<i>Nelumbo nucifera</i> Gaertn.	Padma	Rhizome	Neuoasthenia, Spermatorrhoea, Metrorrhoea, Liver diseases
69.	<i>Neolamarckia cadamba</i> (Roxb.) Bosser.	Kadamba	Leaves, bark	Wounds and bruises, Rheumatic Headache, Liver diseases
70.	<i>Nerium oleander</i> L.	Karabira	Leaves, Root	Ophthalmia, Ring worm, Scabies, Copius Lacrimation, Leprosy
71.	<i>Nyctanthes arbor-tristis</i> L.	Gangasiuli	Leaves, flowers and seeds	Bile fever, Malarial fever, Cold, Cough, Rheumatism
72.	<i>Nymphaea nouchali</i>	Nali Kain	Rhizome, Tuber	Diarrhoea, Dermatopathy,

	<i>Burm.f.</i>			Cardiac disorders
73.	<i>Ocimum basilicum L.</i>	Kapur Kranti	Whole plant	Cold, Cough, Fever, Ring worm, Cancer, Stress, Asthma, Diabetes
74.	<i>Ocimum gratissimum L.</i>	Rama tulasi	Whole plant	Headache, Sun stroke, Influenza
75.	<i>Ocimum sanctum L.</i>	Tulasi	Whole plant	Asthma, Vomiting, Hiccup, Lumbago, Verminosis
76.	<i>Paederia foetida L.</i>	Pasaruni	Fresh leaves	Rheumatism, Bacillary dysentery, Dysuria, Gastritis, Dyspepsia
77.	<i>Phoenix sylvestris (L.) Roxb.</i>	Khajuri	Root, Fruit, Heart wood	Burning sensation, Fever, Cardiac debility, Gastropathy
78.	<i>Phyllanthus acidus (L.) Skeels.</i>	Narakoli	Root, Leaves, Seed	Poultice, Lumbago, Rheumatism, Purgative
79.	<i>Phyllanthus emblica L.</i>	Amla	Root bark, bark, leaves and fruits	Eye diseases, Indigestion, Piles, Diabetes, Polyuria, Dental carries
80.	<i>Phyllanthus fraternus Webster</i>	Bhuinaenla	Root, Stem, Leaves	Viral hepatitis, Oedema, Dysentery
81.	<i>Phyllanthus reticulatus Poir.</i>	Jajanga	Whole plant	Stomach disorder in cows, Burn, Skin infection, Obesity, Gastropathy
82.	<i>Phyllanthus niruri L.</i>	Bhuiamla	Root, Stem, Leaves	Jaundice, Dysentery, Stomachic
83.	<i>Phyllanthus virgatus Forst. f.</i>	Bhuiaenla	Fruit	Diarrhoea, Dysentery, Gastropathy, Scabies, Ulcers
84.	<i>Piper longum L.</i>	Pipali	Rot, Fruit	Gynaec problems, Diarrhoea, Indigestion, Jaundice, Asthma, Fever, Cough, Sinusitis
85.	<i>Plumeria rubra L.</i>	Katha champa	Whole plant	Cough, Constipation, Acute enteritis, Dysentery, Haemophilia
86.	<i>Pongamia pinnata (L.) Pierre.</i>	Karanjo	Root, Bark, Leaves, Seed	Antihelminthic, Earache, Whooping cough, Hydrocele, piles
87.	<i>Psidium guajava L.</i>	Pijuli	Root, Bark, Leaves, Fruit	Diarrhoea, Dysentery, Cough, Stomachache, Bleeding gum, Constipation
88.	<i>Quisqualis indica L.</i>	Madhumalati	Root, Leaves, Seed	Diarrhoea, Liver, Antihelminthic
89.	<i>Rauwolfia serpentine (L.) Benth.ex. Kurz.</i>	Patalagaruda	Root	Snakebite, High B.P., Scorpion sting

90.	<i>Ricinus communis L.</i>	Jadda	Seeds and leaves	Skin diseases, Inflammation, Constipation
91.	<i>Saccharum officinarum L.</i>	Akau	Stemm, Root	Sore eyes and throat
92.	<i>Santalum album L.</i>	Chandana	Heart wood	Skin disease, Jaundice, Cough, Gastric irritability, Menorrhoea, Leucorrhoea, General debility
93.	<i>Saraca asoca (Roxb.) de wilde</i>	Oshoka	Bark, Flower	menorrhagia, leucorrhoea, bleeding hemorrhoids, dysfunctional uterine bleeding
94.	<i>Semecarpus anacardium L.f.</i>	Nut tree	Fruit, Seed	Leprosy, Nervous debility, Rheumatism, Epilepsy, Psoriasis, Diabetes, Tumours
95.	<i>Sesamum orientale L.</i>	Rasi	Leaves, Seed	Ophthalmic and Cutaneous complaints
96.	<i>Sida acuta Burm.f.</i>	Bajarmuli	Root and leaves	Diabetes, Toothache, Ulcer, Piles
97.	<i>Sida cordifolia L.</i>	Bisiripi	Root, Leaves, Bark, seeds	Urinary troubles, Sciatica, Dysentery, Facial paralysis
98.	<i>Streblus asper Lour.</i>	Sahada	Root, bark, latex, leaves	Ulcers, Sinusitis, Elephantiasis, Sore heals, Boils, Haemorrhoids, Syphllis
99.	<i>Strychnosnux-vomica L.</i>	Kochila	Bark, leaves and seeds	Cholera, Asthma, Anaemia, Malarial Fever, Paralysis, Stomachache
100.	<i>Syzygium cumini (L.) Skeels.</i>	Jamukoli	Leaves, Bark, Fruit, Seed	Diabetes, Diarrhoea, Leucorrhoea, Oedema
101.	<i>Tamarindus indica L.</i>	Tentuli	Fruit	Hyper-acidity, Leucorrhoea, Oedema
102.	<i>Tectona grandis L.f.</i>	Saguan	Whole plant	Arthritis, Leukoderma, Leprosy, Dysentery, Piles, Eczema, Ring worm
103.	<i>Tephrosia purpurea (L.) Pers.</i>	Soroponkha	Root, Leaves	Dysmenorrhoea, Chronic fever, Anaemia, Gingivitis, Pimples, Elephantiasis, Boils
104.	<i>Terminalia arjuna (Roxb. ex DC.) Wight</i>	Arjuna	Bark	Heat disease, Diarrhoea, Cough, Diabetes, Leucorrhoea
105.	<i>Terminalia bellirica (Gaertn.) Roxb.</i>	Bahada	Seed	Anaemia, Leukodermia, Constipation, Dyspepsia, Greyness of hair

106.	<i>Tinospora cordifolia</i> (Willd.) Hook.f.	Guluchilata	Whole plant	Flatulence, Stomachalgia, Chronic fever, Jaundice, Seminal weakness, Diabetes
107.	<i>Tridax procumbens</i> L.	Bisalyakarani	Aerial parts	Gonorrhoea, Gleet, Rheumatoid arthritis, Skin disease
108.	<i>Vetiveria zizanioides</i> (L.) Nash.	Bena	Root	Burning sensation, Ulcers, Vomiting, Cough, Asthma, Gout, Lumbago
109.	<i>Vitex negundo</i> L.	Begunia	Root, Leaves	Rheumatism, Dyspepsia, Catarrh, Headache, Piles
110.	<i>Zingiber officinale</i> Rosc.	Adda	Rhizome	Cough, Cold, Flatulence, Colic Hiccup, Anorxia, Piles, Dysuria, Vomitting.
111.	<i>Ziziphus mauritiana</i> Lam.	barakoli	Root, Bark, Leaves, Fruits	Swelling of bone, Chest trouble, Vomitting, Diarrhoea

Ayurveda (traditional medicine of India as per WHO), the holistic science of medicine, as practised and utilized by Indians at large since centuries is now being globally accepted which has increased the demand for medicinal plants. Majority of population in the developing countries like India depends on the traditional systems of medicine like Ayurveda for their primary healthcare needs. Increasing demand of medicinal plants leads to irrational cutting deforestation leading to depletion of the wild resources. Moreover, the natural and manmade calamities lead to further depletion of medicinal plant diversity. Conservation aims at supporting sustainable development by wing the biological resources in ways that don't deplete the world's variety of species or destroy their ecosystems. It involves measures such as collection, propagation, evaluation, disease identification and elimination, storage and distribution. Conservation of medicinal plants and their genetic resources can be undertaken by *in-situ* and *ex-situ* conservation. *Ex-situ* conservation involves conservation of medium plants outside their natural habitat used to safeguard them from destruction, replacement or deterioration. *Ex-situ* conservation includes procedure like seed storage, DNA storage, field gene banks and botanical gardens etc.

## HERBAL BOTANICAL GARDERN

Herbal Botanic gardens – should set up seed banks for the medicinal plants native and cultivated in the country. Botanic gardens should set up alternative means of ex situ conservation for those species which cannot be stored in seed banks. Botanical gardens and herbariums are important places of systematics study and research on flora of the region, great academic and economic importance. Botanical garden are the institutions that maintain the living plant collection of different variety of plants including the ornamental and cultivated ones, medicinal, the wild varieties, cultivated crops of economic importance. They are of value not only to the botanist but also to the horticulturist and foresters. Botanic garden helps in different purposes Table: 8.

1. **Taxonomic Studies:** Botanical gardens Provide valuable information on various plant, local flora, bonsai etc. they act as outdoor laboratory for students and researchers.

2. **Botanical Research:** Botanical gardens supply wide range of plants species, seeds, flowers, fruits for research.

3. **Conservation:** They are associated with conservation and Propagation of rare species and genetic diversity.

4. **Education:** They supply facilities for courses in local flora, Horticulture, hybridization, plant propagation etc. Botanical gardens extend programmes include workshops, training sessions for teachers' students and naturalists.

5. **Public Services:** They help the public in identifying the local plant species provide instructions for home gardening propagation of plants and supply plant resources in local nurseries.

6. **Aesthetics and Recreation:** Botanical gardens attract the general people home gardening as their hobby and agriculture.

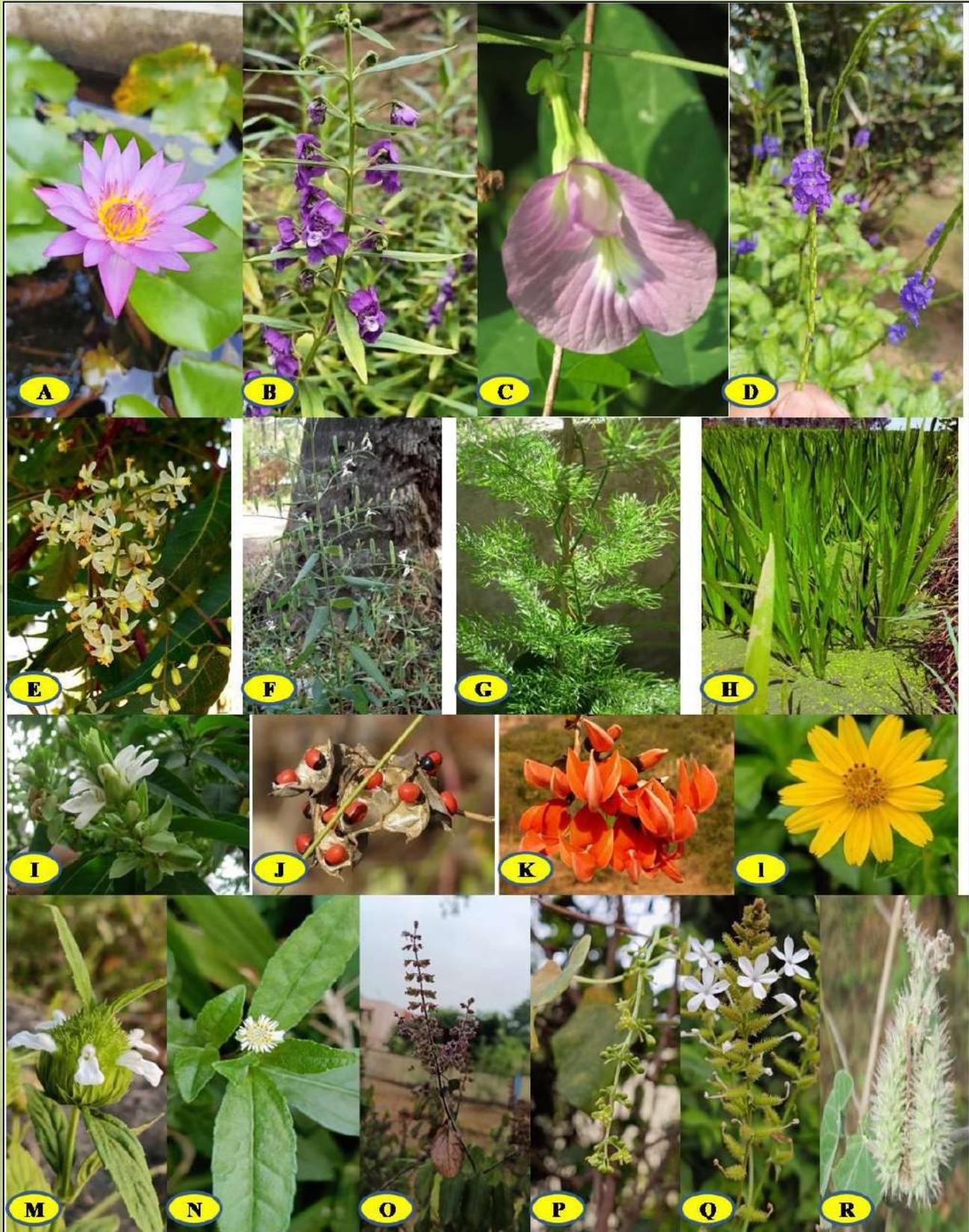
7. **Employment:** They create job opportunities for a large number of young botanists, curators, museum keepers and technical assistants.

