



Senna, Siamca
Siburnus arborescens

Pa

▶ Bot

with

F

▶ SI

appie c

▶ \$t

▶ \$t

PURPOSE OF EXCURSION

- ▲ Botany excursion is aimed at acquainting the student with the life and behaviour of plants.

AIMS & OBJECTIVES OF FIELDS STUDY

- ▼ The main objective of the field study is to create an appreciation and love for the nature and biodiversity.
- ▼ It also helps in orientation to field study.
- ▼ It introduces students to basic field methods of studying the conservation strategy as ex: in situ conservation area.



→ KYD MONUMENT



→ main gate



↳ Hyphreina, Hebaica

Acharya Jagdish chandra Bose..... (Indian Garden Botanic.)

The Acharya Jagdish chandra Bose Indian Botanic garden
Previously known as Indian Botanic Garden and the Calcutta
Botanic Garden is situated in Shibpur, Howrah - near Kolkata.
They commonly know as the Calcutta Botanical Garden and privately
as the Royal Botanic Garden. The gardens exhibit a wide variety
of rare plants and a total collective of over 12,000 specimens spread
over 109 hectares, it is under Botanical Survey of India (BSI) of
Ministry of Environment and forests, Government of India.

Designers :- Robert Kyd, William Roxburgh.

The Great Banyan Tree



THE GREAT BANYAN TREE

We were all attracted to see "The Great Banyan Tree" which looked like a forest in miniature rather than an individual tree. Hundred of aerial roots were found to be hanging from the branches to the ground giving support to the plant, a few gardeners informed us that it's branch trunk had already been lost and they use to take care of this plant regularly. We got some information about the plant from the sign board hanged before the fencing of the surrounding of plants namely. There are about 1825 aerial roots, the circumference of the canopy was more than 245m and age is considered to be over 250 year. The tree is just a wonder and admiration.



Booble Coconut-

Leifung palm.



Amazon Lily.



INTERESTING OBSERVATION MADE IN THIS BOTANICAL GARDEN

DOUBLE COCONUT: *Maldivica* is the native of sicily island. The endocarp of coconut is the long being compressed together. It has a normal life span of 152 years.

BRANCHING PALM: *Hyphanal thebaica* is a rare plant which is brought from Brazil.

LENTURY PALM: *Corypha alata* is another rare plant of Latin America. It has normal life span of 100 years but show 2 distinct phase in life cycle. It grow vegetative.

AMAZON LILY: *Victoria amazonica* is a great giant aquatic plant. It has very lamina with spines on its ventral surface.



→ widgeon

bismuth

→ Cactus House



Hibiscus Section

→ Cactus House



CACTUS HOUSE: A cactus (Plural cacti, cactuses or less commonly, cactus) is a member of the plant family Cactaceae, a family comprising about 127 genera with some 17500 known. Specimen of the order Caryophyllales.....

HIBISCUS SECTION: Hibiscus is a genus of flowers plants in family malvaceae. The genus comprise of over 400 species which can easily grow in wide range of conditions. The world with more than 23000 registered cultivars.....

WODYTIA BIFURCATA: The fox tail palm is a species of Palm in the family Arecaceae, native to Queensland, Australia. It is the sole species in genus Wodytia bifurcata.....



Ficus religiosa



Tamarindus indica



Archontophoenix alexandrina

Lagerstroemia floribunda, also known as Thai
crape myrtle and Kedah bungor, is a species
of flowering plant in the family Lythraceae. It
is native of the tropical region of Southeast
Asia in Thailand. It is provincial tree of Sarawak:.....

Terminalia Catappa, is a large tropical tree
in the leadwood tree family; Combretaceae.
Native to Asia, common names in English include
country almond, India almond, beach almond
and false Kamari, Sea Almond.....

Archontophoenix alexandrea; Commonly known
is alexandra Palm, King Palm, is a palm endemic
to Queensland, Australia it was named in honor
of Princess Alexander of Denmark, but is
also often referred to as Alexander Palm.....



Neolamarckia cadamba



The Great Banyan tree

Servo Siam



LIST OF THE PLANTS

SCIENTIFIC NAME

FAMILY NAME

Abroma augusta
Pterospermum acerifolium
Acorus calamus
Duranta repens
Aristolochia indica
Rajania corymbifolia
Desmodium gangeticum
Barleria cristata
Thespesia schalensis
Hemidesmus indicus
Pterigota elata

Sitirculiaceae
Streculiaceae
Preaceae
Verbinaceae
Artochia
Leguminaceae
Acanthaceae
Malvaceae
Aschepidaceae
Leguminaceae

Casuarina equisetifolia
(Casuarinaceae)



SCIENTIFIC NAME

FAMILY NAME

Antigonon Pectopus

polygoniaceae

Butea Monasperma

leguminaceae

Bauhinia Variiegata

ceasalpinaceae

Cleome Viscosa

verbinaceae

Kantana Camora

capperidaceae

Leucas Aspera

labiate

Ricinus Communis

Euphorbiaceae

Urena Lobata

apocynaceae

Rauwolfia Sarpentina

malvaceae

Urena Sinuata

malvaceae

Myxozourelia Thevetia
(Pezizaceae)



THE CHARAK VIDYAN

After visiting "The Great Banyan Tree", we the young botanist entered "Charak Vidyan" the garden of medical plants dedicated in the name of charak. The famous Ayurvedic physician of history. The garden attempts to conserve the medical plants. Once used by charak for treatment of many incurable diseases. The plants which I remember now including the species - Aloe, Cardamomum, Cannabis, Cephalaria etc.

Besides the Banyan Tree's and Charak Vidyan the interesting spot in the garden were the pain house, orchid house, branching palms, collection of each cacti and succulent green meadows pleasant lakes etc.



Casuarina equisetifolia
(Casuarinaceae)

RETURN JOURNEY

Just at 4 o'clock in the evening. We left the garden for home and we remembered at once again the garden's most precious treasure — the Banyan Tree "PAOLA GRACHH": A tree with leaves of various shapes & size. We saw the giant water lily of the Amazon which reportedly stay even if a child sits on it.



Adonidia mercurii
(Arecaceae)



Sterculia indica
(Sterculiaceae)

CONCLUSION

A trip to Botanical Garden enabled us to make this fitted note book. In this excursion we observed a lot of valuable lessons about these gardens. The gardens is now on the edge of decline. Many of the economically important plant are found missing everyday. This studies can established the teacher-student relationship, help immersely relationship help to know a lot of knowledge through the method of working, learning through playing. Learn with lots of fun.



Seen

Alkan

29 June 2022

TOPOGRAPHY

Name :- Sabnam. Khatabow.

CU ROLL :- 213147-12-0003.

CU Registration NO :- 147-1211-0238-21

Collage Roll No :- 05

Place :- Botanic garden (Acharya Jagadish chandra Bose)

Locality :- Botanic garden is situated on the South banks of Hooghly at distance of 8 km from Howrah Station.

Height :- 4.6 ft from Sea level.

Soil :- Bengali alluvial

Area :- 14.8 acre.

Temperature :- 22°C and 30°C

Date :- ~~29 June 2022~~ 29th June 2022

Teachers with us :- Mrs Antalina Kasi,

Name :- FAIQA NAAZ.

