



UNIVERSITY OF CALCUTTA

Notification No. CSR/ 12 /18

It is notified for information of all concerned that the Syndicate in its meeting held on 28.05.2018 (vide Item No.14) approved the Syllabi of different subjects in Undergraduate Honours / General / Major courses of studies (CBCS) under this University, as laid down in the accompanying pamphlet:

List of the subjects

<u>Sl. No.</u>	<u>Subject</u>	<u>Sl. No.</u>	<u>Subject</u>
1	Anthropology (Honours / General)	29	Mathematics (Honours / General)
2	Arabic (Honours / General)	30	Microbiology (Honours / General)
3	Persian (Honours / General)	31	Mol. Biology (General)
4	Bengali (Honours / General /LCC2 /AECC1)	32	Philosophy (Honours / General)
5	Bio-Chemistry (Honours / General)	33	Physical Education (General)
6	Botany (Honours / General)	34	Physics (Honours / General)
7	Chemistry (Honours / General)	35	Physiology (Honours / General)
8	Computer Science (Honours / General)	36	Political Science (Honours / General)
9	Defence Studies (General)	37	Psychology (Honours / General)
10	Economics (Honours / General)	38	Sanskrit (Honours / General)
11	Education (Honours / General)	39	Social Science (General)
12	Electronics (Honours / General)	40	Sociology (Honours / General)
13	English ((Honours / General/ LCC1/ LCC2/AECC1)	41	Statistics (Honours / General)
14	Environmental Science (Honours / General)	42	Urdu (Honours / General /LCC2 /AECC1)
15	Environmental Studies (AECC2)	43	Women Studies (General)
16	Film Studies (General)	44	Zoology (Honours / General)
17	Food Nutrition (Honours / General)	45	Industrial Fish and Fisheries – IFFV (Major)
18	French (General)	46	Sericulture – SRTV (Major)
19	Geography (Honours / General)	47	Computer Applications – CMAV (Major)
20	Geology (Honours / General)	48	Tourism and Travel Management – TTMV (Major)
21	Hindi (Honours / General /LCC2 /AECC1)	49	Advertising Sales Promotion and Sales Management –ASPV (Major)
22	History (Honours / General)	50	Communicative English –CMEV (Major)
23	Islamic History Culture (Honours / General)	51	Clinical Nutrition and Dietetics CNDV (Major)
24	Home Science Extension Education (General)	52	Bachelor of Business Administration (BBA) (Honours)
25	House Hold Art (General)	53	Bachelor of Fashion and Apparel Design – (B.F.A.D.) (Honours)
26	Human Development (Honours / General)	54	Bachelor of Fine Art (B.F.A.) (Honours)
27	Human Rights (General)	55	B. Music (Honours / General) and Music (General)
28	Journalism and Mass Communication (Honours / General)		

The above shall be effective from the academic session 2018-2019.

SENATE HOUSE
KOLKATA-700073
The 4th June, 2018

Paul
4/6/18
(Dr. Santanu Paul)
Deputy Registrar

University of Calcutta

Under Graduate Curriculum under Choice Based Credit System (CBCS)

Syllabus for Ability Enhancement Compulsory Course-2 (AECC-2) in **Environmental Studies**

Semester-2

Total Marks-100(Credit -2)

(50 Theory-MCQ type + 30 Project + 10 Internal Assessment + 10 Attendance)

[Marks obtained in this course will be taken to calculate SGPA & CGPA]