## **FUNCTIONS OF HERBAL BOTANICAL GARDENS**

Botanic Gardens continued to perform these functions until recent perspectives of environmental pollution, ecological imbalance and conservation of threatened plants have influenced their objectives and reshaped in tune with present concept of conservation. Botanic Gardens are taken as main centres of conservation of plant resources from their extinction.

- To serve as a living repository of plants of a country and also of selected exotics species and endangered plants.
- To serve as a "safe abode" for the rare and endemic plants.
- To house the germplasm collection of selected economic ornamental and medicinal plants and their wild progenitors.
- To promote educational programmes and research in experimental Botany and ornamental Horticulture.
- To undertake research in propagation of rare and threatened species and species for a forestation, energy and alternative or substitute food and fodder plants. Species of different climatic condition are to be grown in specialized conservation houses such as phytotrons hot and greenhouses etc.
- To generate awareness about value of trees and about curious, beautiful and interesting plants with delightful landscaping and display.
- To organize flower, foliage and plant shows, exchange of viable seed materials, seedlings, saplings and other propagules.
- To introduce economic and economically exploitable species to accommodate and study the physiology of species for field trials and cultivation.

•To act as data bank for information and documentation on holdings in Botanic gardens of the country or region. The importance and usefulness of botanic gardens has been realized by all the developed countries of the world to such extent that many of them have scores of such gardens each.



**Fig..13 Diversity of Medicinal Flora in R.I.E. campus.**a. *Nymphaea nouchali*, b. *Angelonia aungustifolia*,c.*Clitoria ternatea*,d. *Stachytarpheta jamaicensis* ,e.*Azadirachta indica*, f.*Andrographis paniculata*,g.*Asparagus racemosus*,h. *Acorus calamus*, i.*Justicia adhatoda*, j.*Abrus precatorious*, k.*Butea monosperma*, l.*Wedelia chinensis*, m., *Leucas aspera*, n.*Eclipta prostrate*, o.*Ocimum sanctum*,p.*Tinospora cordifolia*, q.*Plumbago zeylanica*, r.*Pergularia daemia*.

**Table: 8. MEDICINAL PLANTS IN HERBALL GARDEN IN REGIONAL INSTITUTE OF EDUCATION, BHUBANESWAR CAMPUS**

SL.No.	Botanical Name	Family	Common Name
1	<i>Abrus precatorius</i> Linn.	Fabaceae	Kaincha
2	<i>Acacia auriculiformis</i> A. Cunn.ex. Benth	Mimosaceae	Jaranasaka
3	<i>Alpinia galanga</i> L.	Zingiberaceae	Torani
4	<i>Anacardium occidentale</i> Linn.	Anacardiaceae	Kaju
5	<i>Angelonia aungustifolia</i> Benth.	Scrophulariaceae	Angel flower
6	<i>Araucaria columnaris</i> J.R. Forst. Hook.	Araucariaceae	Christmas Tree
7	<i>Argyreia nervosa</i> (Burm.f.) Boj.	Convolvulaceae	Brudhadarak
8	<i>Asparagus racemosus</i> Willd.	Asparagaceae	Satabari
9	<i>Azadirachta indica</i> A. juss.	Meliaceae	Nimba
10	<i>Bacopa monnieri</i> (Linn.) (Pennell)	Scrophulariaceae	Brahmi
11	<i>Bixa orellana</i> Linn.	Bixaceae	Sindura
12	<i>Boerhavia diffusa</i> Linn.	Nyctaginaceae	Purunisaga
13	<i>Bougainvillea spectabilis</i> Willd.	Nyctaginaceae	Kagajphula
14	<i>Butea monosperma</i> L.	Fabaceae	Flame of the Forest
15	<i>Caesalpinia pulcherima</i> (Linn.) Sw.	Caesalpiniaceae	Krushnachuda
16	<i>Calotropis gigantea</i> R.Br.	Asclepiadaceae	Arakha
17	<i>Calotropis procera</i> (Ait.) R.Br.	Asclepiadaceae	Dhalaarakha
18	<i>Celosia argentea</i> Linn.	Amaranthaceae	Nahanga
19	<i>Cheilocostus speciosus</i> (J. Koenig) C.D. Specht	Costaceae	Keukanda
20	<i>Clerodendrum splendens</i> G. Don	Verbenaceae	Genguti
21	<i>Clerodendrum thomsonii</i> Balf.f.	Verbenaceae	Bladder heart
22	<i>Clitoria ternatea</i> Linn.	Fabaceae	Aparajita
23	<i>Coccinia grandis</i> (Linn.) Voigt	Cucurbitaceae	Kundru
24	<i>Crateva magna</i> (Lour.) DC	Capparaceae	Baruna
25	<i>Curcuma longa</i> L.	Zingiberaceae	Haladi
26	<i>Cycas revoluta</i> Thunb.	Cycadaceae	Sago palm
27	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Dubaghasa
28	<i>Dalbergia sisoo</i> Roxb.	Fabaceae	Sishu
29	<i>Datura innoxia</i> Mill.	Solanaceae	Dudura
30	<i>Datura metel</i> Linn.	Solanaceae	Kaladudura
31	<i>Duranta repens</i> Linn.	Verbenaceae	Bayakoli
32	<i>Eclipta prostrata</i> (Linn.) Linn.	Asteraceae	Kesadura
33	<i>Elephantopus scaber</i> (Linn.)	Asteraceae	Totamuli
34	<i>Ervatamia divaricata</i> (Linn.) Burkil Linn.	Apocynaceae	Tagar
35	<i>Euphorbia pulcherrima</i>	Euphorbiaceae	Poinsettia
36	<i>Gomphrena globosa</i> Linn.	Amaranthaceae	Godiphula
37	<i>Gymnema sylvestre</i> (Retz) R.Br. Ex. Sch.	Asclepiadaceae	Gudamari
38	<i>Helianthus annus</i> L	Asteraceae	Sun Flower
39	<i>Hemidesmus indicus</i> (Linn.) R.Br.	Asclepiadaceae	Anantamula
40	<i>Hibiscus rosa sinensis</i> Linn.	Malvaceae	Mandara
41	<i>Ichnocarpus frutescens</i> (Linn.) R. Br	Apocynaceae	Suanlai

42	<i>Impatiens balsamina</i> Linn.	Balsaminaceae	Haragoura
43	<i>Ipomoea cairica</i>	Convolvulaceae	Railway Creeper
44	<i>Ixora coccinea</i> Linn.	Rubiaceae	Rangani
45	<i>Kalanchoe pinnata</i> (Lam.) Pers.	Crassulaceae	Amaraoi
46	<i>Lantana camara</i> Linn.	Verbenaceae	Putus
47	<i>Lavendula officinalis</i> L.	Lamiaceae	Lavendula
48	<i>Lawsonia inermis</i> Linn.	Lytharaceae	Manjuati
49	<i>Mesua ferrea</i> Linn	Clusiaceae	Nageswar
50	<i>Michelia champaca</i> Linn.	Magnoliaceae	Champa
51	<i>Mimosa pudica</i> Linn.	Mimosaceae	Lajakuli
52	<i>Mimusops elengi</i> Linn.	Sapotaceae	Baula
53	<i>Momordica charantia</i> Linn.	Cucurbitaceae	Kalara
54	<i>Murraya koenigii</i> (Linn.) Spreng.	Rutaceae	Bhrusunga
55	<i>Musa paradisiaca</i> L.	Musaceae	Plantain
56	<i>Mussaenda erythrophylla</i>	Rubiaceae	Mussanda
57	<i>Nerium oleander</i> Linn.	Apocynaceae	Karabira
58	<i>Nyctanthes arbor-tristis</i> Linn.	Oleaceae	Gangasiuli
59	<i>Ocimum bascilicum</i> Linn.	Lamiaceae	Durlabha
60	<i>Ocimum cannum</i> Sims	Lamiaceae	Gangatulasi
61	<i>Ocimum gratissimum</i> Linn.	Lamiaceae	Bantulasi
62	<i>Oxalis obtusa</i>	Oxalidaceae	Oxalis
63	<i>Paederia foetida</i> Linn.	Rubiaceae	Prasaruni
64	<i>Pithocellobium dulce</i> (Roxb.) Benth.	Mimosaceae	Bilatikayan
65	<i>Pothos scandens</i> L.	Araceae	Money Plant
66	<i>Pterocarpus santalinus</i> Linn.f.	Fabaceae	Raktachandan
67	<i>Pterospermum acerifolium</i> (Linn.) Willd.	Sterculiaceae	Muchukunda
68	<i>Pterospermum xylocarpum</i> (Gaertn) Sant &Wagh	Sterculiaceae	Giringa
69	<i>Punica granatum</i> Linn.	Punicaceae	Dalimba
70	<i>Quisqualis indica</i> Linn.	Combretaceae	Madhumalati
71	<i>Rauwolfia serpentina</i> (Linn.) Benth	Apocynaceae	Patalagaruda
72	<i>Rauwolfia tetraphylla</i> Linn.	Apocynaceae	Patalagaruda
73	<i>Saraca asoca</i> (Roxb.) de Wilde.	Caesalpiniaceae	Asoka
74	<i>Sida acuta</i> Burm.f.	Malvaceae	Bajramuli
75	<i>Solanum torvum</i> Sw.	Solanaceae	Dengabheji
76	<i>Stachytarpheta jamaicensis</i> (L.) Vahl.	Verbenaceae	Karaputia
77	<i>Tecoma stans</i> (Linn.) Kunth	Bignoniaceae	Tecoma
78	<i>Terminalia arjuna</i> (Roxb.ex. Dc) Wt.&Arn	Combretaceae	Arjuna
79	<i>Terminalia bellirica</i> (Gaertn) Roxb.	Combretaceae	Bahada
80	<i>Thuja occidentalis</i> Linn.	Cupressaceae	Thuja
81	<i>Tinospora cordifolia</i> (Willd.) Hook.f&Thoms.	Menispermaceae	Guluchilata
82	<i>Tradescantia bracteata</i> L.	Commelinaceae	Tradescantia
83	<i>Tradescantia spathacea</i> Sw.	Commelinaceae	Rhoeo
84	<i>Tridax procumbens</i> Linn.	Asteraceae	Bisalyakarani
85	<i>Turneraulmifolia</i> Linn.	Turneraceae	Basanti
86	<i>Vanda spathulata</i> L.	Orchidaceae	Rasna

87	<i>Withania somnifera</i> (Linn.) DunaLinn.	Solanaceae	Aswagandha
88	<i>Zamia furfuracea</i> L.f.	Zamiaceae	Zamia
89	<i>Zingiber officinala</i> Roscoe	Zingiberaceae	Ada

## CONCLUSION

The biodiversity of the campus is significant as it is indispensable that local and endemic types of verdure are rationed. However, there are a lot more life-frames that should be recognized up to species level, the biodiversity of the grounds holds a ton of possible regarding preservation. The vegetated regions recognized during the current review can be concurred exceptional consideration and assuming that any improvement is arranged here, it ought to be reexamined.

**“Even if I knew that tomorrow the world would go to pieces, I would still plant my apple tree.”**

**- Brother Rev. Dr.Martin Luther King. Jr.**



**Save a Tree,  
it Don't  
Charge a Fee**



Interaction and discussion of students about campus flora and their medicinal uses in R.I.E. campus, Bhubaneswar



# UNIT- 4

## FAUNAL DIVERSITY

**"Until one has loved an animal, a part of  
one soul remains unawakened"**

- Anatole France



## Introduction

Institute being situated at the heart of the state shares distribution of various species that are also part of rich diversity of state as whole.