Class :- B. Sc (General) II, Semester

C.U Regn. NO. - 147-1211-0236-21

Sub 1 - Botanical Excursion Project.

File..

Trip To
Botanical
Garden
Kolkata

TOPOGRAPHY

PLACE :- Botanical Garden, West Bengal.

LOCALITY :- Botanical Garden is situated on the South banks of Hooghly at distance of 8 km from Howrah Station.

HEIGHT :- 4.6 ft from sea level.

SOIL :- Gangetic alluvial.

AREA :- 14.8 acre.

TEMPERATURE :- 22°C - 42°C

DATE :-

TEACHERS WITH US :- Miss Anthalima Kan.



Introduction

This is situated at Shibpur area of Howrah district. It was laid out in 1786. This is the oldest of the Botanical gardens in India. Its cover area is 270 acres. Inside is an incredible variety of about 50,000 trees. The main attraction is the Great Banyan tree, which covers about 404 m² of land. It has 157 offshoots hanging down from the original tree. There are innumerable orchids and colourful flowers. There is a library in the garden which comprises of a large collection of books on botany. It has the largest garden in the world in Asia called the "National Herbarium".



LEWIS LAKE

About the Garden

During our bus journey we came to know many valuable information about the garden. As history says Indian Botanical Garden, Shibpur Howrah, was established by Robert Kyd, a military engineer of the East India Company in July 1857. It occupies an area of 237 acres of land on the west bank of river Hooghly. Many famous taxonomist were established with this garden. Notable persons are Dr. Nathaniel Wallich, Sir George King, J.D. Hooker and several others. Robert Kyd passed away in 1931. In 1962 Dr. William Roxburgh became the second in charge of the garden. He was said to be the father of Indian Botany. He wrote a book "Flora Indica" about the Indian flora. He was the founder member of Central National Herbarium. He introduced botany as a subject in school and college for the first time. He gave 25 acres with plant subplantation of over 12,000 of land plants from garden to a Christian Missionary of over 12,000 of land plants from garden to a Christian Missionary.



1858 - 1937

Acharya Jagdish
Chandra Bose

Acharya Jagadish Chandra Bose

Sir Jagadish Chandra Bose, was a biologist, physicist, botanist and an early writer of science fiction. He pioneered the investigation of radio and microwave optics, made significant contributions to plant science, and was a major force behind the expansion of experimental science on the Indian subcontinent. IEEE named him one of the fathers of radio science. Bose is considered the father of Bengali science fiction, and also invented the crescograph, a device for measuring the growth of plants. A crater on the moon has been named in his honour. He founded Bose Institute, a premier research institute of India and also one of its oldest. Established in 1917, the institute was the first interdisciplinary research centre in Asia. He served as the director of Bose Institute from its inception until his death.

(30 November 1858 - 23 November 1937)



About the Great Banyan tree



Poster of Great Banyan tree.

The Great Banyan Tree

The Great Banyan is a banyan tree (*Ficus benghalensis*) located in Acharya Jagadish Chandra Bose Indian Botanic Garden, Shibpur, Howrah near Kolkata, India. The great banyan tree draws more visitors to the garden than its collection of exotic plants from five continents. Its main trunk became diseased after it was struck by two cyclones, so in 1925 the main trunk of the tree was amputated to keep the remainder healthy. A 330-metre long (1080 ft) road was built around its circumference, but the tree continues to spread beyond it.

Botanically known as *Ficus benghalensis*, and belonging to the family Moraceae, the tree is a native of India. The fruit is like a small fig and is eaten by some people. It tastes sweeter than fig. The banyan plant is seen sometimes growing from the little wet dust deposits on building because birds carry them around for eating. The fruit is red and when ripe gets softer.



BSc Sem 5th Students.



Group photo



BSc (Gen) Vth Sem Girls
with Mam.

The Charak Udyan

After visiting the Great Banyan tree, we the young botanist entered " ". The garden of medical plants dedicated in the name of Charak, the famous Ayurvedic physician of history. The garden attempts to conserve the medical plants once used by Charak for treatment of many incurable diseases. The plants what I can remember now, including the species of Aloe, Cardamom, Cannabis, Cephalis etc.

Besides the Banyan tree and Charak Udyan the interesting spot in the garden is the palm house, orchid house, branching palms, collection of each cacti and succulent green meadows pleasant lakes.



Leaf of Water Lily



Water Lily

Interesting Observations made in the Botanical

Double coconut: - maldivica is the native of Sicily island
- the endosperm of coconut is of large size if
look as 2 halves being compressed to gether
It has a normal life span of 152 years.

Plum-stemmed tree - **Hyptis** the tree is a rare plant
which is brought from Brazil.

Century palm :- **Conyza elata** is another rare plant of
Latin America. It has a normal life span
of 100 yrs. It shows 2 different phases of life
cycle. It grows vegetatively throughout its life.

Amazon lily :- **Victoria amazonica** is a great giant
aquatic plant. It has a very large leaf
lamina with spine on its ventral surface.



Tree in Botanical Garden



Astonia scholaris

The Plants and Trees of Botanical Garden

Alstonia scholaris

Alstonia scholaris, commonly known as blackbeard-tree or devil's tree in English. It is an evergreen tropical tree in the family Apocynaceae. It is native to southern China, tropical Asia and Australasia, it is commonly planted ornamental plant in these areas. It is a toxic plant, but traditionally it is used medicinally for myriad diseases and complaints.

Alstonia scholaris is a glabrous tree and grows up to 40 m (130ft) tall. Its mature bark is grayish and its young branches are copiously marked with lenticels. Flowers bloom in the month of October. The flowers are very fragrant similar to the flower of *Cestrum nocturnum*.

Seeds of *A. scholaris* are oblong, with ciliated margins, and end with tufts of hairs 1.5-2 cm. The bark is almost odorless and very bitter, with abundant bitter and milky sap.



Syzygium malaccense

di
fr
A

Syzygium malaccense

Syzygium malaccense is a species of flowering tree native to Malacca and Australia. It is one of the species cultivated since prehistoric times by the Austronesian peoples. They were carried and introduced deliberately to Remote Oceania as canoe plants. In modern times, it has been introduced throughout the tropics, including many Caribbean countries and territories.

Syzygium malaccense has a number of English common names. It is known as Malay rose apple or simply Malay apple, mountain apple, rose apple, Otahite apple, pink satin-ash, plumrose and pommerac. Despite the fact that it is sometimes called Otahite cashew, it is not related to cashew. While cashew nuts may trigger allergic reaction, rose apple fruit has not been observed to do so. It is found mainly in the rainforest zones on the Atlantic Coast of the country. In Colombia, Puerto Rico and other Latin American countries it is also found and known as *Porra Rosa*.



Adonidia merrillii

Adonidia merrillii

Adonidia merrillii, the Manila palm, is a palm tree species native to the Philippines (Palawan and Danjugan Island). This palm was cultivated for centuries in East Asia before becoming a staple in the west. It is reportedly naturalized in the West Indies and Florida. It is commonly known as the "Christmas palm" because its fruits become bright scarlet and tend to be that colour in winter. This palm is typically fairly small and slender, normally attaining 25 feet or 8 metres.

Adonidia merrillii is widely planted in cultivation and grows well in tropical locations such as Hawaii and the southern half of the Florida peninsula. It is also one of the most commonly planted ornamental palms in the world, often planted in non-tropical locations such as shopping malls.