Theory

Unit 1 Introduction to environmental studies	2 lectures
<ul style="list-style-type: none">•Multidisciplinary nature of environmental studies;•Scope and importance; Concept of sustainability and sustainable development.	
Unit 2 Ecology and Ecosystems	6 lectures
<ul style="list-style-type: none">•Concept of ecology and ecosystem, Structure and function of ecosystem; Energy flow in an ecosystem; food chains, food webs; Basic concept of population and community ecology; ecological succession.•Characteristic features of the following:<ol style="list-style-type: none">a) Forest ecosystemb) Grassland ecosystemc) Desert ecosystemd) Aquatic ecosystems (ponds, streams, lakes, wetlands, rivers, oceans, estuaries)	
Unit 3 Natural Resources	8 lectures
<ul style="list-style-type: none">• Concept of Renewable and Non-renewable resources• Land resources and land use change; Land degradation, soil erosion and desertification.•Deforestation: Causes, consequences and remedial measures•Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).•Energy resources: Environmental impacts of energy generation, use of alternative and nonconventional energy sources, growing energy needs.	
Unit 4 Biodiversity and Conservation	8 lectures
<ul style="list-style-type: none">•Levels of biological diversity: genetic, species and ecosystem diversity;• Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots•India as a mega-biodiversity nation; Endangered and endemic species of India•Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions;•Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.•Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.	
Unit 5 Environmental Pollution	8 lectures
<ul style="list-style-type: none">• Environmental pollution: concepts and types,• Air, water, soil, noise and marine pollution- causes, effects and controls• Concept of hazardous waste and human health risks• Solid waste management: Control measures of Municipal, biomedical and e-waste.	

Unit 6 Environmental Policies and Practices	7 lectures
<ul style="list-style-type: none"> •Climate change, global warming, ozone layer depletion, acid rain and their impacts on human communities and agriculture •Environment Laws: Wildlife Protection Act; Forest Conservation Act. Water (Prevention and control of Pollution) Act; Air (Prevention & Control of Pollution) Act; Environment Protection Act; Biodiversity Act. •International agreements: Montreal Protocol, Kyoto protocol and climate negotiations; Convention on Biological Diversity (CBD). •Protected area network, tribal populations and rights, and human wildlife conflicts in Indian context. 	
Unit 7 Human Communities and the Environment	6 lectures
<ul style="list-style-type: none"> •Human population growth: Impacts on environment, human health and welfare. •Case studies on Resettlement and rehabilitation. • Environmental Disaster: Natural Disasters-floods, earthquake, cyclones, tsunami and landslides; Manmade Disaster- Bhopal and Chernobyl. •Environmental movements: Bishnois, Chipko, Silent valley, Big dam movements. •Environmental ethics: Role of gender and cultures in environmental conservation. •Environmental education and public awareness 	
Project/ Field work	Equal to 5 lectures
<ul style="list-style-type: none"> •Visit to an area to document environmental assets: Natural resources/flora/fauna, etc. •Visit to a local polluted site-Urban/Rural/Industrial/Agricultural. •Study of common plants, insects, fish, birds, mammals and basic principles of identification. •Study of ecosystems-pond, river, wetland, forest, estuary and agro ecosystem. 	
Total	50 Lectures

Suggested Reading:

Asthana, D. K. (2006). *Text Book of Environmental Studies*. S. Chand Publishing.

Basu, M., Xavier, S. (2016). *Fundamentals of Environmental Studies*, Cambridge University Press, India

Basu, R. N., (Ed.) (2000). *Environment*. University of Calcutta, Kolkata

Bharucha, E. (2013). *Textbook of Environmental Studies for Undergraduate Courses*. Universities Press.

De, A.K., (2006). *Environmental Chemistry*, 6th Edition, New Age International, New Delhi.

Mahapatra, R., Jeevan, S.S., Das, S. (Eds) (2017). *Environment Reader for Universities*, Centre for Science and Environment, New Delhi.

Masters, G. M., & Ela, W. P. (1991). *Introduction to environmental engineering and science*. Englewood Cliffs, NJ: Prentice Hall.

Odum, E. P., Odum, H. T., & Andrews, J. (1971). *Fundamentals of ecology*. Philadelphia: Saunders.

Sharma, P. D., & Sharma, P. D. (2005). *Ecology and environment*. Rastogi Publications.