Odisha (17.780N, 22.730N & 81.370E, 87.530E) has a total geographic area of approximately 155,707 sq. km which covers 4.87% of total area of India. It constitutes 25% of the total bio-geographic area of the Eastern Ghats documenting large number of endemic and endangered species. Odisha has 19 Wildlife Sanctuaries and 2 National parks. Some of the noted protected areas include Simlipal tiger reserve, Bhitarkanika wildlife sanctuary and Chandaka elephant sanctuary. In Odisha, very few studies have been done for invertebrates and among those most of them were found to be restricted to reserves, sanctuaries and zoos. Some surveys were conducted to prepare a checklist of butterflies in protected areas in Odisha. During these surveys, nearly 200 species of butterflies have been reported in Odisha out of which 170 species were found in Bonai forest division of Sundergarh district. In a survey conducted in Similipal Tiger Reserve, a total of 106 species of butterflies belonging to 5 families and 15 sub-families were recorded representing Nymphalidae as the most dominating family with 42 species. The species diversity of butterflies of Sunabeda Wildlife Sanctuary reported 40 species belonging to Family Nymphalidae. Nandankanan Zoo (Bhubaneswar) documented 92 species belonging to 68 genera. Recently a butterfly park has been established in Nandankanan Zoological park spreading over 3,200 sq metres documenting at least 54 species of butterflies. Some have reported 70 species of Odonates in Odisha and Eastern India out of which 45 species are Libellulids and 25 species are Coenagrionids

**Some of the features of state faunal diversity are:**

### **Common Migratory birds of Chilika**

Blue-tailed bee-eater (*Merops philippinus*)

Black bittern (*Ixobrychus flavicollis*)

Terek sandpiper (*Xenus cinereus*)

Indian spot-billed duck (*Anas poecilorhyncha*)

Shikra (*Accipiter badius*)

Red-necked falcon (*Falco chicquera*)

Kentish plover (*Charadrius alexandrines*)

Glossy ibis (*Plegadis falcinellus*)

Red-crested pochard (*Netta rufina*)

Collared Pratincole purple heron (*Ardea purpurea*)

Pied kingfisher (*Ceryle rudis*)

The yellow bittern (*Ixobrychus sinensis*)

The white-throated kingfisher (*Halcyon smyrnensis*)

The white wagtail (*Motacilla alba*)

The white-bellied sea eagle (*Haliaeetus leucogaster*),

The watercock (*Gallix rex cinerea*)

Peregrine Falcon painted stork (*Mycteria leucocephala*)

Great egret (*Ardea alba*),

Indian pond heron or paddybird (*Ardeola grayii*)

Spot-billed pelican or grey pelican (*Pelecanus philippensis*)

The spoon-billed sandpiper (*Calidris pygmaea*)

Common kingfisher (*Alcedo atthis*)

Cinnamon bittern or chestnut bittern (*Ixobrychus cinnamomeus*)

Black-shouldered kite (*Elanus axillaris*)  
Red-naped ibis (*Pseudibis papillosa*)  
Bar-headed goose (*Anser indicus*)  
Brahminy kite (*Haliastur indus*)  
Asian openbill or Asian openbill stork (*Anastomus oscitans*)

#### **Common butterflies of Odisha**

A total of 5 families like Nymphalidae (35 species), followed by Lycaeinidae (28 species), Pieridae (16 species), Hesperidae (14 species), Papilionidae (8 species).

#### **Common Dragonflies & Damselflies of Odisha**

Spread Wings (Lestidae)  
Skimmers (Libellulidae)  
Clubtails (Gomphidae)  
Bush Darts (Platycnemididae)  
Bamboo Tails (Protoneuridae)  
Torrent Hawks (Cordulegastridae)  
Species description (Damselflies)  
Darners (Aeshnidae)  
Marsh Darts (Coenagrionidae)  
Torrent Darts (Euphaeidae)  
Glories (Calopterygidae)  
Stream Jewels (Chlorocyphidae)

#### **Endangered Species of Odisha**

##### **• Birds**

1. The Spoon Billed Sandpiper (*Eurynorhynchus pygmeus*)
2. The Forest Owlet: (*Heteroglaux blewitti*)

##### **• Animals**

1. Hawksbill Turtle (*Eretmochelys imbricata*)
2. Black Buck in Odisha
3. Bengal tiger
4. Gharial (*Gavialis gangeticus*)

#### **Institute campus**

**Location: 20°17'20"N & 85°49'57"E**

Regional Institute of education, (NCERT) Bhubaneswar has a total of 105 acre of area cover. The campus has a good cover of greenery and variety of faunal diversity. The abundance of number of floral diversity provides suitable habitat for these faunal diversity to flourish. The area receives an average rainfall of 1492 mm annually and has tropical weather conditions with temperature varying between 40°C in summer and 15°C-18°C in winter inside the campus. More than 500 Species of plants and 160 Species of animals have been documented so far. Some of the rare butterfly species recorded are arctic white *Pierisangelika* (Eitschberger, 1983), purple sapphire *Heliophorus epicles* (Godart, 1823), Indian palm bob *Suastusgremius* (Fabricius, 1798), rare beetles species recorded are parthenium beetle *Zygogramma bicolorata* (Pallister, 1953), spotted ladybird beetle *Coccinella*

*septempunctata* (Linnaeus, 1758), rare dragon flies and damselfies recorded are *Orthetrum pruinosum* (Rambur, 1842) Crimson Tailed Marsh Hawk, *Orthetrum glaucum* (Brauer, 1865) Blue Marsh Hawk, *Palpopleura sexmaculata* (Fabricius, 1798) Blue Tailed Yellow Skimmer, *Rhodothemis rufa* (Rambur, 1842) Rufous Marsh Glider, whereas no such rare species were reported in the case of vertebrates. At the same time there are possibilities of finding new species which is subjected to proper documentation and identification. Faunal diversity of the campus comprises of approximately 45 species of butterflies belonging to 5 families 14 subfamilies and 35 genera, 37 species of beetles belonging to 7 superfamilies, 10 families, 18 subfamilies and 29 genera, 20 species of dragonflies representing 15 genera belonging to one family, 4 species of damselfies belonging to 4 genera which belongs to family Coenagrionidae, 2 species belonging to amphibians, 9 species belonging to reptilians, 25 species belonging to birds and 7 species belonging to mammals.

The campus is home to various vertebrates and invertebrates species. But most of the invertebrate species are specific to different seasons it sometimes become difficult to collect, preserve, photograph and identify all species in a small period of time.

**Uniqueness:** Some of the rare butterfly species recorded are arctic white Pierisangelika (Eitschberger, 1983), purple sapphire *Heliophorus epicles* (Godart, 1823), Indian palm bob *Suastusgremius* (Fabricius, 1798), rare beetles species recorded are parthenium beetle *Zygogramma bicolorata* (Pallister, 1953), spotted ladybird beetle *Coccinella septempunctata* (Linnaeus, 1758), rare dragon flies and damselfies recorded are *Orthetrum pruinosum* (Rambur, 1842) Crimson Tailed Marsh Hawk, *Orthetrum glaucum* (Brauer, 1865) Blue Marsh Hawk, *Palpopleura sexmaculata* (Fabricius, 1798) Blue Tailed Yellow Skimmer, *Rhodothemis rufa* (Rambur, 1842) Rufous Marsh Glider, whereas no such rare species were reported in the case of vertebrates.

**Similarity with that of the vast state faunal diversity:** In Odisha, Chilika is home to various migratory birds like Greater coucal (*Centropus sinensis*), Common koel (*Eudynamys*), White breasted waterhen (*Amaurornis phoenicurus*), Cattle egret (*Bubulcus ibis*), Red Wattled lapwing (*Vanellus senegallus*), Brown headed barbet (*Megalaima zeylanica*), White throated kingfisher (*Halcyon smyrnensis*), Rose winged parakeet (*Psittacula krameri*), Black headed oriole (*Oriolus xanhornus*), Black drongo (*Dicrurus macrocercus*), Rufus treepie (*Dendrocitta vagabunda*), House crow (*Corvus splendens*), Purple rumped sunbird (*Leptocoma zeylonica*), Red whiskered bulbul (*Pycnonotus jocosus*), Red vented bulbul (*Pycnonotus cafer*), Jungle babbler (*Turdoides striata*). Abundance of such species can also be seen in RIE, Bhubaneswar campus in respective seasons of the year.

Butterflies of Odisha belonging to families Pieridae, Papilionidae, Hesperidae, Lycaenidae, and Nymphalidae are also observed in the institute's campus.

Dragonflies and damselfies of Odisha belonging to families Libellulidae, Coenagrionidae, Gomphidae, and Aeshnidae are also observed in the institute's campus.

## **Awareness programmes for school children**

School inside our campus had also played significant role in making students and teachers aware of the biodiversity of the campus. Every year there are various awareness programmes organised by the school administration along with the help of institute staffs in order to fulfil the same purpose. Students,

teachers (pre- service and in- service), technical staffs, lab attendants, lab supervisors actively participate and develop teaching learning materials to facilitate learning along with live experience.

## Maps

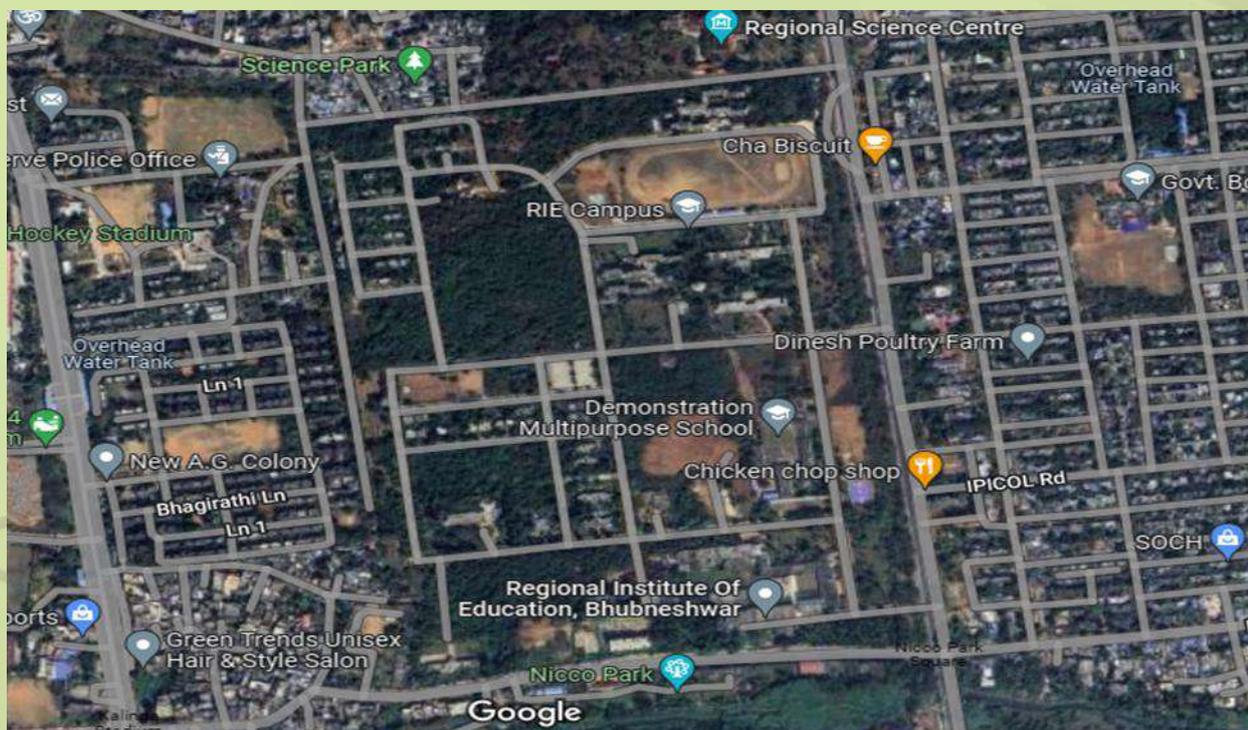


Fig: Satellite image of RIE (NCERT) Bhubaneswar Campus



Fig: Campus map of RIE (NCERT), Bhubaneswar

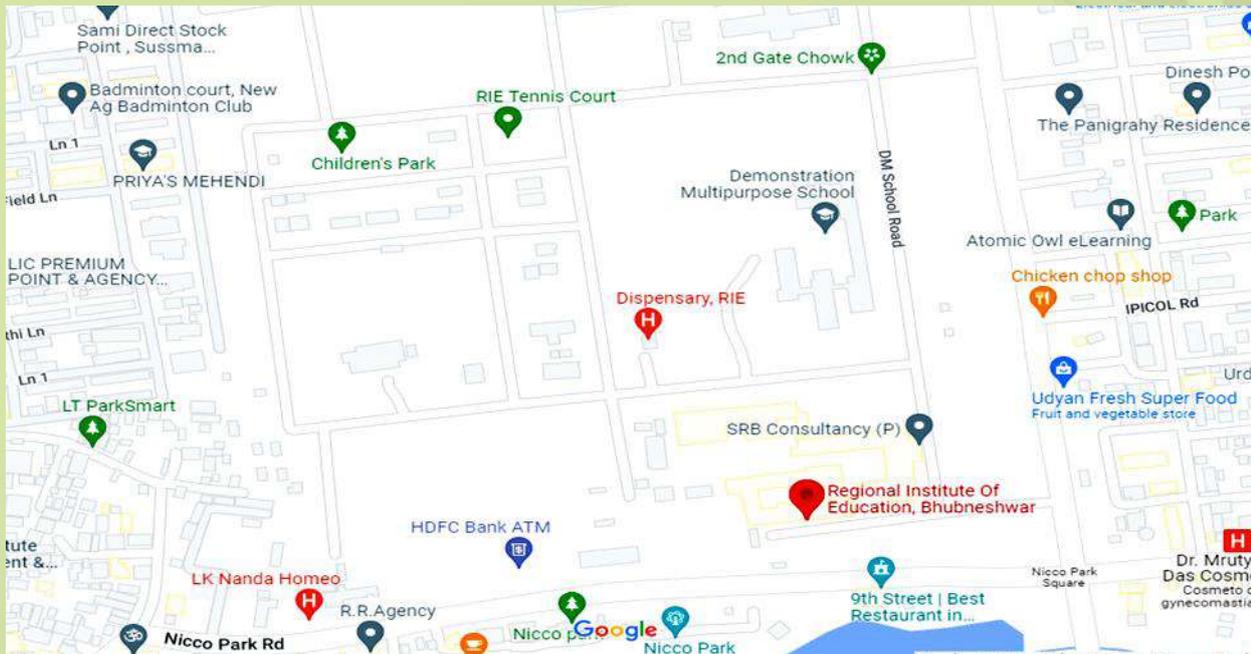


Fig: Google map of RIE, (NCERT) Bhubaneswar

## Documentation Pattern

The pattern of documentation followed by the institute is conducting documentation survey at regular intervals. After every 3-4 years documentation is done. The list is updated and species are recorded. At the same time new findings are also given importance.