It is sometimes used as an annual in places that freeze in the winter.

The *Adonidia* is also commonly placed indoors in hotels, casinos and other higher-end establishments due to its ability to adjust to lower light conditions.



Pterospermum acerifolium

Pterospermum acerifolium

Pterospermum acerifolium, the Bayur tree or Karnikara tree, is a flowering plant indigenous to Southeast Asia, from India to Burma. It is most likely to grow naturally along forested stream banks. The best-growing conditions are a seasonally moist-trew day climate to access to full sunlight. *Pterospermum acerifolium* is an angiosperm that is traditionally included in the family Sterculiaceae; however it is grouped in the expanded family Malvaceae as well. There is an array of common names of *Pterospermum acerifolium* depending on the region where it is grown. It is commonly referred to as Kanak champa, Muchakunda or Karnikar tree within its native range.

In the Philippines, it is known as Bayog. Other common name is Bayur Tree, Maple-leafed Bayur Tree and Dinner Plate Tree. It is relatively a large tree, growing up to thirty metres tall. Mostly planted as an ornamental or shade tree, the leaves, flowers and wood of a Bayur Tree can serve a vary variety of functions.



Neobanksia cadamba /

Livistona chinensis

Neolamarckia cadamba

Neolamarckia cadamba, with English common names burflower-tree, lanan and Leichhardt pine, and called kadamb or cadamba locally is an evergreen, tropical tree native to South and Southeast Asia. The genus name honours French naturalist Jean-Baptiste Lamarck. It has scented orange flowers in dense globe-shaped clusters. The flowers are used in perfumes. The tree is grown as an ornamental plant and for timber and paper making. Kadamb features in Indian religions and mythologies.

A fully mature tree can reach up to 45m in height. It is a large tree with a broad crown and straight cylindrical bole. It is quick growing with broad spreading branches and grows rapidly in the first 6-8 years.

The trunk has a diameter of 100-160cm but typically less than that. Leaves are 15-32cm long. Flowering usually begins when the tree is 4-5 years old.



Mussaenda Koenigii

Murraya Koenigii

The curry tree, *Murraya Koenigii* or *Berbera Koenigii*, is a tropical to subtropical tree in the family Rutaceae and is native to Asia. The plant is also sometimes called sweet neem, *Azadirachta indica*, which is in the related family Meliaceae.

It is a small tree growing 4-6 m tall, with a trunk up to 40 cm diameter. The aromatic leaves are pinnate with 11-21 leaflets, each leaflet 2-4 cm long and 1-2 cm broad. The plant produces small white flowers which can self pollinate to produce small shiny-black drupes containing a single, large viable seed. The berry pulp is edible, with a sweet flavor.

The tree is native to the Indian subcontinent commercial plantations have been established in India, and more recently.

Growth is more robust when temperatures are at least 18°C (64°F).

Acknowledgement

I would like to express my special thanks of gratitude to my teacher Antalina Ma'am who gave me the golden opportunity to do this wonderful project of Trip to Botanical Garden, who also helped me in completing my project. I came to know about so many things.

I am really thankful to you. Secondly, I would also like to thank my parents and friends who helped me a lot in finalizing this project within limited time.

Faiqa Nazki
BSC General

✓ Akar
29 June 2022



NAME: SHAMA PARVEEN.
COLLEGE ROLL NO: 49
CU ROLL NO: 222147-12-0040
REG NO: 147-1211-0179-22
SUBJECT: E.V.S

C O N T E N T.

S.No.	INDEX	Pg. no
1.	INTRODUCTION	1-2
2.	Botanical Garden	3-4
3.	Collection of plants and trees	5
4.	Livistona chinensis	6
5.	LYTHRACEAE	7
6.	Ptychosperma Macarthurii	8
7.	Adonidia Merillii	9-10
8.	Adonidia Merillii - culture	11
9.	Neolamarckia cadamba	12
10.	Legumes	13
11.	Aegle Marmelos	14-17
12.	Banyan tree	17-19
13.	Casuarina Equisetifolia	20-21
14.	Pterospermum Acerifolium	22-24
15.	CONCLUSION.	25

ACKNOWLEDGEMENT

Working on a project particularly for the student require the guide and assistance of an expert. I would like to thank for my E.V.'s teacher Mrs. Saba Taj who gave me the golden opportunity to work for the project extension of a story under her guidance it was a collaborative and individual activity and myself lucky have Mrs. Saba Taj as my guide whose encouragement, motivation and individual care helped us in during a lot of research and widened the horizon of our knowledge. I sincerely know her guidance and supervision.

Secondly, I would like to thank my parents who help drew the project to a successful end. I am also grateful to all my friends and others who became a part of this project in my way.

Teacher's sign

Principal's sign

Teacher's Signature

INTRODUCTION

BIO-DIVERSITY: Biological diversity or in short Bio-diversity may be defined as the variety and variability among living organisms and the ecological complexes in which they occur. The term encompasses different ecosystem species, genes and their relative abundance.

GENETIC-DIVERSITY All forms of life whether microbes plants, animal or human living within genes. Genetic diversity is the sum of genetic information, contained in the genes of individual plants, animals and micro organism. Each species is the structure of an immense amount of genetic information in the form of traits, characteristics, etc.

The individuals differ widely from one another in their genetic make-up and is known as genetic diversity.

Modern technology one being able to manipulate genes to develop better types of medicines and industrial products.

{SPECIES DIVERSITY}

In any ecosystem the biotic components is composed of few species only of a large numbers of microbes plants and animals species. These species react and interact with each other and within the abiotic factors of the environment the diversity related to the numbers and relative abundance of species within a community are referred to species diversity.

{ COMPONENT OF SPECIES

DIVERSITY Whittaker in (1972) expressed different components of species diversity such as:

{ ALPHA DIVERSITY }

This is the local diversity which is expressed as the number of species in a small area of more or less uniform habitat.

{ BETA DIVERSITY }

The difference in species form one habitat to the next is referred to as beta diversity.

{ GAMMA DIVERSITY }

It is the total diversity of both the forest and the open field. It is the total number of species observed in all habitats within a region or geographical area that includes no significant barriers to dispersal of organisms.

{ECO-SYSTEM DIVERSITY}

Bio-diversity viewed at the ecosystem level, that includes the great variety of habitat types and biomass are usually referred to as ecosystem diversity.

{BIO-DIVERSITY OF WEST BENGAL}

The bio-diversity of west Bengal is a assemble of various habitats and vegetations having eight different forest types.

{IMPORTANCE OF BIO-DIVERSITY}

Bio-diversity performs a number of ecological services for mankind that have economic, aesthetic and recreational value.

{ CONSUMPTIVE VALUE }

These include utilization of timber, food, fuel, wood and fodder by local communities for example. Fisher folks are completely dependents on fishes and know where and how to catch them and other edible aquatic animals and plants.

{ PRODUCTIVE VALUE }

The genetic properties of microbes, plants and animals are used biotechnologically to develop better varieties of crops for use in farming and plantation programmes and to develop better line stock.

To industrialist biodiversity is a storehouse to develop new products for pharmacist. Bio-diversity helps to develop new drugs from plants.