STUDY OF FLORA AND FAUNA IN MY LOCALITY



SUBJECT : ENVS
PAPER : AECC 2
SEMESTER : 2
DEPARTMENT : MICROBIOLOGY
CU ROLL No : 193223-11-0066
CU REGISTRATION No : 223-1211-0366-19
COLLEGE ROLL No. : MCBA19S-521

INDEX

	<u>Page No.</u>
■ Introduction	1
■ Content	
<u>Flora</u>	
• Trees	2 - 6
• Flowers	7 - 11
<u>Fauna</u>	
• Birds	12 - 16
• Animals	17 - 21
• Insects	22 - 26
■ Conclusion	27
■ Acknowledgement	28

INTRODUCTION



The planet Earth is a beautiful place to live in. Life has flourished on the planet. There are many stunning plants, animals, flowers, insects that attract our attention.

Among them, there are two very important aspects of any ecosystem. These two are flora and fauna i.e. plant and wildlife of the earth.

Flora is a group of indigenous plants in an ecosystem of a geographical region. The study of plant life around the world is very interesting since it makes different classifications of the flora.

Fauna is a group of indigenous animals of any geographical region. On the other hand fauna is the name given to collective animal life that lives in a certain area or time period.

So, here I am doing a flora and fauna auditing of Baranagar area, North 24 parganas. This can help me to learn about the different kinds of plants, flowers, birds, animals, insects of my area and also to aware about the plant and animal life of my area.



GUAVA TREE



Scientific Name : Psidium guajava

Scientific Classification :

Kingdom : Plantae
 Order : Myrtales
 Family : Myrtaceae
 Genus : Psidium
 Species : P. guajava

Significance :

- Guava leaves are used as an herbal tea and the leaf extract as a supplement.
- The wide range of vitamins and antioxidants packed into guava may work wonders for our skin and also promotes fertility.
- Guava is one of the richest food source of vit. C which help to maintain a healthy immune system.
- Guava is excellent source of dietary fiber.
- Guava also helps in regulating metabolism which leads to weight loss.

BANANA TREE



Scientific Name : Musa acuminata

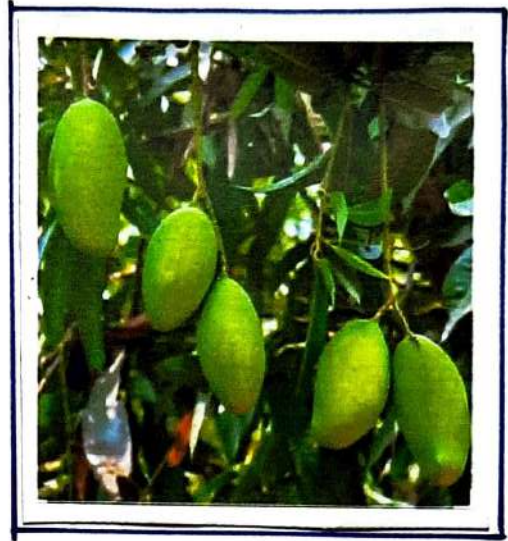
Scientific Classification :

Kingdom : Plantae
 Order : Zingiberales
 Family : Musaceae
 Genus : Musa
 Species : M. acuminata

Significance :

- ⊙ Banana fruits are rich in potassium, thus including them daily in our diet can help to control blood pressure.
- ⊙ Banana leaves are large enough to serve a full meal with lots of dishes.
- ⊙ Banana plant roots are rhizomes that have many medicinal uses and they are used in many medicines in Ayurveda.
- ⊙ The fine threads from the banana stems can also be used to make clothes.
- ⊙ The fibres from the outer skin of the banana stems are natural threads and useful in crafts.