The preliminary visit is initially planned in order to get the idea of resources, sights, area of study etc. This enables gathering information useful in preparing pre audit questionnaires and data sheet.

## Documentation Method

Firstly the area is identified as hotspots for species. Then these areas are surveyed again and again to identify the abundance of the species. While documenting species attention is given to the abundance of species, occurrence of species, distribution of species, seasonal variations if any, migratory species, dominance of species, dependence of species on specific type of habitat, coexistence of species, nature of habitats, invasive species.

For maintaining the records, photograph of each and every species are collected along with the date of collection, name of species (common name, scientific name), time of collection, site of collection, abundance of species, distribution of species, coordinates, present status, name of family, subfamily, genera, species, segregation of species according to common, uncommon and rare ones, plant species associated if any.

## Recent findings

Recent survey indicates the presence of species which have already been listed and some of the new species which were not found earlier creating a need for further identification and verification.

## Different types of interaction

**Plant- animal:** Wide diversity is attributed to the presence of host plants like *Annona sp.*, *Bougainvillea sp.*, *Murraya sp.*, *Hibiscus sp.*, *Tridax sp.*, *Calotropis sp.*, *Lantana camara*, *Ixora sp.*, *Citrus sp.* etc.

Positive interaction is seen between plants and animal in the campus although there are some minimal parasitic interactions also existing in the survey area. Some of the negative interactions are also seen, for the same control measures are taken time to time.



## BUTTERFLIES OF RIE CAMPUS

The present study documents a total of 45 species of butterflies belonging to 5 families, 14 subfamilies and 35 genera. The maximum number of species were reported from the family Nymphalidae (18 species) which represent 40% of the total butterflies studied in the Campus and least from family Hesperidae (4 species). Lycaenidae (11 species) was found to be second largest family (24.44%) in the study area followed by Pieridae (15.55%), Papilionidae (11.11%) and Hesperidae (8.88%) (Table 2, Figure 2). Only one subfamily was recorded under family Papilionidae constituting 2 genera and 5 species while there were 6 subfamilies which were reported under the family Nymphalidae making it the most diverse family in the study area. Further it was observed that Nymphalinae (Nymphalidae) and Polyommatae (Lycaenidae) were found to be most dominating subfamilies each representing 7 species in the study area and this wide diversity may be attributed to the presence of host plants like *Annona sp.*, *Bougainvillea sp.*, *Murraya sp.*, *Hibiscus sp.*, *Tridax sp.*, *Calotropis sp.*, *Lantana camara*, *Ixora sp.*, *Citrus sp.* etc.

**Uniqueness:** Among all 45 butterfly species reported, 13(28.88%) were found to be very common, 21(46.66%) were common, 8 (17.77%) were uncommon and 3(6.66%) were rare. The 7 species of butterfly recorded were included under IWPA,1972; *Neptis columella* , *Hypolimnas misippus* and *Castalius rosimon* in Schedule I, *Hypolimnas misippus*, *Euchrysops cnejus* and *Lampides boeticus* in Schedule II and *Appias libythea* and *Euploea core* in Schedule IV. The status of these species differs from the IWPA list as they were reported in abundant number in the study area.

		
<p style="text-align: center;">Image 1. <i>Graphium doson</i> (Common Jay)</p>	<p style="text-align: center;">Image 2. <i>Graphium agamemnon</i> (Tailed Jay)</p>	<p style="text-align: center;">Image 3. <i>Papilio crino</i> (Common Banded Peacock)</p>
		
<p style="text-align: center;">Image 4. <i>Papilio demoleus</i> (Common Lime)</p>	<p style="text-align: center;">Image 5. <i>Papilio polytes</i> (Common Mormon) Male</p>	<p style="text-align: center;">Image 6. <i>Papilio polytes</i> (Common Mormon) Female</p>
		
<p style="text-align: center;">Image 7. <i>Catopsilla pomona</i> (Common Emigrant)</p>	<p style="text-align: center;">Image 8. <i>Eurema hecabe</i> (Common Grass Yellow)</p>	<p style="text-align: center;">Image 9. <i>Appias libythea</i> (Striped Albatross) Male</p>



Image 10. *Appias libythea*  
(Striped Albatross) Female



Image 11. *Leptosia nina*  
(Psyche)



Image 12. *Pareronia valeria*  
(Common Wanderer) Female

**Plate 1.** Photographs of Butterflies recorded in RIE Campus, Bhubaneswar  
Image:1-6,Papilionidae;7-12,Pieridae.



Image 13. *Pieris angelika*  
(Arctic White)



Image 14. *Pieris brassicae*  
(Cabbage White)



Image 15. *Ariadne merione*  
(Common Castor)



Image 16. *Danaus chrysippus*  
(Plain Tiger)



Image 17. *Euploea core*  
(Common Indian Crow)



Image 18. *Acraea violae*  
(Tawny Coster)



Image 19. *Athyma perius*  
(Common Sergeant)



Image 20. *Neptis columella*  
(Short banded Sailer)



Image 21. *Moduza procris*  
(Commander)



Image 22. *Hypolimnys bolina*  
(Great Eggfly) Male



Image 23. *Hypolimnys misippus*  
(Danaid Eggfly) Female



Image 24. *Junonia almana*  
(Peacock Pansy) Wet Season  
Form

**Plate 2.** Photographs of Butterflies recorded in RIE Campus, Bhubaneswar  
Image:1-2,Pieridae;15-24, Nymphalidae.



Image 25. *Junonia atlites*  
(Grey Pansy)



Image 26. *Junonia iphita*  
(Chocolate Pansy)



Image 27. *Junonia lemonias*  
(Lemon Pansy)



Image 28. *Junonia orithya*  
(Blue Pansy)



Image 29. *Elymnias hypermnestra*  
(Common Palmfly) Male



Image 30. *Elymnias hypermnestra*  
(Common Palmfly) Female



Image 31. *Melanitis leda*  
(Common Evening Brown)



Image 32. *Melanitis phedima*  
(Dark Evening Brown)



Image 33. *Mycalesis mineus*  
(Dark Brand Bush Brown)



Image 34. *Heliophorus epicles*  
(Purple Sapphire)



Image 35. *Castalius rosimon*  
(Common Pierrot)



Image 36. *Chilades lajus*  
(Lime Blue) Wet Season Form

**Plate 3.** Photographs of Butterflies recorded in RIE Campus, Bhubaneswar  
Image:25-33,Nymphalidae;34-36 Lycaenidae.



Image 37. *Euchrysops cnejus*  
(Gram Blue)



Image 38. *Everes lacturnus*  
(Indian cupid)



Image 39. *Lampides boeticus*  
(Pea Blue)



Image 40. *Tarucus nara*  
(Striped Pierrot)



Image 41. *Zizeeria karsandra*  
(Dark Grass Blue)



Image 42. *Rapala manea*  
(Slate Flash)



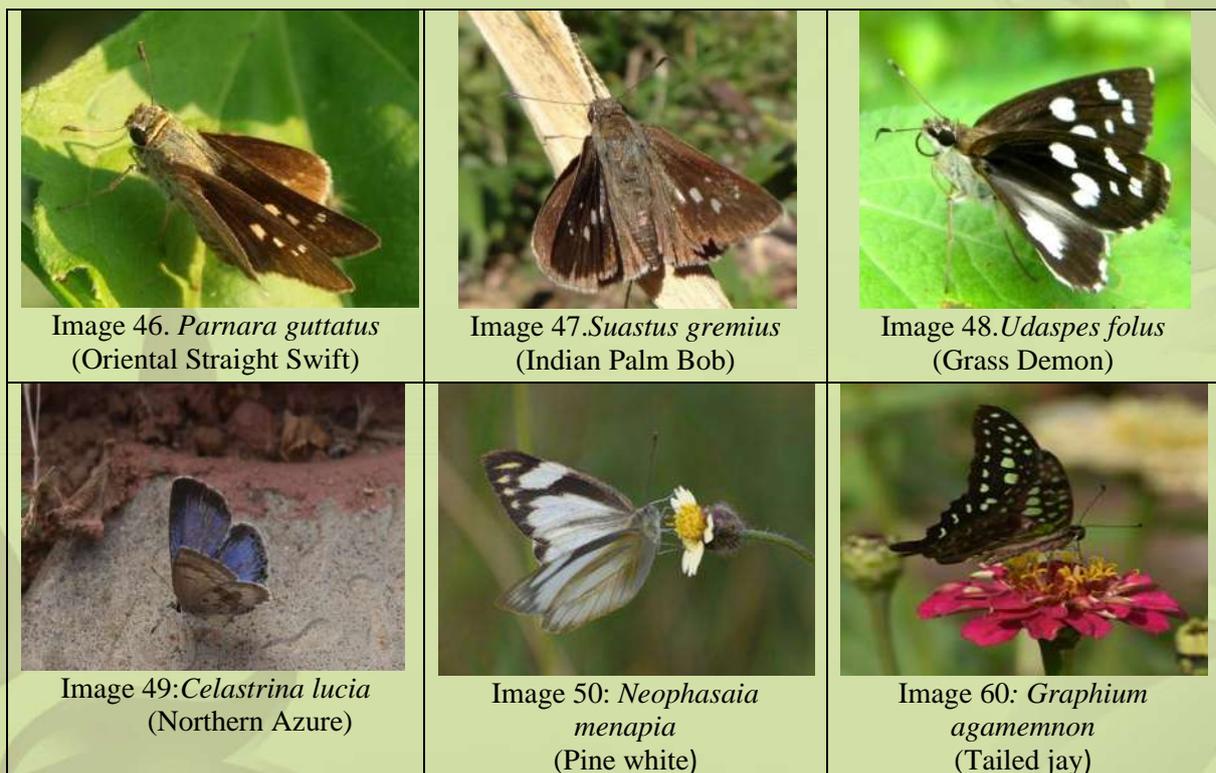
Image 43. *Rathinda amor*  
(Monkey Puzzle)



Image 44. *Spindasis vulcanus*  
(Common Silverline)



Image 45. *Iambrix salsala*  
(Chestnut Bob)



**Plate 4.** Photographs of Butterflies recorded in RIE Campus, Bhubaneswar Image:37-44, Lycaenidae; 45-48, Hesperidae.

**Table 1.** A Checklist of butterflies recorded in the RIE Campus with status.

Family/ Subfamily	Common Name	Scientific Name	IWPA 1972	Status
<b>Papilionidae (02 genera; 05 species)</b>				
Papilioninae	1. Common Jay	<i>Graphium doson</i> (Felder, 1864)		C
	2. Tailed Jay	<i>Graphium agamemnon</i> (Linnaeus, 1758)		C
	3. Common Banded Peacock	<i>Papilio crino</i> (Fabricius, 1792)		UC
	4. Common Lime	<i>Papilio demoleus</i> (Linnaeus, 1758)		VC
	5. Common Mormon	<i>Papilio polytes</i> (Linnaeus, 1758)		VC
<b>Pieridae (06 genera; 07 species)</b>				
Coliadinae	6. Common Emigrant	<i>Catopsilla pomona</i> (Fabricius, 1775)		VC
	7. Common Grass Yellow	<i>Eurema hecabe</i> (Linnaeus, 1758)		VC
Pierinae	8. Striped Albatross	<i>Appias libythea</i> (Fabricius, 1775)	IV	C
	9. Psyche	<i>Leptosianina</i> (Fabricius, 1793)		C
	10. Common Wanderer	<i>Pareronia valeria</i> (Cramer, 1776)		C
	11. Arctic White	<i>Pieris angelika</i> (Eitschberger, 1983)		R
	12. Cabbage White	<i>Pieris brassicae</i> (Linnaeus, 1758)		UC
<b>Nymphalidae (12 genera; 18 species)</b>				
Biblidinae	13. Common Castor	<i>Ariadne merione</i> (Cramer, 1777)		UC
Danaiidae	14. Plain Tiger	<i>Danaus chrysippus</i> (Linnaeus, 1758)		VC
	15. Common Indian Crow	<i>Euploea core</i> (Cramer, 1780)	IV	VC
Heliconiinae	16. Tawny Coster	<i>Acraeaviola</i> (Fabricius, 1793)		VC
Limnithidinae	17. Common Sergeant	<i>Athyma perius</i> (Linnaeus, 1758)		UC
	18. Short banded Sailer	<i>Neptis columbia</i> (Cramer, 1780)	I	C
	19. Commander	<i>Moduraprocris</i> (Cramer, 1777)		UC
Nymphalinae	20. Great Eggfly	<i>Hypolimnas bolina</i> (Linnaeus, 1758)		C
	21. Danaid Eggfly	<i>Hypolimnas misippus</i> (Linnaeus, 1764)	I, II	C
	22. Peacock Pansy	<i>Junonia almana</i> (Linnaeus, 1758)		C
	23. Grey Pansy	<i>Junonia atlites</i> (Linnaeus, 1763)		C