{ THREATS OF BIO-DIVERSITY }

The cults of overuse and misuse of most of our ecosystem the once productive forest and grasslands have ~~been~~ turned into barren deserts and fertile lands have been converted into wasteland. The world has lost about 30 species of high animals.

{ CONSERVATION OF BIO-DIVERSITY }

Being in mega diversity country ~~we~~ India has a broad range of ecosystem a vast area of flora and fauna. Its forest biodiversity faces increasingly pressure from trees felling for ~~fire~~ fuels and timber cattle grazing poaching conversion of land to agriculture and etc. the population boom couple

with incidence to poverty has quickened the pace of degradation in India.

Thus, India is committed to bio-diversity conservation. It has developed an extensive system of parks and sanctuaries covering more than 4% of its area.

(SOCIAL VALUE) These are linked to consumption and productive values. For example - cultivation of Rice and many other things are linked to earthian Social Value. Social culture and customs. Recent practices have resulted in giving economic incentives to farmer to grow each crops for national and international markets ignoring local food need. This however can lead to local food shortage unemployment and ~~that~~ vulnerability to drought and flood.

ETHICAL AND MORAL VALUE

There are several cultural, moral and ethical values association with the sanctity of all forms of life nature in India civilization has been preserved for hundred of generation through local tradition and customs, these act as gene Banks for several wild plants.

OPTICAL-VALUE There are every possibility that many traditional varieties of crops and Domestic animals may become useful in future.

IN SITU CONSERVATION

Bio-diversity at all level can be preserved most effectively by setting adequate representation of wilderms practical areas through in situ conservation setting up a network of national parks wild-life Sanctuaries etc. each with distinctive ecosystems is the preservation of relative intact.

natural ecosystem where biological diversity from microbes, microscopic plants and animals to the giant and mammals are all equally inacted with the work.

{EX-SITU CONSERVATION} When conservation is done outside the natural ~~to~~ habitat of organism, pollen storage, tissue is called ex-conservation.

In ex-conservation seat bank, botanical garden, pollen, storage, tissue culture, genetic engineering etc have been playing a crucial role.

Modern zoos undertake breeding programmes of endangered animals even assisting in artificial breeding.

example - Delhi Zoo has successfully bred the rare manufacture brown antelope boas.



2, 2



{ BOTANICAL GARDEN }

A botanical garden or botanic garden is a garden dedicated to the collection, cultivation, preservation and display of an especially wide range of plants which are typically labelled with their botanical names. It may collection specialist plant collection such as cacti and other succulent plants, herb gardens. Plants from particular plants of the world and so on there may be greenhouses, shade houses again with special collections such as tropical plants, alpine plants, or other exotic plants. Most are at least partly open to the public, and may offer guided tours, educational displays, art exhibitions, book rooms, open air theatrical and musical performances and other entertainment. Botanical gardens are often run by universities or other scientific research organizations, and often have associated.



herbaria and research programmes in plant taxonomy or some other aspect of botanical science. In principle their role is to maintain documented collections of living plants for the purpose of scientific research, conservation, display and education although this will depend on the resources available and the special interest pursued at each particular garden. The staff will normally include botanists as well as gardeners.



??



{ ACHARYA JAGADISH

CHANDRA BOSE BOTANIC

INDIAN

GARDEN }

The Acharya Jagadish chandra Bose Indian Botanic Garden previously known as Indian Botanic Garden and the calcotta Botanic Garden. is situated in Shibpur, Howrah near Kolkata as the commonly known as the calcutta Botanical Garden and previously as the Royal botanic Garden, calcutta. The gardens exhibit a wide variety of rare plants and a total collection of over 12,000 specimens over 109 hectares. It is under Botanical Survey of India (BSI) of Ministry of Environment and Forests, Government of India.



भारत सरकार, नई दिल्ली / GOVT OF INDIA
भारतीय वन्यजीव संरक्षण बोर्ड, कोलकाता
आचार्य जगदीश चंद्र बोस भारतीय वनस्पति उद्यान
ACHARYA JAGADISH CHANDRA BOSE INDIAN BOTANIC GARDEN
कोलकाता-७०० ०३२ / कोलकाता-७०० ०३२ / कोलकाता-७०० ०३२
वेबसाइट: www.ajcboseindianbotanicgarden.org / फोन: ९८५०११ / मोबाइल: ९८५०११

2

Type	public
Location	Shibpur, Howrah
Nearest city	Howrah, Kolkata
Area	109 hectares (270 acres)
Created	1787, 235 years ago
Designer	Robert Kyd · William Roxburgh
operated by	Botanical Survey of India
status	open 5am-7am for morning worker 9am-5pm for visitors.
website	official website



22



LIVISTONA CHINESE

Livistona chinensis, the Chinese for palm or fountain palm is a species of subtropical palm tree of east-Asia. It is native to southern Japan, Taiwan, the Ryukyu islands, south-eastern China and Hainan. put Chinese for a palm in a bright location, but out of direct sunlight. Give it a quarter turn about once a week to expose all sides to light for even growth. water.

LYTHRACEAE

Lythraceae is a family of flowering plant including 32 genera with about 620 species of herbs, shrub and trees. The large genera include euphorbia (275 spp), aegstroemia (56), Nesea (50), Adala (45) and Lythrum (35) it also includes the pomegranate punica granatum formerly in punica ceae) and the water.



NO PLASTIC

PTEROSPERMUM MACARTHURII

ptychosperma macarthurii.

Commonly known as the Macarthur palm is a species of tree in the palm family *Areaceae*. Its native range is northern Cape York Peninsula in Queensland with a number of disjunct populations in the northern Territory and New Guinea. The species has been widely planted in tropical areas and is commonly grown as an indoor plant.

PTEROSPERMUM

MACARTHURIT

Ptychosperma macarthurit.
Commonly known as the Macarthur palm is a species of tree in the palm
Arecaceae its native range is northern
Cape York peninsula in Queensland with
a number of disjunct population in
the northern Territory and New Guinea.
The species has been widely planted
in tropical areas and is commonly grown
as an indoor plant.

ADONIDIAMERILLIT

Adonida merillit the Manila palm is a palm tree species native to the Philippines (Palawan and Danjagan island). This palm has cultivated for centuries. The Manila palm is a terrific choice that will not over whelm a landscape in size or workload (unless you want to content with the fruit) because it grows quickly to 5 or 6 feet and level off to a slower growth that reaches its final mature height of 25 feet.

{ADONIDIA MERRILLII CULTURE}

Easily grown in most humid tropical environments as long as moist well-draining soils are provided. Intolerant of consistently saturated soils. Prefers full sun. But is adaptable to most light conditions and can be grown indoors if given plenty of bright light. Manila palms are self-pruning meaning that the older lower leaves will fall off on their own. Can be propagated from seed. Hardy in zones 10b-11 highly sensitive to frost and freezing temperatures.

NEOLAMARCKIA

CADAMBA

The Scientific name of ~~Kadamba~~ Kadamba is *Neolamarckia cadamba* however more popular synonym is *Anthocephalus cadamba*. It belongs to Rubiaceae family. The Kadamba tree is indigenous to hotter parts of India. It is known by numerous other names throughout India.

LEGUMES

Legumes also called pod-fruit of plants in the pea family (Fabaceae). Most legumes are dehiscent fruits that release their seeds by splitting open along two seams. Though some such as peanuts (*Arachis hypogaea*) and coarses (*Ceratonia siliqua*), do not naturally open.