MANGO TREE



Scientific Name : Mangifera indica

Scientific Classification :

Kingdom : Plantae
 Order : Sapindales
 Family : Anacardiaceae
 Genus : Mangifera
 Species : M. indica

Significance :

- ⊙ Mango is rich in iron. Consuming mango in adequate quantities helps in increasing iron levels.
- ⊙ The yellow colour of mango pulp is due to the presence of abundance of carotenoids which help in improving eyesight.
- ⊙ Extract of mango tree leaves has antihypertensive properties.
- ⊙ Consuming the powder of dried mango bark provides relief from diarrhea.
- ⊙ Consuming mango seed extract has proved helpful in losing weight and decreasing obesity.

ASHVATTHA TREE



Scientific Name : Ficus religiosa

Scientific Classification :

Kingdom	: Plantae
Order	: Rosales
Family	: Moraceae
Genus	: Ficus
Species	: F. religiosa

Significance :

- ⊙ Ashvattha tree is used in traditional medicine for about fifty types of disorders including asthma, diabetes, diarrhea, gastric problems, infectious and sexual disorders.
- ⊙ Prayer beads are made from the seeds of this plant.
- ⊙ The trunk of this tree is used by farmers as a soil leveller. After seed harvesting, the rectangular shaped trunk is connected to tractors and levels the soil.
- ⊙ The leaves are purgative and tonic. They are useful in constipation and jaundice.

JACK TREE



Scientific Name : Artocarpus heterophyllus

Scientific Classification :

Kingdom : Plantae
 Order : Rosales
 Family : Moraceae
 Genus : Artocarpus
 Species : A. heterophyllus

Significance :

- ⊙ Jackfruit contains functional compounds that have capability to reduce various diseases such as blood pressure, heart diseases, strokes and bone loss.
- ⊙ Jackfruit is also rich in potassium which aids in lowering blood pressure.
- ⊙ Jackfruit is also a good source of vitamin C which protects the skin from damage.
- ⊙ The outer peel of jackfruit is rich in fibrous compounds calcium and pectin.
- ⊙ Phytonutrients such as lignans, isoflavones and saponins in jackfruit contribute to its anticancer, antihypertensive and antiaging properties.

FLOWER

CHINA ROSE



Scientific Name : Hibiscus rosa-sinensis

Scientific Classification :

Kingdom : Plantae
 Order : Malvales
 Family : Malvaceae
 Subfamily : Malvoideae
 Genus : Hibiscus
 Species : Hibiscus rosa-sinensis

Significance :

- ▶ China rose flower helps in weight loss. It contains hydroxytric acid which is also found in weight loss pills.
- ▶ Hibiscus extracts are used in various skin care products as they contain high levels of Vitamin C in the natural form.
- ▶ Hibiscus tea induces sleep and calmness in people. The flavonoids in the flowers work like a charm with the central nervous system and help you stay calm.
- ▶ Hibiscus decoction is known to reduce abdominal cramps.

NAYANTARA FLOWER



Scientific Name : Catharanthus roseus

Scientific Classification :

Kingdom : Plantae
 Order : Gentianales
 Family : Apocynaceae
 Genus : Catharanthus
 Species : C. roseus

Significance :

- ▶ In traditional medicine this flower has been used for relieving muscle pain, depression of the central nervous system.
- ▶ It is also used for the prevention of diabetes and treatment of stomach ache.
- ▶ It is also used for promoting wound healing.
- ▶ This flower can lower blood pressure.
- ▶ This can also help reduce swelling and have a drying effect on the tissues.

CAPE JASMINE FLOWER



Scientific Name : Gardenia jasminoides

Scientific Classification :

Kingdom : Plantae
 Order : Gentianales
 Family : Rubiaceae
 Genus : Gardenia
 Species : *G. jasminoides*

Uses :

- ▶ Some chemicals found in this flower might reduce insulin resistance and help to prevent glucose intolerance.
- ▶ Gardenia extract might also reduce swelling, lowers blood fats and cholesterol, protect the liver and help treat viral infections.
- ▶ Gardenia is used as a yellow food colorant.
- ▶ This is applied to skin for bleeding, wound healing, sprains and muscle soreness.