	24. Chocolate Pansy	<i>Junoniaiphita</i> (Cramer, 1779)		C
	25. Lemon Pansy	<i>Junonialemonias</i> (Linnaeus, 1758)		VC
	26. Blue Pansy	<i>Junoniaorithya</i> (Linnaeus, 1758)		C
Satyrinae	27. Common Palmfly	<i>Elymniashypermnestra</i> (Linnaeus, 1763)		C
	28. Common Evening Brown	<i>Melanitiseda</i> (Linnaeus, 1758)		VC
	29. Dark Evening Brown	<i>Melanitispheidima</i> (Cramer, 1780)		VC
	30. Dark Brand Bush Brown	<i>Mycalesismineus</i> (Linnaeus, 1758)		C
<b>Lycaenidae (11 genera; 11 species)</b>				
Lycaeninae	31. Purple Sapphire	<i>Heliophorusepicles</i> (Godart, 1823)		R
Polyommatainae	32. Common Pierrot	<i>Castaliusrosimon</i> (Fabricius, 1775)	I	C
	33. Lime Blue	<i>Chiladeslajus</i> (Stoll, 1780)		VC
	34. Gram Blue	<i>Euchrysopsnejes</i> (Fabricius, 1798)	II	C
	35. Indian cupid	<i>Evereslacturnus</i> (Godart , 1824)		C
	36. Pea Blue	<i>Lampidesboeticus</i> (Linnaeus, 1767)	II	C
	37. Striped Pierrot	<i>Tarucusnara</i> (Kollar, 1848)		VC
	38. Dark Grass Blue	<i>Zizeeriakarsandra</i> (Moore, 1865)		C
Theclinae	39. Slate Flash	<i>Rapalamanea</i> (Hewitson, 1863)		UC
	40. Monkey Puzzle	<i>Rathindaamor</i> (Fabricius, 1775)		UC
	41. Common Silverline	<i>Spindasisvulcanus</i> (Fabricius, 1775)		C
<b>Hesperiidae (04 genera; 04 species)</b>				
Hesperiinae	42. Chestnut Bob	<i>Iambrixsalsala</i> (Moore, 1865)		C
	43. Oriental Straight Swift	<i>Parnaraguttatus</i> (Bremer&Grey, 1852)		VC
	44. Indian Palm Bob	<i>Suastusgremius</i> (Fabricius, 1798)		R
Heteropterinae	45. Grass Demon	<i>Udaspesfolus</i> (Cramer, 1775)		UC

Abbreviations-VC-Very Common (50-70 sightings), C-Common (30-50 sightings), UC-Uncommon( 5-30 sightings), R-Rare (1-5 sightings); IWPA- Indian Wildlife Protection Act, 1972.

Table 2. Distribution of Genera and Species of butterflies in their respective families and subfamilies.

Sl.No.	Family	Subfamily	No. of Genera		%	No. of Species		%
1.	Papilionidae	Papilioninae	2		5.7	5		11.11
2.	Pieridae	Coliadinae	2	6	17.14	2	7	15.55
		Pierinae	4			5		
3.	Nymphalidae	Biblidinae	1	12	34.28	1	18	40
		Danaidae	2			2		
		Heliconiinae	1			1		
		Limenitidinae	3			3		
		Nymphalinae	2			7		
		Satyrinae	3			4		
4.	Lycaenidae	Lycaeninae	1	11	31.42	1	11	24.44
		Polyommatainae	7			7		
		Theclinae	3			3		
5.	Hesperiidae	Hesperiinae	3	4	11.42	3	4	8.88
		Heteropterinae	1			1		

Total no. of Genera: 35; Total no. of Species: 45

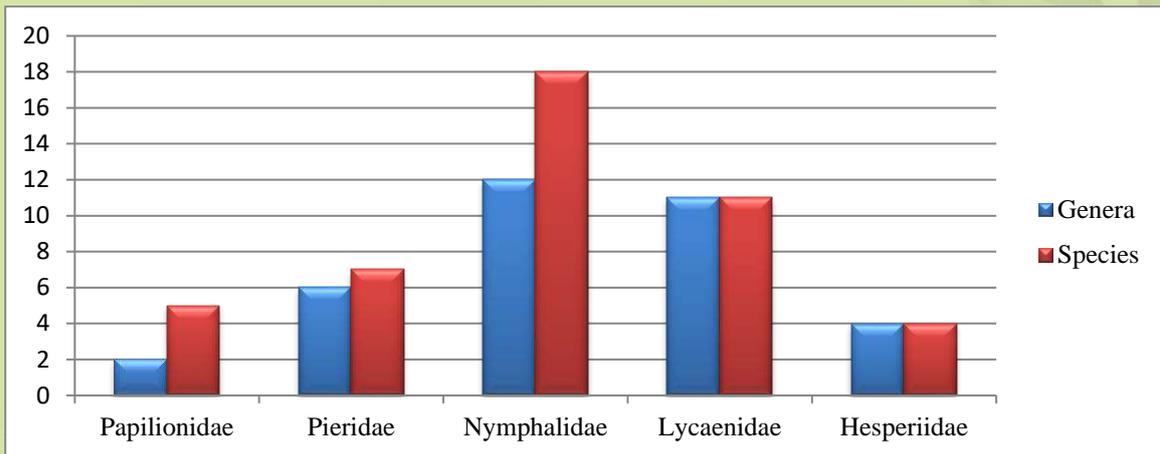


Figure.2. Graph showing family-wise distribution of butterflies in RIE, Campus.

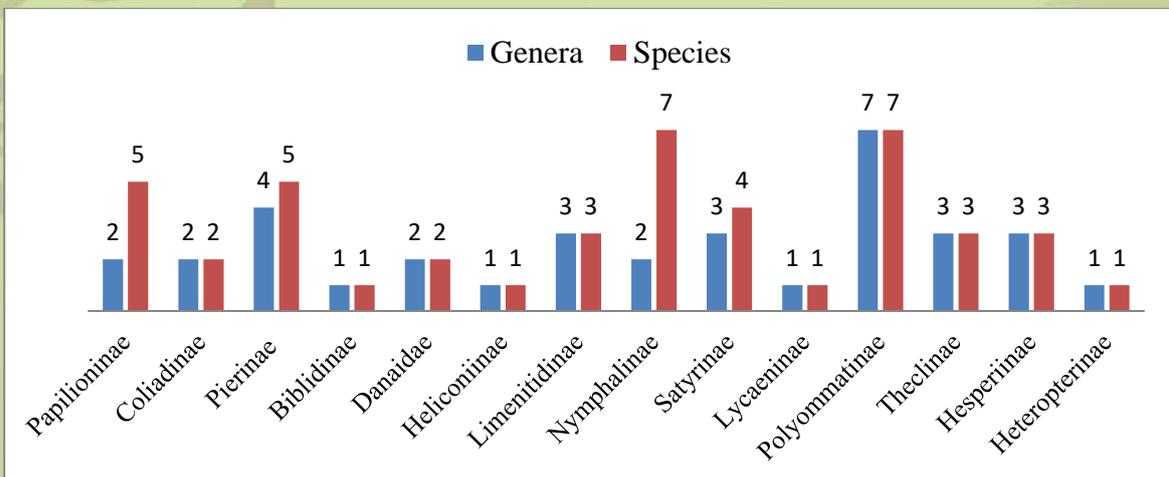


Figure 3. Graph showing subfamily-wise distribution of butterflies in RIE, Campus.

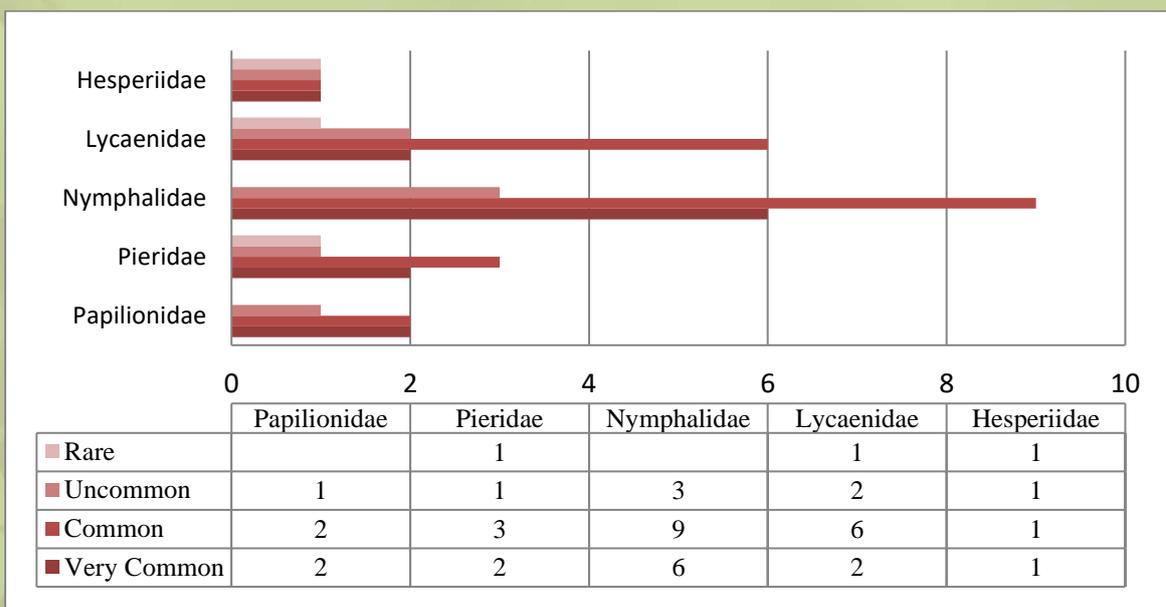


Figure 4. Graph showing status of butterflies in RIE, Campus.

## DRAGONFLIES OF RIE CAMPUS

In the present findings, 20 (83.33%) species of dragonflies representing 15 (78.95%) genera belonging to the family Libellulidae and 4(16.67%) species of damselflies representing 4 genera (21.05%) belonging to the family Coenagrionidae have been reported.

**Uniqueness:** Among 20 species of Libellulids recorded, 9 (45%) are common, 6 (30%) are occasional and 5 (25%) are rare. Out of 4 species of Coenagrionids observed, 3 (75%) are common and 1 (25%) are occasional. It was also noted that the maximum number of species were recorded in the month of July and September except 9 species of Libellulids and 3 species of Coenagrionids which were present in all six months.



Image 1: *Acisoma panorpoides*  
(Trumpet Tail) Female



Image 2: *Aethriamanta brevipennis*  
(Scarlet Marsh Hawk) Female



Image 3: *Brachydiplax sobrina*  
(Blue Tailed Marsh Skimmer)  
Female



Image 4: *Brachythemis contaminata*  
(Ditch Jewel) Male



Image 5: *Bradinopyga geminata*  
(Granite Ghost) Female



Image 6: *Crocothemis servilia*  
(Ruddy Marsh Skimmer) Male



Image 7: *Crocothemis servilia*  
(Ruddy Marsh Skimmer) Female



Image 8: *Diplacodes trivalis*  
(Ground skimmer) Male



Image 9: *Diplacodes trivalis*  
(Ground skimmer) Female



Image 10: *Neurothemis intermedia*  
(Ruddy Meadow Skimmer) Male



Image 11: *Neurothemis tullia*  
(Pied Paddy Skimmer) Male



Image 12: *Orthetrum pruinosum*  
(Crimson Tailed Marsh Hawk)  
Male

Plate 5. Photographs of Libellulids species recorded in RIE Campus, Bhubaneswar.



Image 13: *Orthetrum glaucum*  
(Blue Marsh Hawk) Male



Image 14: *Orthetrum sabina*  
(Green Marsh Hawk) Male



Image 15: *Orthetrum sabina*  
(Green Marsh Hawk) Female



Image 16: *Orthetrum triangulare*  
(Blue Tailed Forest Hawk) Male



Image 17: *Orthetrum villosivittatum*  
(Fiery Skimmer) Female



Image 18: *Palpopleura sexmaculata*  
(Blue Tailed Yellow Skimmer)  
Male



Image 19: *Pantala flavescens*  
(Wandering Glider) Male



Image 20: *Rhodothemis rufa*  
(Rufous Marsh Glider) Male



Image 21: *Rhyothemis variegata*  
(Common Picture Wing) Male



Image 22: *Rhyothemis variegata*  
(Common Picture Wing)Female



Image 23: *Tramea limbata*  
(Black Marsh Trotter) Male



Image 24: *Trithemis pallidinervis*  
(Long-Legged Marsh Glider)  
Female

Plate 2. Photographs of Libellulids species recorded in RIE Campus, Bhubaneswar (Continued)

### DAMSELFLIES OF RIE CAMPUS



Image 25: *Agriocnemis pygmaeae*  
(Pigmy Dartlet) Male



Image 26: *Agriocnemis pygmaeae*  
(Pigmy Dartlet) Female



Image 27: *Ceriagrion coromandelianum*  
(Coromandel Marsh Dart) Male



Image 28: *Ceriagrion coromandelianum*  
(Coromandel Marsh Dart) Male

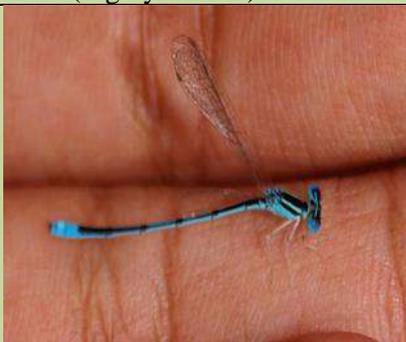


Image 29: *Enallagma parvum*  
(Azure Dartlet) Male



Image 30: *Ischnura aurora*  
(Golden Dartlet) Male



Image 30: *Ischnura aurora*  
(Golden Dartlet)Female

Plate 3: Photographs of Coenagrionids species recorded in RIE Campus, Bhubaneswar.