A dry dehiscent one-celled fruit developed from a simple superior ovary and usually dehiscent into two valves with the seed attached to the ventral suture.

{ A G L E M A R M E L O S }

Aegle marmelos commonly known as ball, also bengal quince apple. Japanese better orange. Stone or wood apple is a rare species of tree native to the Indian subcontinent and Southeast Asia. It is present in India, Bangladesh, Sri...

Aegle marmelos (L.) Correa (A. marmolesia) a tree species belonging to the family Rutaceae is commonly called *ivam* (in Tamil) and often cultivated in temples for its leaves are used for pujas.

{BANYAN TREE}

The Great Banyan is a banyan tree located in Acharya dish chandra Bose Indian botanic Shibpur Howrah near Kolkata India. The Great Banyan tree is believed to be at least 250 years old and has belonging. The great banyan is located century. The Acharya Jagadish chandra Bose Botanical garden in Howrah near Kolkata. The entire garden is actually that spans 3.5 acres and is over 80 feet tall making it one the natural marvels of the world. The Botanic Garden boasts of being home to 12,000

Amazingly, the tree continues to thrive without its main trunk and continues to grow wider and bigger each year. This fact even baffles scientists. Banyan trees also have many medical benefits. It can prevent tooth decay boost immunity prevent and even treat diarrhoea.

P T E R O S P E R U M
A C E R I F O L I U M

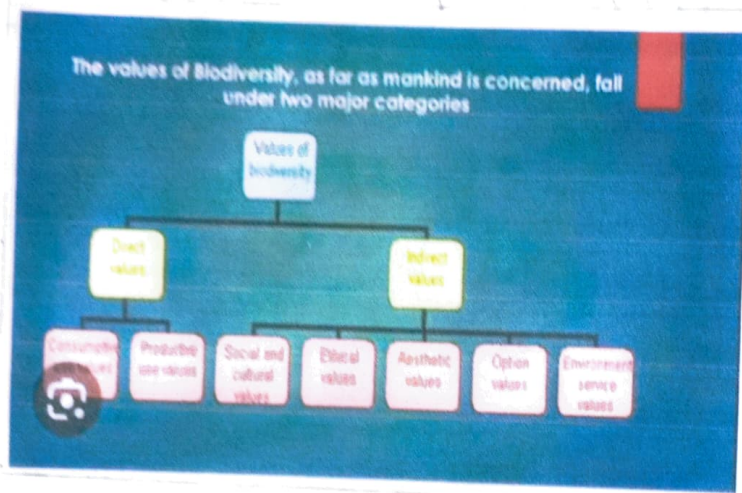
Maple - level bayon is an evergreen tree with an irregular crown with thick steeply ascending branches it can grow up to ~~30~~ 30 meters tall. The bole is often crooked. The tree is gathered from the wild for a range of local uses - medicinal timber plate substitutes etc. It is planted as a roadside tree or garden ornamental being valued especially for its beautiful fragrant blooms; large leaves and the shade it provides.

CONCLUSION.

The project has been completed by me under the guidance of our E.V.S. Ma'am.

I have tried to give my all and not to make any mistake in this project. I hope this project will provide information regarding "Acharya Jagadish Chandra Bose Indian Botanic Garden" now it come into existence, its present condition was its plants and trees and the lake and the nursery, location etc. Botanical garden play an important as the exist conversation your plant also in sites conversation site. It was a wonderful and learning experience for while on this project. This project looks me through the different families of plant and trees and gave me a real environment of evs and a project insight into the world of greens and nature. The project give me a challenges to feel of a family belonging to nature.

S. A. Khan
08/5/23
Perman
31/8/23
24
- 30



VALUES OF BIODIVERSITY

ley local communities; for example, fisher folks are completely dependent on fishes and know where and how to eat them and other edible aquatic animals and plants.

B. Productive value

The genetic property of microbes, plants and animals are used biotechnologically to develop better variety of crops for use in farming and plantations programmes and to develop better line stock.

To industrialist, biodiversity is a store-house to develop new products for pharmacist. Bio-diversity helps to develop new drugs from plants.

dly naturalized in the west Indies and Florida. It is commonly known as the "Christmas palm" because known its fruits become bright scarlet and tend to be that color in winter. This palm is typically fairly small and slender, normally attaining 25 feet or 8 meters in height. Most plants maintain 5-7 fronds when young, gradually building up the crown as the palm ages, and sometimes reaches 10-12 fronds when mature.

Adonidia Merrilli Cultury

Easily grown in most humid tropical environments as long as moist well-draining soils are provided intolerant of consistently saturated soils.

Prefers full sun, but is adoptable to most light conditions and can be grown indoors if given plenty of bright light. Manila Palms are self-pruning meaning that the older, brown leaves will fall off on their own. Can be propagated from seed. Hardy in zones 10-11. Highly sensitive to frost and freezing temperatures.



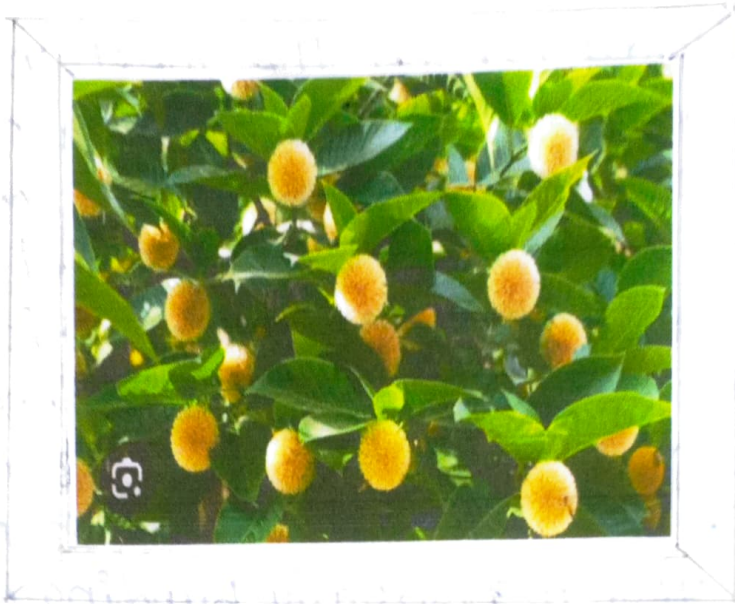
ADONIDIA MERRILLII

Neolamarckia cadamba

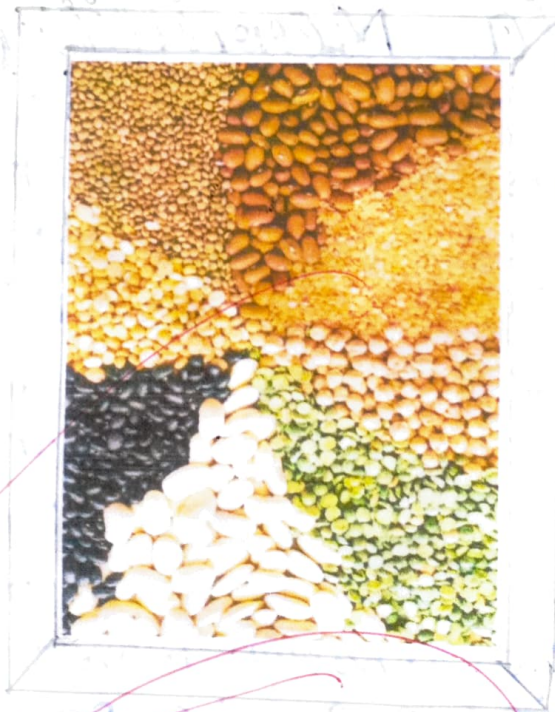
Neolamarckia cadamba, with English common names burlflower-tree, laran, and Leichhardt Pine, and called Kadam or cadamba locally, is an evergreen, tropical tree native to south and southeast Asia. The genus name honours French naturalist Jean Baptiste Lamarck. It has scented orange flowers in dense globe-shaped clusters. The flowers are used in perfumes. The tree is grown as an ornamental plant and for timber and paper-making. Kadam features in Indian religions and mythologies.