MARIGOLD FLOWER



Scientific Name : Calendula officinalis

Scientific Classification :

Kingdom : Plantae
 Order : Asterales
 Family : Calenduleae
 Genus : Calendula
 Species : C. officinalis

Uses :

- ▶ Marigold is used for stomach upset, ulcers, menstrual period problems, eye infections, inflammations and for wound healing.
- ▶ The infusion of freshly gathered flower is beneficial in fever.
- ▶ Internally it is used to treat bladder and kidney problems, blood in the urine, uterine bleeding and many more.
- ▶ Bright yellow and orange marigold flowers are used to make garlands and they are also used to decorate religious places.

BUR FLOWER (Kadamba)



Scientific Name : Neolamarckia cadamba

Scientific Classification :

Kingdom : Plantae
 Order : Gentianales
 Family : Rubiaceae
 Genus : Neolamarckia
 Species : N. cadamba

Uses :

- ▶ Frequent use of Kadamba is highly beneficial for the patients suffering from diabetes mellitus.
- ▶ Kadamba flower is used in management of several forms of cancer including prostate cancer, colon cancer, breast cancer and esophageal cancer.
- ▶ Kadamba is used to reduce the cholesterol and triglyceride levels.
- ▶ Kadamba produces a strong antifungal action. It can be also used to treat bacterial infection.
- ▶ This flower is used in perfumes and also this is the source of an essential oil.

BIRD

PIGEON



Scientific Name : Columba livia

Scientific Classification :

Kingdom	:	Animalia
Phylum	:	Chordata
Class	:	Aves
Order	:	Columbiformes
Family	:	Columbidae
Genus	:	Columba
Species	:	C. livia

Significance :

- Pigeons are known to be the messengers of love, peace.
They also symbolize that luck is favouring you in terms of love.
- Pigeons brings piece and harmony to the house and they also attract Goddess Laxmi.
- Pigeons are very adaptable to outside conditions and that is why they have made the whole planet their home.

SPARROW



Scientific Name : Passer domesticus

Scientific Classification :

Kingdom : Animalia
 Phylum : Chordata
 Class : Aves
 Order : Passeriformes
 Family : Passeridae
 Genus : Passer
 Species : P. domesticus

Importance :

- Sparrow plays an important role in environmental balance.
- Sparrows feed their children with insects called alpha and catworm. These insects are extremely dangerous for crops. They kill the leaves of the crops and destroy them.
- Sparrow also eats insects that appear during monsoon season.

CROW



Scientific Name : Corvus splendens

Scientific Classification :

Kingdom : Animalia
 Phylum : Chordata
 Class : Aves
 Order : Passeriformes
 Family : Corvidae
 Genus : Corvus
 Species : C. splendens

Importance :

- Crows play a vital role in waste management. They consume tons of waste every year, preventing the spread of disease and bad odor.
- Crows have the ability to clear pests and parasites from farmlands greatly which outweigh the minimal damage they inflict on vegetation.
- They also act as pollinators by transporting pollen from one plant to another.
- Crows are susceptible to West Nile virus and are used by health authorities as an indicator species.
- The bird droppings act as fertilizer.

COMMON MYNA



Scientific Name : Acridotheres tristis

Scientific Classification :

Kingdom : Animalia
 Phylum : Chordata
 Class : Aves
 Order : Passeriformes
 Family : Sturnidae
 Genus : Acridotheres
 Species : A. tristis

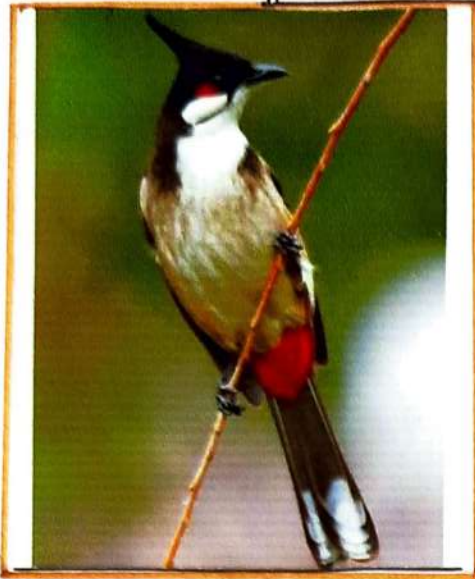
Importance :

- The common myna was a success as a bug killer.
- They also help in pest control, pollination and cleaning the environment.