**Table 2:** List of Coenagrionids (Zygoptera) species recorded in RIE campus with status.

Family/ Genus	Scientific Name	Common Name	Monthly visibility	Status
Coenagrionidae (4 genera, 4 species)				
<i>Agriocnemi</i>	1. <i>Agriocnemispygmaea</i> (Rambur, 1842)	Pigmy Dartlet	A,S,O,N	C
<i>Ceriagrion</i>	2. <i>Ceriagrion coromandelianum</i> (Fabricius,1798)	Coromandel Marsh Dart	A,S,O,N	C
<i>Enallagma</i>	3. <i>Enallagmaparvum</i> (Selys,1876)	Azure Dartlet	S,O	O
<i>Ischnura</i>	4. <i>Ischnura aurora</i> (Brauer,1865)	Golden Dartlet	A,S,O,N	C

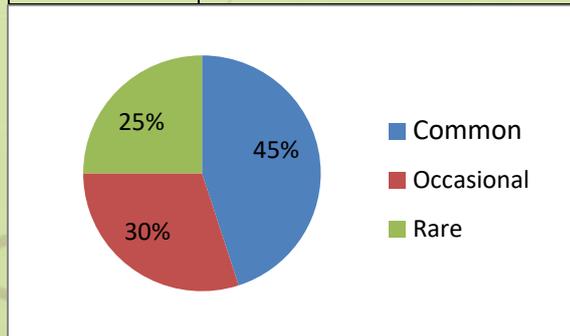


Figure 2. Percentile distribution showing status of Libellulid species recorded in RIE campus, Bhubaneswar

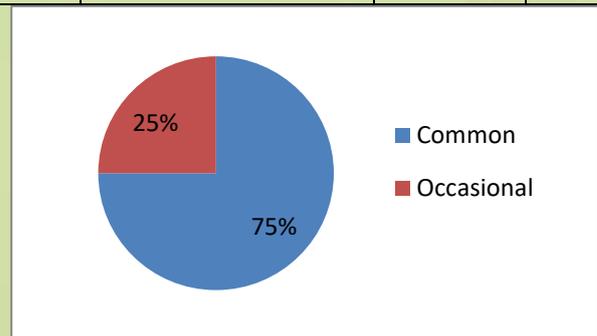


Figure 3. Percentile distribution showing status of Coenagrionid species recorded in RIE campus, Bhubaneswar

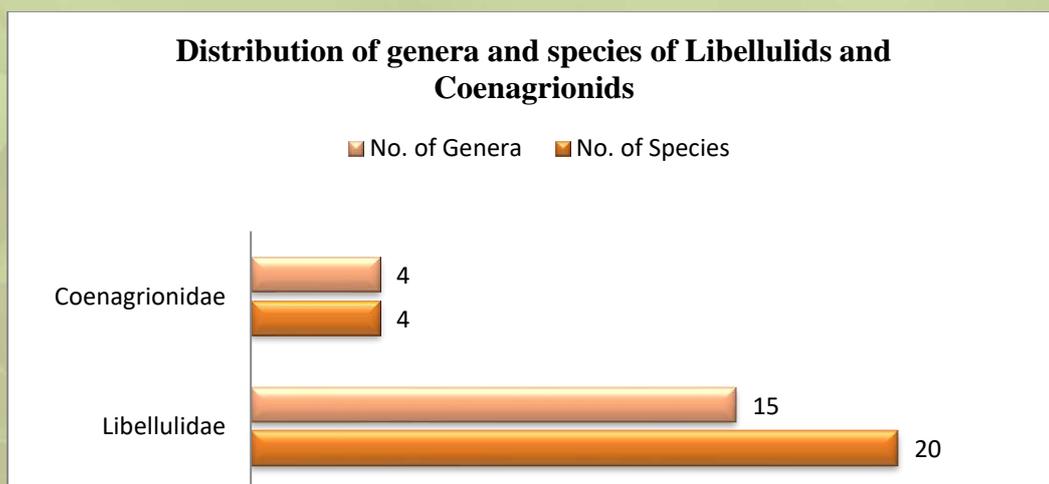


Figure 4: Distribution of genera and species in RIE campus, Bhubaneswar

## BETTLES OF RIE CAMPUS

A total of 37 species of beetles belonging to 7 super families, 10 families, 18 subfamilies and 29 genera were recorded in the study area. The family Chrysomelidae (12 species) was found to be the most dominant family representing 32.4% followed by family Scarabaeidae (7 species) representing 18.9% of the all total beetle species recorded in the study area. Further it was observed that super family Chrysomeloidea and subfamily Cassinidae represents the most diverse group of beetles in the study area during the survey period.

**Uniqueness:** The least number of species were recorded from the superfamily Hydrophiloidea (1 species), families Lampyridae, Hydrophilidae and Tenebrionidae (1 species) and subfamilies Licininae, Lebiinae, Chrysomelinae, Epilachninae, Luciolinae, Hydrophilinae, Dynastinae and Tenebrioninae (1 species). The most commonly occurring species were also observed from the family Chrysomelidae (11 species) and Scarabaeidae (5 species).



Image 1: *Brachinus* sp.1  
(Bombardier Beetle)



Image 2: *Pheropsophus* sp.1  
(Bombardier Beetle)



Image 3: *Chlaenius bimaculatus*  
(Black Ground Beetle)



Image 4: *Ophionea nigrofasciata*  
(Ground Beetle)



Image 5: *Batocera rufomaculata*  
(Mango Stem Borer)



Image 6: *Coptops aedificator*  
(Albizia Long horned Beetle)



Image 7: *Aspidimorpha difformis*  
(Tortoise Beetle)



Image 8: *Aspidimorpha* sp.1  
(Tortoise Beetle)



Image 9: *Aspidimorpha westwoodie*  
(Tortoise Beetle)

**Plate 1.** Photographs of Beetle species recorded in study site-Image: 1- 4 Carabidae; 5-6 Cerambycidae; 7-9 Chrysomelidae.



Image 10: *Cassida circumdata*  
(Tortoise Beetle)



Image 11: *Chiridopsis bipunctata*  
(Tortoise Beetle)



Image 12: *Zygogramma bicolorata* (Parthenium Beetle)



Image 13: *Crioceris duodecimpunctata*  
(Spotted Asparagus Beetle)



Image 14: *Lema diversa*  
(Red Necked Narrow Flower Beetle)



Image 15: *Lilio cerislilii*  
(Scarlet Lily Beetle)



Image 16: *Aphthona flava*  
(Golden flea Beetle)



Image 17: *Diabrotica sp.1*  
(Spotted Cucumber Beetle)



Image 18: *Nisotra breweri*  
(Small Blue Leaf Beetle)

**Plate 2.** Photographs of Beetle species recorded in study site-Image: 12-18, Chrysomelidae.



Image 19. *Cheilomenes Sexmaculata*  
(6-Spotted Zigzag Ladybird)



Image 20. *Coccinella septem punctate*  
(7-Spotted Ladybird Beetle)



Image 21. *Coccinella transversalis*  
(Transverse Ladybird Beetle)



Image 22. *Micraspis discolour*  
(Ladybird Beetle)



Image 23. *Henosepilachna vigintioctopunctata*  
(28-Spotted Potato Ladybird Beetle)



Image 24. *Chauliognathus* sp.1  
(Golden Soldier Beetle)



Image 25. *Chauliognathus* sp.2  
(Golden Soldier Beetle)



Image 26. *Pteroptyx malaccae*  
(Malaysian Firefly)



Image 27. *Hydrophilus triangularis*  
(Giant Water Scavenger Beetle)

**Plate 3.** Photographs of Beetle species recorded in study site-Image: 19-23,Coccinellidae;24-25, Cantharidae; 26, Lampyridae; 27,Hydrophilidae.



Image 28. *Dyscinetus morator*  
(Rice Black Beetle)



Image 29. *Phyllophaga* sp.1 (May Beetle)



Image 30. *Phyllophaga* sp.2  
(May Beetle)



Image 31. *Phyllophaga* sp.3  
(May Beetle)



Image 32. *Phyllophaga* sp.4  
(May Beetle)



Image 33. *Onthophagus*  
(Dung Beetle)



Image 34. *Scarabaeus viette*  
(Dung Beetle)



Image 35. *Mylabris phalerata*  
(Yellow Banded Blister Beetle)



Image 36. *Mylabris pustulata*  
(Orange Blister Beetle)

**Plate 4:** Photographs of Beetle species recorded in study site-Image: 28-34, Scarabaeidae;35-36, Meloidae.

Table 1. A systematic list of beetle species recorded in the RIE Campus with status.

Super-family/ Family/ Subfamily	Common name	Scientific name	Status
<b>A. Caraboidea (Latreille, 1804)</b>			
<b>I. Carabidae (Latreille, 1802) (04 genera; 04 species)</b>			
Brachininae	Bombardier Beetle	1. <i>Brachinus</i> sp.1	C
		2. <i>Pheropsophus</i> sp.1	C
Licininae	Black Ground Beetle	3. <i>Chlaenius bimaculatus</i> (Dejean, 1826)	C
Lebiinae	Ground Beetle	4. <i>Ophionea nigrofasciata</i> (Schmidt-Gobel, 1846)	C
<b>B. Chrysomeloidea (Latreille, 1802)</b>			
<b>II. Cerambycidae (Latreille, 1802) (02 genera; 02 species)</b>			
Lamiinae	Mango Stem Borer	5. <i>Batocera rufomaculata</i> (De Geer, 1775)	O
	Albizia Long horned Beetle	6. <i>Coptops aedificator</i> (Fabricius, 1792)	O
<b>III. Chrysomelidae (Latreille, 1802) (10 genera; 12 species)</b>			
Cassidinae	Tortoise Beetle	7. <i>Aspidimorpha difformis</i> (Motschulsky, 1860)	C
		8. <i>Aspidimorpha</i> sp.1	C
		9. <i>Aspidimorpha westwoodie</i> (Boheman, 1854)	C
		10. <i>Cassida circumdata</i> (Herbst, 1790)	C
		11. <i>Chiridopsis bipunctata</i> (Linnaeus, 1767)	C
Chrysomelinae	Parthenium Beetle	12. <i>Zygogramma bicolorata</i> (Pallister, 1953)	R
Criocerinae	Spotted Asparagus Beetle	13. <i>Crioceris duodecimpunctata</i> (Linnaeus, 1758)	C
	Red Necked Narrow Flower Beetle	14. <i>Lema diversa</i> (Baly, 1873)	C
	Scarlet Lily Beetle	15. <i>Lilioceris lili</i> (Scopoli, 1763)	C
Galerucinae	Golden flea Beetle	16. <i>Aphthona flava</i> (Guillebeau, 1895)	C
	Spotted Cucumber Beetle	17. <i>Diabrotica</i> sp.1	C
	Small Blue Leaf Beetle	18. <i>Nisotra breweri</i> (Baly, 1877)	C
<b>C. Coccinelloidea (Latreille 1807)</b>			
<b>IV. Coccinellidae (Latreille, 1807) (04 genera; 05 species)</b>			
Coccinellinae	6-Spotted Zigzag Ladybird	19. <i>Cheilomenes sexmaculata</i> (Fabricius, 1781)	O
	7-Spotted Ladybird Beetle	20. <i>Coccinella septempunctata</i> (Linnaeus, 1758)	R
	Transverse Ladybird	21. <i>Coccinella</i>	C