Legumes

Legume, also called ~~pod~~ fruit of plants in the pea family (Fabaceae). Most legumes are the fruit or seed of such a plant. When used as a dry grain, the seed is also called a pulse. Legumes are grown agriculturally, primarily for human consumption, for livestock forage and silage, and as soil-enhancing green manure. Well-known legumes include beans, soybeans, chickpeas etc.



NEOLAMARCKIA CADAMBA



LYGUMES

Legumes produce a botanically unique type of fruit - a simple dry fruit that develops from a simple carpel and usually dehisces (opens along a seam) on two sides.

Aegle Marmelos

Aegle marmelos, commonly known as, bael also Bengal quince, golden apple, Japanese bitter orange, stone apple or wood apple, is a species of tree native to the Indian subcontinent and Southeast Asia. It is present in India, Pakistan, Bangladesh, Sri Lanka, and Nepal as a naturalized species. The tree is considered to be sacred by Hindus and Buddhists.



AEGLE MARMELOS



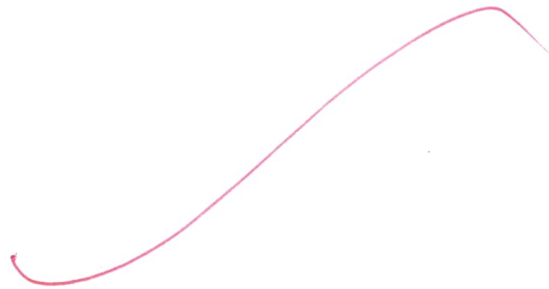
Banyan Tree

The banyan (*Ficus benghalensis*), also called Indian banyan or banyan fig, unusually shaped tree of the mulberry family (*Moraceae*) native to the Indian subcontinent. The banyan reaches a height up to 30 metres (100 feet) and spreads laterally indefinitely. Aerial roots descend that develop from its branches descend and take root in the soil to become new trunks. One tree may in time assume the appearance of a very dense thicket as a result of the tangle of roots and trunks. One individual, known as Thimmamma Massimanu, in Andhra Pradesh, India is thought to have the broadest canopy of any tree in the world. The banyan is the national tree of India.

fig, (*Ficus carica*), plant of the mulberry family - Moraceae and its edible fruit. The common fig is indigenous to an area extending from Asiatic Turkey to northern India, but natural seedlings grow in most mediterranean countries; it is cultivated in warm climates.



BANYAN TREE

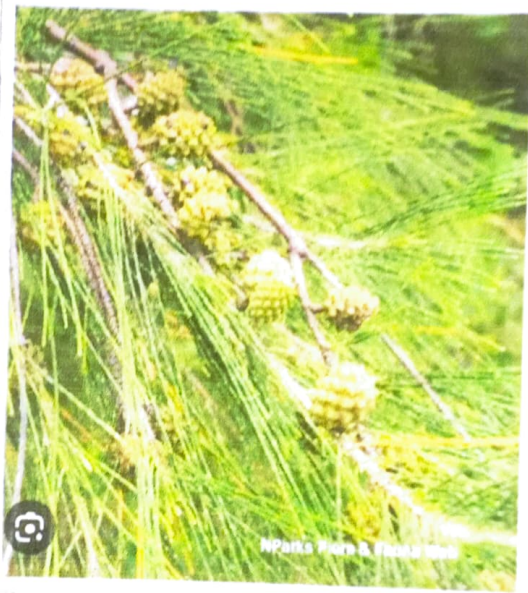


In the Mediterranean region the fig is so widely used, both fresh and dried, that it is called "the poor man's food." The fruit contains significant amounts of Calcium, Potassium, Phosphorus. and iron.

Casuarina Equisetifolia

Outstanding Casuarina trees can be propagated by rooting for young shoots (springs). Such plants produce uniform superior growth in plantations. Springs collected from selected trees are trimmed to 8-10 cm long and washed in a 5% solution of fungicide like Bavistin.

Introduction of Casuarina cultivation Casuarina is a fast growing agro-forestry perennial and evergreen tree with wide-ranging adaptability of different environments. These trees are excellent source of providing multiple and use and services.



CASUARINA

EQUISETIFOLIA





PEEROSPERMUM

ACERIFOLIUM

Conclusion

The project has been completed by me under the guidance of our ENVS MAAM.

I have tried to give my all and not to make any mistake in this project. I hope this project will provide sufficient information regarding "Acharya Jagadish Chandra Bose Indian Botanical Garden" now it come into existence, its present condition now its plants and trees and about the lake and nursery, location etc. Botanical garden play an important role as the exists conservation yours plant and also in sites conservation site. It was a wonderful and learning experience for me while on this project. This project took me through the different families of plant and trees and a real environment of ENVS and a perfect insight of into the world of greens and nature. This project gave me a challenges 10 fee of a family belongings to nature.

Pterospermum Acerifolium

Pterospermum acerifolium, the bayur tree or Karnikara tree, is a flowering plant indigenous to Southeast Asia, from India to Burma. It is most likely to grow naturally along forested stream banks. The best growing conditions are a seasonally moist then dry climate with access to full sunlight.

Pterospermum acerifolium is an angiosperm that is traditionally included in the family *Steculiaceae*; however, it is grouped in the expanded family *Malvaceae* as well. The classification "*Pterospermum*" is based on two Greek words "pteron" and "sperma", meaning "winged seed" and the species name *acerifolium* indicates ~~leaves~~ leaves shaped like a maple's. There is an array of common names for *Pterospermum acerifolium*, depending on the region where it is grown. Mostly planted as an ornamental or shade tree, the leaves, flowers, and wood of a Bayur Tree can serve a variety of functions.

Acknowledgement

Working on a project particularly for the student require the guide and assistance of an expert. I would like to thank my ENVS Teacher, Mrs. Sadaf Rahman who gave me the golden opportunity to work for the project extension of a study under her guidance it was a collaborative and individual activity and find myself lucky to have Mrs. Sadaf Rahman as my guidance whose encouragement, maturation and individual can help us in during a lot of research and would the horizon to our knowledge. I sincerely acknowledge her guidance and supervision.

Secondly I would like to thank my parents who help draw the project to artificial. I am also grateful to my all friends and other who become a part of his project in my way. Thanks again to all who helped me.