Harmful effects :

- Common mynas are regularly observed to usurp nests and hollows, destroy the eggs and kill the young native bird species including seabirds and parrot.
- Common myna frequently displaced native birds and depleted their food supply.

RED-VENTED BULBUL



Scientific Name : Pycnonotus cafer

Scientific Classification :

Kingdom : Animalia
 Phylum : Chordata
 Class : Aves
 Order : Passeriformes
 Family : Pycnonotidae
 Genus : Pycnonotus
 Species : P. cafer

Importance :

- They are important dispersers of seed of plants such as Carissa spinarum.
- This species has led to changes in the population dynamics of butterfly morphs on the island of Oahu in Hawaii.

Harmful effects :

- The red-vented bulbul is widely blamed for its impact on biodiversity, especially through competition.
- It is currently considered to be a major invasive species that play a major role in the decline of native species globally.

ANIMAL

DOG



Scientific Name : Canis familiaris

Scientific Classification :

Kingdom : Animalia
 Phylum : Chordata
 Class : Mammalia
 Order : Carnivora
 Family : Canidae
 Genus : Canis
 Species : C. familiaris

Importance :

- ▲ Stray dogs are good for their scavenger roles, that remove leftover food like agricultural wastes, city waste etc.
- ▲ By tracking animal fecal matter, or scat, dogs are helping scientists understand problems facing endangered species.

Harmful Effects :

- ▲ Dogs can also attack and spread disease to humans, livestock and other domestic animals.

CAT



Scientific Name : Felis catus

Scientific Classification :

Kingdom : Animalia
 Phylum : Chordata
 Class : Mammalia
 Order : Carnivora
 Family : Felidae
 Genus : Felis
 Species : F. catus

Importance :

- ▲ Cats play an important ecological role by regulating prey populations and structuring animal communities.
- ▲ Domestic cats impact biodiversity through predation, competition, disease and hybridization.

Harmful Effects :

- ▲ Cats have contributed to species extinction especially on islands. The domestic cat has contributed to the extinction of 33 species worldwide.
- ▲ Cats will kill too many of the prey species. That means less food will be available for the predator species.

GOAT



Scientific Name : Capra aegagrus hircus

Scientific Classification :

Kingdom : Animalia
 Phylum : Chordata
 Class : Mammalia
 Order : Artiodactyla
 Family : Bovidae
 Genus : Capra
 Species : *C. aegagrus*
 Subspecies : *C. a. hircus*

Importance :

- ▲ Goat plays a significant role in providing supplementary income and livelihood to millions of resource poor farmers.
- ▲ They are able to browse on plants that would normally not to be eaten by other livestock species.
- ▲ Goats contribute to a broad range of production systems.
- ▲ They provide substance in the form of food and clothing.

COW



Scientific Name : Bos taurus

Scientific Classification :

Kingdom : Animalia
 Phylum : Chordata
 Class : Mammalia
 Order : Artiodactyla
 Family : Bovidae
 Genus : Bos
 Species : B. taurus

Importance :

- ▲ Cow plays an important role in the economy of farmers.
- ▲ Cow provide us with many other by-products. Parts of cow are used to make products for home, health, food and industry.
- ▲ They are used as riding animals.
- ▲ Their cowdung is used for many purposes in villages for house floors and cooking.
- ▲ Cows help restore healthy soils, and conserve sensitive species.