	Beetle	<i>transversalis</i> (Fabricius, 1781)	
	Ladybird Beetle	22. <i>Micraspis discolor</i> (Fabricius, 1798)	O
<b>Epilachninae</b>	28-Spotted Potato Ladybird Beetle	23. <i>Henosepilachna</i> <i>vigintiocto punctata</i> (Fabricius, 1775)	C
<b>D.Elateroidea(Leach, 1815)</b>			
<b>V.Cantharidae(Imhoff, 1856) (01 genera; 02 species)</b>			
<b>Chauliognathinae</b>	Golden Soldier Beetle	24. <i>Chauliognathus sp.1</i>	C
		25. <i>Chauliognathus sp.2</i>	C
<b>VI. Lampyridae (Latreille, 1817) (01 genera; 01 species)</b>			
<b>Luciolinae</b>	Malaysian Firefly	26. <i>Pteroptyx malacca</i> (Gorham, 1880)	O
<b>E.Hydrophiloidea (Latreille, 1802)</b>			
<b>VII. Hydrophilidae(Latreille, 1802) (01 genera; 01 species)</b>			
<b>Hydrophilinae</b>	Giant Water Scavenger Beetle	27. <i>Hydrophilus triangularis</i> (Say, 1823)	O
<b>F. Scarabaeoidea(Latreille, 1802)</b>			
<b>VIII.Scarabaeidae (Latreille, 1802) (04 genera; 07 species)</b>			
<b>Dynastinae</b>	Rice Black Beetle	28. <i>Dyscinetus morator</i> (Fabricius, 1798)	C
<b>Melolonthinae</b>	May Beetle	29. <i>Phyllophaga sp.1</i>	C
		30. <i>Phyllophaga sp.2</i>	C
		31. <i>Phyllophaga sp.3</i>	C
		32. <i>Phyllophaga sp.4</i>	C
<b>Scarabaeinae</b>	Dung Beetle	33. <i>Onthophagus sp.1</i>	O
		34. <i>Scarabaeus viette</i> (Paulian, 1953)	O
<b>G. Tenebrionoidea (Latreille, 1802)</b>			
<b>IX. Meloidae (Gyllenhal, 1810) (01 genera; 02 species)</b>			
<b>Meloinae</b>	Yellow Banded Blister Beetle	35. <i>Mylabris phalerata</i> (Pallas, 1781)	O
	Orange Blister Beetle	36. <i>Mylabris pustulata</i> (Thunberg, 1821)	O
<b>X.Tenebrionidae(Latreille, 1802) (01 genera; 01 species)</b>			
<b>Tenebrioninae</b>	Darkling Beetle	37. <i>Alphitobius sp.1</i>	C

Abbreviations- C-Common (30-50 sightings), O - Occasional (10 -30 sightings), R - Rare (5 - 10 sightings) Total no. of Genera: 29; Total no. of Species: 37

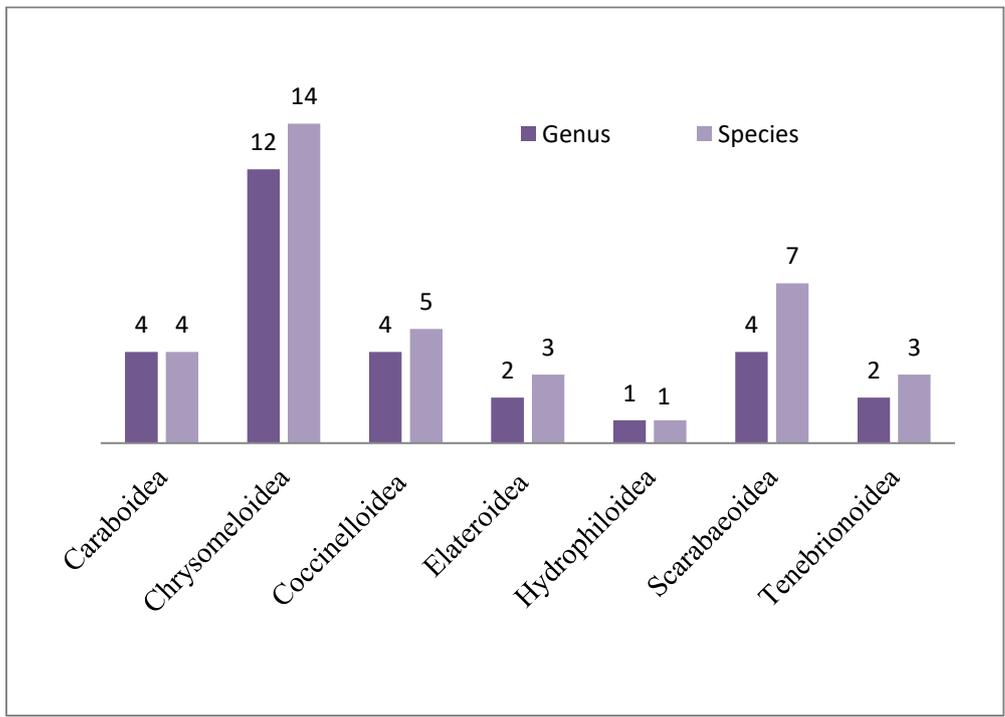


Figure 2. Super-family wise distribution of beetles in study site.

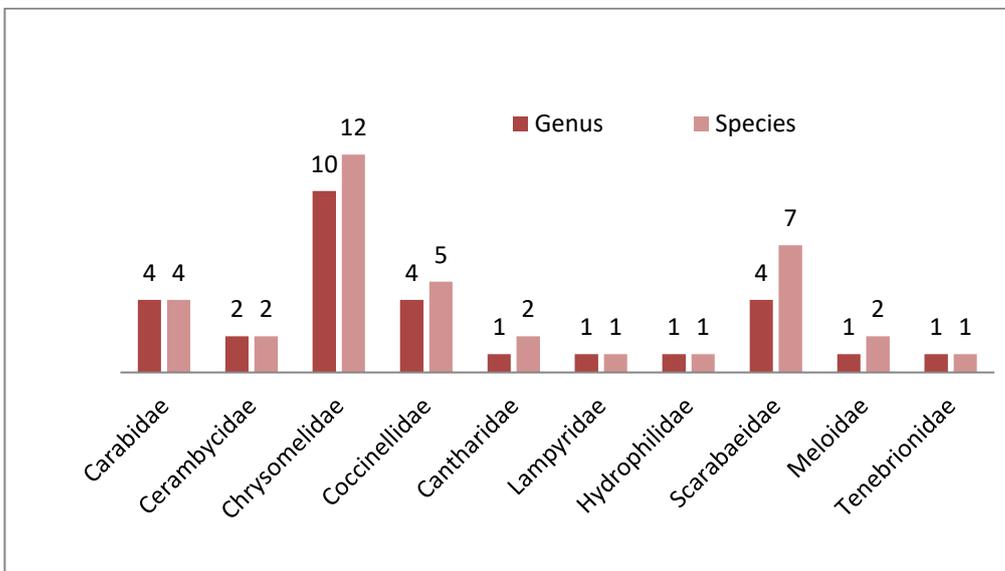


Figure 3. Family wise distribution of beetles in study site.

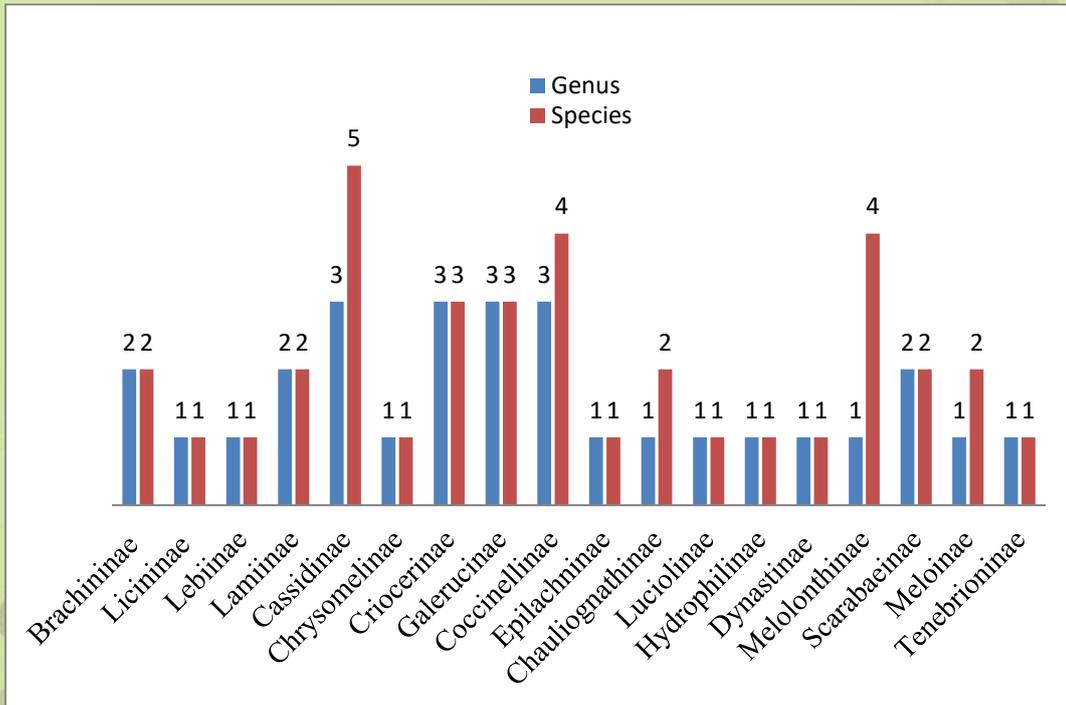


Figure 4. Subfamily wise distribution of beetles in study site.

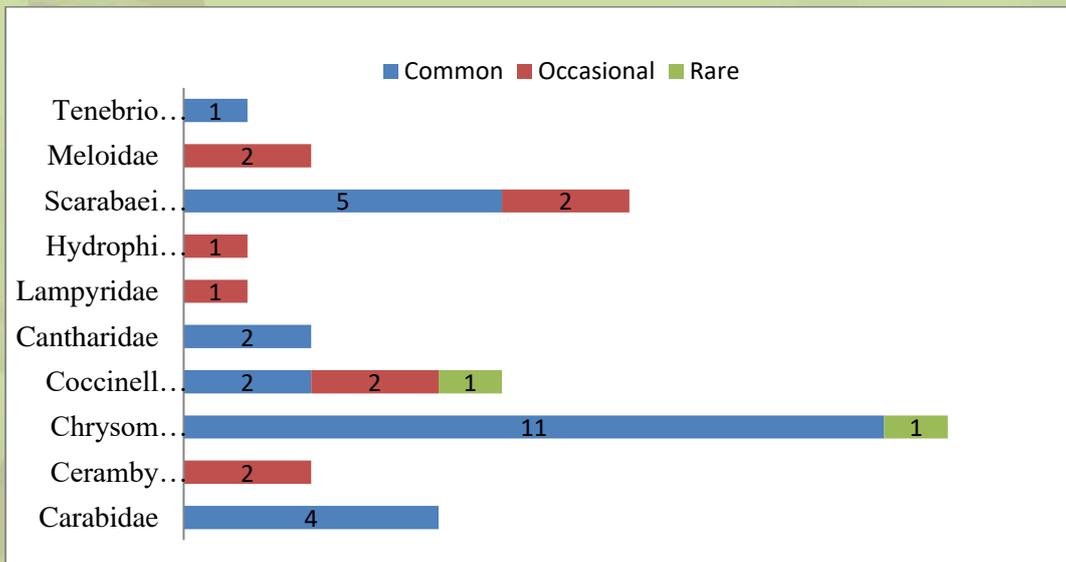


Figure 5. Status of beetle species in study site.

## MOTHS OF RIE CAMPUS



Image 1. *Amata humeralis*



Image 2. *Ophiusa coronata*



Image 3. *Eudocima materna*



Image 4. *Agrotis criniger*



Image 5. *Anomis flava*



Image 6. *Theretra nessus*



Image 7. *Anomis flava*

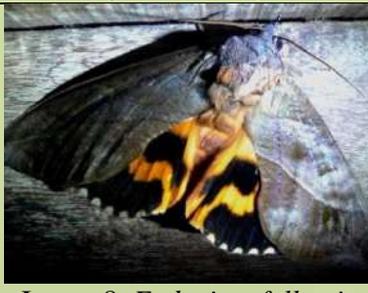


Image 8. *Eudocima fullomia*



Image 9. *Metallata absumens*



Image 10. *Eudocima fullomia*



Image 11: *Herpetogramma thestialis*



Image 12. *Agrotis criniger*



Image 13: *Nymphula nitidulata*  
(China-mark)



Image 14: *Amata huebneri*  
(Hubner's wasp moth)



Image 15: *Cnaphalocrocis medinalis*



**Plate 2.** Photographs of unidentified moths recorded in RIE Campus, Bhubaneswar



**Plate 3:** Photographs of unidentified moths recorded in RIE Campus, Bhubaneswar



Image: *Lymnaea stagnalis*



Image: *Sarcophgidae*  
(Flesh fly)



Image: *Eressa*



Image: *Borbo cinnara*



Image: Grasshopper



Unidentified



Image: *Apis dorsata*



Image: *Orthetrum sabina*  
(Slender skimmer)

**Plate 4:** Photographs of invertebrates recorded in RIE Campus, Bhubaneswar

# SPIDER DIVERSITY OF RIE CAMPUS



Image 1: *Telamonia dimidata*  
(Two-striped jumper)



Image 2: *Plexippus petersi*  
(Small zebra jumper)



Image 3: *Camaricus khandalaensis*  
(Red flower spider)



Image 4: *Perenethis venusta*  
(Single striped grass spider)



Image 5: *Neoscona vigilans*  
(Brown-legged spider)



Image 6: *Argiop anasuja*  
(Giant cross spider)



Image 7: *Carrhotus viduus*  
(Black and white jumper)



Image 8: *Nephila maculate*  
(Gaint wood spider)



Image 9: *Thomisus projectus*  
(Cream crab spider, Male)