25
30
Stahma
20/4/23

Teacher's Signature
20/4/23

EXPLORE

water caltrop (*Troapa natans*, formerly in *Trapeceae*). *Lythraceae* has a worldwide distribution, with most species in the tropics, but ranging into temperate climate regions as well.

Ptychosperma Macarthurii

Ptychosperma macarthurii, commonly known as the Macarthur palm, is a species of tree in the palm family *Areaceae*. Its native range is northern Cape York peninsula in Queensland with a number of disjunct populations in the Northern Territory and New Guinea. The species has been widely planted in tropical areas and is commonly grown as an indoor plant.

Adonidia Merrillii

Adonidia merrillii, the Manila palm, is a palm tree species native to the Philippines (Palawan and Danjungan Island). This palm was cultivated for centuries in East Asia before becoming a staple in the west. It is repote-



PTYCHOSPERMA

MACARTHURII

19 2 20 20 20 20



Livistona chinensis

Livistona chinensis, the Chinese fan palm or fountain palm is a species of subtropical palm tree of East Asia. It is native to Southern Japan, Taiwan, the Ryukyu Islands, Southeastern China and Hainan. In Japan, two notable populations occupy islands near the coast of Miyazaki Prefecture, Aoshima and Tsuki Shima. It is also reportedly naturalized in South Africa, Mauritius, Reunion, the Andaman Islands, Java, New Caledonia, Micronesia, Hawaii, Florida, Bermuda, Puerto Rico and the Dominican Republic.

Lythraceae

Lythraceae is a family of flowering plants, including 32 genera, with about 620 species of herbs, shrubs, and trees. The larger genera include *Cuphea* (275 spp), *Lagerstroemia* (56), *Nesaea* (50), *Rotala* (45), and *Lythrum* (35). It also includes the pomegranate (*Punica granatum*, formerly in *Punicaceae*) and the



LIVISTONA CHINENSIS



LYTHRACEAE

ACHARYA JAGADISH CHANDRA BOSE INDIAN BOTANICAL GARDEN

The Acharya Jagadish Chandra Bose Indian Botanic Garden, previously known as Indian Botanic Garden and the Calcutta Botanic Garden is situated in Shibpur, Howrah near Kolkata. They are commonly known as the Calcutta Botanical Garden and previously as the Royal Botanic Garden, Calcutta. The gardens exhibit a wide variety of rare plants and a total collection of over 12,000 specimens spread over 109 hectares. It is under Botanical Survey of India, (BSI) of Ministry of Environment and Forests, Government of India.



ACHARYA JAGADISH CHANDRA
BOSE INDIAN BOTANICAL GARDEN

Botanical Garden

A botanical garden or botanic garden is a garden with a documented collection living plants for the purpose of scientific research, conservation, display, and education. Typically plants are labelled with their botanical names.

It may contain specialist plant collections such as cacti and other succulent plant, herb gardens, plants from particular parts of the world, and so on; there may be greenhouses, shadehouse, again with special collections such as tropical plants, alpine plants or other exotic plants.

Most are at least partly open to the public, and may offer guided tours, educational displays, art exhibitions, book rooms, open-air theatrical and musical performances, and other entertainment.

Botanical gardens are often run by universities or other scientific research organizations, and often have associated herbaria and research programmes in plant taxonomy or some other aspects of botanical science. In principle, their role is to

working in their herbaria and universities associated with the gardens, these systems often being displayed in the gardens as educational "order beds". With the rapid expansion of European colonies around the globe in the late 18th century, botanic gardens were established in the tropics, and economic botany became a focus with the hub at the Royal Botanic Gardens, Kew, near London.

Over the years, botanical gardens as cultural and scientific organisations, have responded to the interests of botany and horticulture.

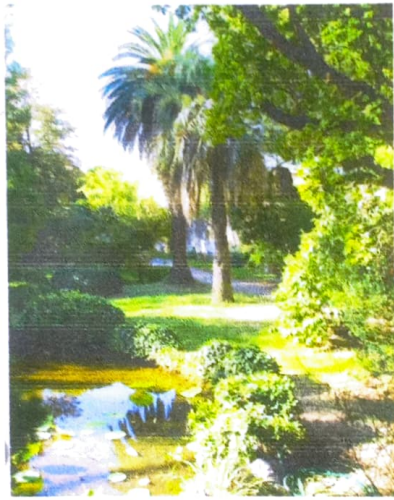
Nowadays, most botanical gardens display a mix of the themes mentioned and more; having a strong connection with the general public, there is the opportunity to provide visitors with information relating to the environmental issues being faced at the start of the 21st century, especially those relating to plant conservation and sustainability.

maintain documented collections of living plants for the purposes of scientific research, conservation, display, and education, although this will depend on the resources available and the special interests pursued at each particular garden. The staff will normally include botanists as well as gardeners.

The origin of modern botanical gardens is generally traced to the appointment of professors of botany to the medical faculties of universities in 16th century Renaissance Italy, which also entailed the creation of a medical garden. However, the objectives, content, and audience of today's botanic gardens more closely resembles that of the grandiose gardens of antiquity and the educational garden of Theophrastus in the Lyceum of ancient Athens.

The early concern with medicinal plants changed in the 17th century to an interest in the new plant imports from explorations outside Europe as botany gradually established its independence from medicine.

In the 18th century, systems of nomenclature and classification were devised by botanists



BOTANICAL GARDEN

conserving biodiversity of genetic resources, as well as wild and cultivated or species and draws on a diverse body of techniques and facilities.

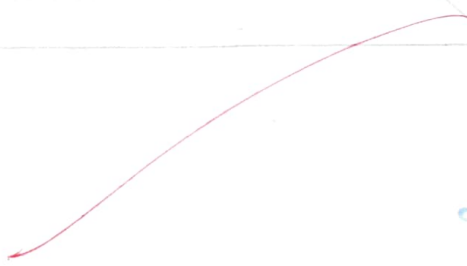
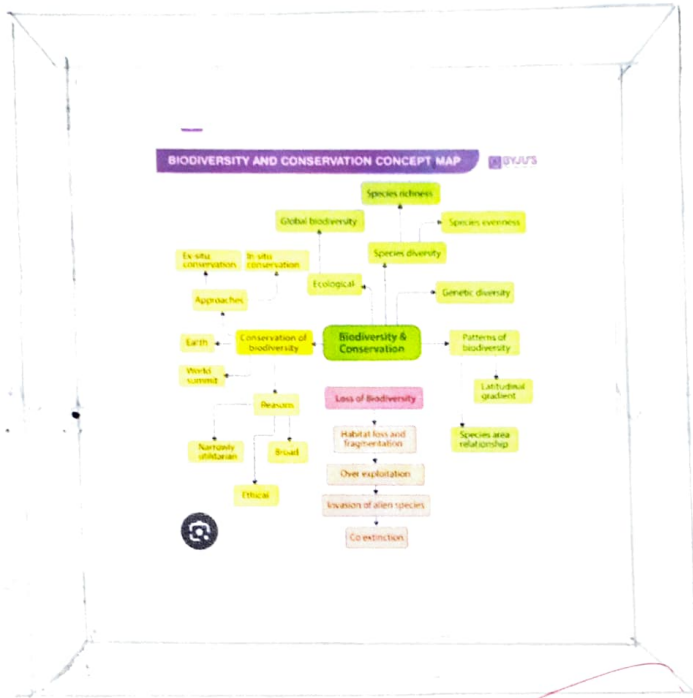
B. Ex-situ Conservation

Conserving biodiversity outside the areas where they naturally occur is known as ex-situ conservation.