**Plate 1:** Photographs of spiders recorded in RIE Campus, Bhubaneswar.



Image 10: *Xysticus minutus*  
(Brown crab spider)



Image 11: *Oxyopes Shweta*  
(White Lynx Spider)



Image 12: *Hyllus semicuperus*  
(Heavy Jumping Spider)



Image 13: *Eriovixia sp.*  
(Dotted bird dropping spider)



Image 14: *Plexippus paykulli*  
(Common zebra jumper)



Image 15: *Castianeira zetes*  
(Black ant-mimicking spider)



Image 16: *Oxyopes papuanus*  
(Papuan Lynx Spider)



Image 17: *Telamonia dimidata*  
(Two-striped jumper, Female)



Image 18: *Heteropoda venatoria*  
(Common house Spider)

**Plate 2:** Photographs of spiders recorded in RIE Campus, Bhubaneswar.

## VERTEBRATE DIVERSITY OF RIE CAMPUS



Image 1: *Clarias gariepinus*



Image 2: *Duttaphrynus melanostictus*



Image 3: *Polypedates maculatus*



Image 4: *Gehyra multilata*



Image 5: *Hemidactylus mabouia*



Image 6: *Hemidactylus frenatus*



Image 7: *Naja naja*  
(Indian cobra)



Image 8: *Ptyas mucosa*



Image 9: *Lycodon aulicus*



Image 10: *Calotes versicolor*  
(Oriental garden lizard)



Image 11: *Elgaria multicarinata*



Image 12: *Dendrelaphis punctulata*



Image 13: *Bubulcus ibis*  
(Cattle egret)



Image 14: *Vanzosaura rubicauda*  
(Red tailed Tegu)



Image 15 : *Accipiter novaehollandiae*  
(Grey goshawk)

**Plate 1:** Photograph of vertebrates of RIE Campus, Bhubaneswar.



Image 16: *Psittacula krameri*  
(Rose-ringed parakeet)



Image 17: *Eudynamys scolopaceus*  
(Asian Koel)

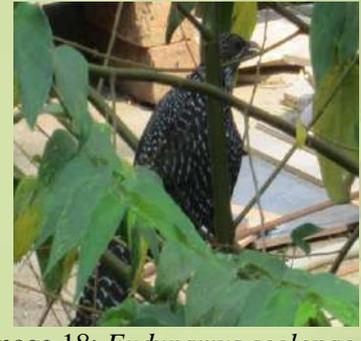


Image 18: *Eudynamys scolopaceus*  
(Asian Koel)



Image 19: *Centropus*  
(Coucals)



Image 20: *Halcyon smyrnensis*  
(White breasted kingfisher)



Image 21: *Dinopium javanense*  
(Common Flameback)



Image 22: *Acridotheres tristis*  
(Common myna)



Image 23: *Columba livia domestica*  
(Feral Pigeon)



Image 24: *Oriolus lavaratus*  
(Black-headed oriole)



Image 25: *Gracupica contra*  
(Indian pied myna)



Image 26: *Pycnonotus jocosus*  
(Red-whiskered bulbul)



Image 27: *Corvus corax*  
(Common raven)

**Plate 2:** Photographs of vertebrates recorded in RIE Campus , Bhubaneswar



Image 28: *Corvuscorax*  
(Common raven)



Image 29: *Dendrocitta*  
*vagabunda* (Rufus treepie)



Image 30: *Geokichla citrine*  
(Orange headed thrush)



Image 31: *Pycnonotus cafer*  
(Red-vented bulbul)



Image 32: *Liptocoma zeylonica*  
(Purple-rumped sunbird)



Image33: *Diecaeam erythrorhynchos*  
(Pale-billed flowerpecker)



Image 34: *Columba livia*  
*domestica*  
(Feral Pigeon)



Image 35: *Megalaima zeylanica*  
(Brown headed barbet)



Image 36: *Dicrurus macrocercus*  
(Black drongo)



Image 37: *Turdoides striata*  
(Jungle babbler)



Image 38: *Canis lupus*  
*familiaris*(Aspin)



Image 39: *Tamias striatus*  
(Eastern Chipmunk)

**Plate 3:** Photographs of vertebrates recorded in RIE Campus , Bhubaneswar



Image 40: *Funambulus pennantii*  
(Northern palm squirrel)



Image 41: Calico cat



Image 42: Stray dog



Image 43: *Herpestidae*  
(Mongoose)



Image 44: *Paradoxurus hermaphroditus*  
(Asian palm civet)



Image 45: *Macaca mulatta*  
(Rhesus Monkey)

**Plate 4:** Photographs of vertebrates recorded in RIE Campus, Bhubaneswar.

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# UNIT- 5

# MANAGEMENT

## **INTRODUCTION**

The lush green surrounding of this institute provide a fresh, clean atmosphere for the students, teachers and all the staff. To maintain the campus diversity, greenery and to develop a sense of responsibility towards the environment, time to time many engagement programs are organized for in-service and pre-service employees. The members of the institute as well as of DM school are involved in different activities performed to make everyone aware of biodiversity. Resource persons, Invited lectures and interactions sessions by skilled persons were organized to involve the young mass in better ways. Teachers are also asked to prepare and present lessons using resources available in the campus like- Flower garden, Medicinal garden, small water bodies, and barren house, to make students aware of biodiversity.

## **ACADEMIC INVOLVEMENT**

Out of total 98.4 acres of land of the institute, 39% is occupied by vegetation which has a rich floral and faunal diversity. Though all plants are important but we maintain the green environment of this institute as per certain specific mandate (vision and mission).

In all the management activities students are also being involved along with the institute's teaching and non-teaching staff so that they can also be aware and become sensitive towards biodiversity.

Students are given tasks to list, observe, identify, report, capture photographs of different plant species under the supervision and guidance of concerned faculty member. The plants were being identified with scientific approach by using various taxonomical keys.

Regularly student volunteers help the maintenance staff in cleaning weeds, pruning trees. The botanical garden is a conservatory to many medicinal and economically important plants. Utmost care is being taken for such plants without disturbing their surroundings.

Different programs like Van Mahotsav, Earth's Day, Republic Day, or any such event planting is one of the agenda.

## Pre-service and In-service Programmes to Create Awareness

### Hotspots of the Institute's Campus



Botanical gardens are the institutions that maintain several living plants of different varieties. It poses mainly plant species from several corners and also includes green houses a library herbarium research Laboratories and several miscellaneous resources therefore it is considered as Botanical institution for school science education. Ministry of Ayush Government of India with an aim to promote medicinal plants has started school herbal garden scheme in our school system. In this program according to Ministries setting up of herbal garden in school is a good way of accounting them with the commonly available and frequently used medicinal plants Under this project the schools will be encouraged to set up herbal garden within their own complex the objective is to promote an include uses of medicinal plants in food life style for preservation and control of common diseases for health benefits.

## Main objectives

- To provide good resourceful material to conduct scale enhancement course field and laboratory work for B.Sc.B.Ed honors botany semester 2 courses under CBCS pattern.
- To collect conserve and propagate the available medicinal plants in Bhubaneswar.
- To acquaint the skill best experience about the field work in medicinal botany for secondary school students and semester courses of CBCS pattern.
- To create learning environment to carry out the projects in plant propagation, nursery techniques, agro techniques for cultivation outdoor science education for both college students and DMS children.
- More than 90 species of various medicinal plants are cultivated and conserved in botanical garden.
- Activities and ideas for school children to work with botanical gardens observation of plants for morphology, vegetative growth and flowers description of plants for similarities and differences for classification and identification measurement of rainfall with regard
- To source of water and irrigation preparation of soil mixture with organic fertilizers for application and maintenance of polypots for transplantation of seedlings observation on germination of seeds and growth contentions of light humidity and temperature nutrient requirement for growth and development of plants
- Transplantation of polypot bags for growth of baby plants samplings micro propagation cuttings earrings drafting for clonal propagation of Elite varieties.
- B.Sc. B.Ed. Honors students teacher is practicing innovative method of teaching in Biology using botanical garden student trainee from B.Sc. B.Ed. CBZ integrated course of the institute exploring the botanical garden facilities as innovative teaching tool in conducting hands on activity of DMS school children.



**Image:-Two days laboratory work in herbal garden for skill enhancement course third strategy for conducting hands on experience for exhibition.**



**Image:- DMS student are explaining importance of nutrition in soil mixture for plant growth**



**Image:-Participation of a school kids and preparation of nursery seat beds in the garden**



**Image:- Primary kids practicing in garden activity for watering and germination of seeds for baby plants**



**Image:-DMS Biology teacher Madam Shalini is explaining about wild xerophytic plants to students**



**Image:-B.Sc. B.Ed. Honors botany student training is explaining about the field grown flowering plant for anti-cancer property**



**Image:-Professor MK Satapathy Dean addressing the DMS school students during the participation in seminar professor.**



**Image:-DMS students are exhibiting project work inquisitiveness of students in response to questions exhibitions on medicinal plants to acquaint traditional house for common remedies DMS school children participating in plantation with the coordinator honorable director professor H.K Senapati visited the medicinal Garden in December 2017 for planting the sampling.**

## **SUPERVISION OF GREEN COVER**

There is time to time supervision of the work done by various clubs. An even participation of staffs of this institution as well as DM school staffs in various plantation programme is seen. Starting from watering the plants to grow healthy trees various workers are engaged to take care of them. Regular monitoring and supervision helps them to work efficiently without harming any natural habitat. The unwanted plants and trees are also removed to clean the small water bodies that are present widely in this campus.

Cleanliness programs on regular basis were conducted by the NSS and student forums to help creating and maintaining a healthy environment around the institution campus.

## **BUDGET OF 5 YEARS**

A substantial amount of yearly budget has been allocated towards the purpose of maintenance and up gradation of green cover of the institution. Budget allocated towards this particular agenda had variations subjected to requirement and utilization.

<b>Sl.No.</b>	<b>Year</b>	<b>Budget Utilized</b>	<b>Purpose</b>
<b>1</b>	<b>2019-2020</b>	<b>Rs. 66,540/-</b>	<b>Purchase of new saplings, manure, biopesticides and biofertilisers</b>
<b>2</b>	<b>2020-2021</b>	<b>Rs. 47,920/-</b>	
<b>3</b>	<b>2021-2022</b>	<b>Rs. 92,020/-</b>	
<b>4</b>	<b>2022-2023</b>	<b>Rs. 48,050/-</b>	

## **STRATEGIES TO CONSERVE BIODIVERSITY**

Biodiversity is the “biological diversity in an environment as indicated by numbers of different species of plants and animals. “Protection, restoration, and management of biodiversity in order to derive sustainable benefits for present and future generations.

The main objectives of Biodiversity Conservation are to:

- protect and preserve species diversity.
- ensure sustainable management of the species and ecosystems.
- prevent and restore ecological processes and life support systems.

**So our institute has taken major steps in order to maintain the biodiversity of this campus which are as follows:**

1. All the varieties of food, timber plants, livestock, fungi and agricultural animals are conserved.
2. All the economically important organisms are identified and conserved carefully.
3. The levels of pollutants are checked and measured in the environment to take the utmost care of our natural diversity.
4. Deforestation is strictly prohibited in order to nurture the existing biodiversity.
5. The useful and endangered species of plants and animals are conserved in their natural environment.
6. Local plants and vegetables are planted so that it supports the wider ecosystem of our local area.
7. Public awareness is created through various programs like drama or role play and various rallies.
8. A herbal garden having various medicinal plants is setup in order to make students aware of their importance

Conservation of biodiversity has always been an objective of environment education. CEE has expertise in and has done a wide range of activities in this area. Several of its Eco development Programs looked at biodiversity conservation as a major thrust. There are various training programme for in-service as well as pre-service teachers for better enhancement of the biodiversity.

## Plantation – 2020



Plate 1: photographs of plantation 2020 in RIE Campus ,Bhubaneswar

## Plantation – 2021



**Plate2: Photographs of plantation 2021 in RIE Campus , Bhubaneswar**

## **Plantation – 2022**



**Plate 3: Photographs of plantation 2022 in RIE Campus, Bhubaneswar**

# Plantation – 2022



Plate 4: Photographs of plantation 2022 in RIE Campus, Bhubaneswar



**Save a Tree,  
it Don't  
Charge a Fee**



**Plate 5. Interaction and discussion of students about campus flora and their medicinal uses in R.I.E. campus, Bhubaneswar**

## Checklist

The institute campus is audited with respect to the Green Audit Checklist developed with the help of experts.

Sr. No.	Green Program	Yes/No	Remarks (if any)
1	Upcycling of waste, recycling beyond books		
2	Criteria of green team in the institute		
3	Awareness programme on the environment energy management and safety (external and academic courses)		
4	Outreach activities, green programme (Tree plantation, waste segregation, plastic waste collection, cleaning etc.) records/ photos of programs		
5	Presence of system/ methodology available for implementation of green initiatives and green projects		
6	Mindset for reduction, recycle of waste		
7	Digitization		
8	E-archiving		
9	E- resources: E books, Online journals, membership of consortium		
10	Maintaining green campus/ greening of campus		
11	Building architecture that allows sunlight to pass		
12	Enough natural light in the classroom and seminar hall		
13	Presence of skylight rooftop		
14	Wide corridors open to daylight		



विद्यया ऽ मृतमश्नुते



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