Here, animals and plants are reared or cultivated in areas like zoological or botanical parks.

Reintroduction of an animal or plant into the habitat from where it has become extinct is another form of ex-situ conservation. For example, the genetic gharial has been reintroduced in the rivers of Uttar Pradesh, Madhya Pradesh and Rajasthan where it had become extinct. Seedbanks, Botanical, Horticultural and recreational gardens are important centres for ex-situ conservation.

17/11/2024



Threats To Bio-Diversity

The cults of overuse and mis-use of most of our ecosystem, the once productive forest and grasslands have turned into barren deserts and fertility lands have been converted into wasteland. The world has lost about 30 species of high animals.

Conservation OF Bio-Diversity

Biodiversity conservation is basically aimed at protection, upliftment, enhancement and scientific management of the biodiversity so as to be precise, manage it at its threshold level and derive sustainable benefits both for the present and future generation.

Types OF Conservation

A. In-situ Conservation

In-situ conservation, the conservation of species in their natural habitats is considered the most appropriate way of



THREATS TO BIODIVERSITY



CONSERVATION OF BIODIVERSITY

Social Value: These are linked to consumption and productive value. For example, cultivation of rice and many other things are linked to earth in social value, social culture and customs. Recent practices have resulted in giving economic incentives to farmers to grow each crop for national and international markets ignoring local needs. The social value of biodiversity includes aesthetic, recreational, cultural and spiritual values. To this can be added health benefits resulting from recreational and other activities.

Ethical And Moral Value

There are several ethical and moral value of biodiversity is the principle that humans should abide by to ensure the conservation of all forms of life around us. Moral refer mainly to guiding principles, and ethics refer to specific rules and actions, or behaviors.

Optical Value: There are every possibility that many traditional varieties of crops and domestic animal may become useful in future.

D. Ecosystem Diversity

Bio-diversity viewed at the ecosystem level, that includes the great variety of habitat types and biomass are usually referred to as ecosystem diversity.

Bio-Diversity OF West Bengal

The bio-diversity of west Bengal is a rich assemblage of various habitats and vegetations having eight different forest types.

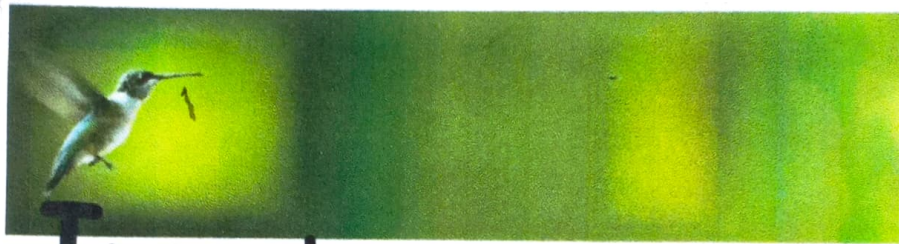
Importance OF

Bio-Diversity

Bio-diversity performs a number of ecological services for mankind that have economic, aesthetic and recreational value.

A. Consumptive Value

These include utilization of timbers, food, fuel, wood and fodder.



**Importance
OF**

Biodiversity

TO HUMANKIND....



IMPORTANCE OF

BIO-DIVERSITY

Equally abundant). Meanings of species diversity may include species richness, taxonomic or phylogenetic diversity and/or species evenness. Taxonomic or phylogenetic diversity is the genetic relationship between different groups of species. Species evenness quantifies how equal the abundances of the species are.

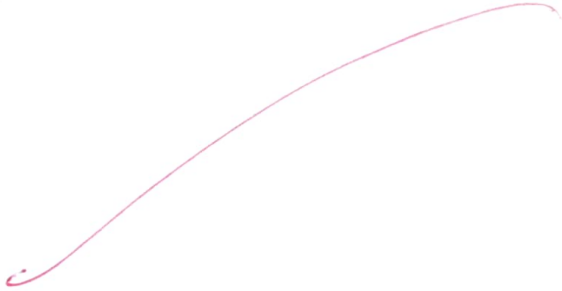
c. Ecological Biodiversity

Ecological biodiversity is the diversity of ecosystems, natural communities, and habitats. In essence, it's the variety of ways that species interact with each other and their environment.

Ecological biodiversity refers to the variations in the plant and animal species living together and connected by food chains and food webs.



ECOSYSTEM DIVERSITY



Handwritten scribble or signature at the bottom center of the page.

Components OF Species Biodiversity

Witta Whittaker in (1972) expressed different components of species diversity such as:-

1. Alpha Diversity:- This is the local diversity which is expressed as the numbers of species in a small area of more or less uniform habitats.

2. Beta Diversity:- The differences in species from one habitat to the next is referred to as beta diversity.

3. Gamma Diversity

It is the total diversity of both the forest and the open field. It is the total numbers of species observed in all habitats within a region or geographical area that includes no significant barriers to dispersal of organism.

A. Genetic Biodiversity

All forms of life on the earth whether microbes, plants, animals or human beings within genes. Genetic biodiversity refers to the variation of genes within species. Genetic diversity is the sum genetic information, contained in the genes of individual plants, animals, and micro organisms. Each species is the structure of an immense amount of genetic information in the form of traits, characteristic.

The individuals differ widely from one another in their genetic make-up and is know as genetic diversity.

B. Species Biodiversity

Species diversity is the number of different species that are represented in a given community (a dataset). The Effective number of species refers to the number of equally abundant species needed to obtain the same mean proportional species abundance as that observed in the dataset of interest (where all species may not be

CONTENT

Sl. NO	TOPICS	Pg. no
1.	Introduction of Biodiversity	1-9
2.	Botanical Garden	10-12
3.	Acharya Jagadish chandra Bose. Indian Botanical garden	13
4.	Livistona chinensis	14
5.	Lythraceae	14-15
6.	Ptychosperma macarthurii	15
7.	Adonidia Merrillii	15-16
8.	Adonidia Merrillii Cultiv	16-
9.	Neolomaxckia Cadamba	17
10.	Legumes	17-18
11.	Aegle Marmelos	18
12.	Banyan Tree	19-20
13.	Casuarina Equisetifolia	20
14.	Pterospermum Acerifoliam	21
15.	Conclusion	22
16.	Acknowledgement.	23.



BIO-DIVERSITY

Introduction

Bio-Diversity

Biodiversity is all the different kinds of life you'll find in one area—the variety of animals, plants, fungi, and even microorganisms like bacteria that make up our natural world. Each of these species and organisms work together in ecosystems, like an intricate web, to maintain balance and support life. And there are three different types of Biodiversity:

A. Genetic Biodiversity

B. Species Biodiversity

C. Ecological Biodiversity

MILLI AL-AMEEN

COLLEGE (FOR GIRLS)

NAME :- SANA KHATOON

COLLEGE ROLL NO :- 65

CU ROLL NO :- 222147-11-0040

REGISTRATION NO :- 147-1211-004~~3~~-22

SUBJECT :- ENVS (AECC-2)

PROJECT :- BASED ON EXCURSION
OF BOTANICAL GARDEN.