SQUIRREL



Scientific Name : Funambulus palmarum

Scientific Classification :

Kingdom : Animalia
 Phylum : Chordata
 Class : Mammalia
 Order : Rodentia
 Family : Sciuridae
 Genus : Funambulus
 Species : F. palmarum

Importance :

- ▲ Squirrels are huge contributors in shaping plant composing due to their eating and food saving habit.
- ▲ They find seeds and bury them throughout the environment for later.
- ▲ They hold a significant place in the natural food chain and are preyed on by several avian and mammalian predators.

Harmful Effects :

- ▲ Their chewing habit is troublesome as it results in damaged fruits, nuts, clothes and other household items.

INSECT

HONEY BEE



Scientific Name : Apis mellifera

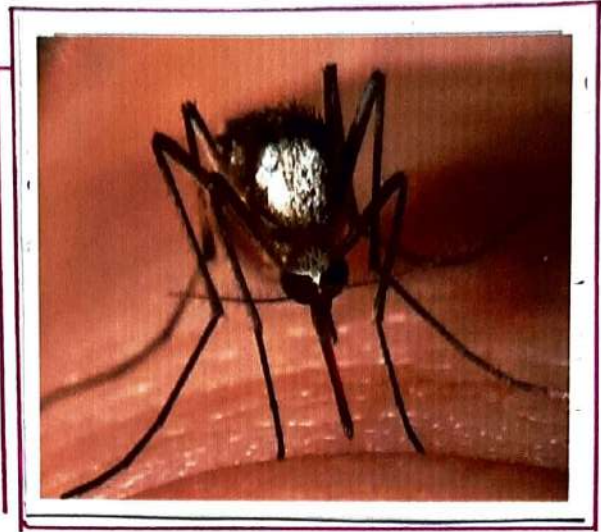
Scientific Classification :

Kingdom : Animalia
 Phylum : Arthropoda
 Class : Insecta
 Order : Hymenoptera
 Family : Apidae
 Genus : Apis
 Species : A. mellifera

Importance:

- Honey bees are the world's most important pollinator of food crops. They can pollinate clover, alfalfa and also other important crops such as cotton and flax.
- There are some non-food products produced by honey bees such as beeswax used in cleaning and beauty products.
- Bees contribute to complex, interconnected ecosystems that allow a diverse number of different species to co-exist.
- From their hive, we get food products also such as honey, pollen, royal jelly.
- Honey bee also pollinate wild and native plants.

MOSQUITO



Scientific Name : Culex pipiens

Scientific Classification :

Kingdom : Animalia
 Phylum : Arthropoda
 Class : Insecta
 Order : Diptera
 Family : Culicidae
 Genus : Culex
 Species : C. pipiens

Importance :

- Mosquitoes play an ecological role, serving as pollinators and as a food source for other wildlife.
 The larvae of mosquitoes live in water and provide food for fish and other wildlife including larger larvae of other species such as dragonflies.

Harmful Effects :

- Mosquitoes are responsible for the transmission of several pathogenic agents to humans causing vector-borne diseases such as malaria, filariasis, yellow fever, dengue etc.
- Mosquitoes affect health, immunity as well as the life of a people. Every year mosquitoes infect hundreds of millions of people around the world, from which millions die.

HOUSEFLY



Scientific Name : Musca domestica

Scientific Classification:

Kingdom : Animalia
 Phylum : Arthropoda
 Class : Insecta
 Order : Diptera
 Family : Muscidae
 Genus : Musca
 Species : M. domestica

Importance:

- Houseflies play an important ecological role in breaking down and recycling organic matter.
- They are also a part of the food chain.

Harmful Effects:

- Houseflies are carriers of organisms which cause several diseases in human.
- Flies feed on garbage, manure and faeces. They also visit them for laying eggs, they pick up disease germs and then come to feed on dining tables, kitchens etc.
- They also play a part in the transmission of tuberculosis and virus of poliomyelitis and cause food poisoning.

HOUSE CRICKET



Scientific Name : Acheta domesticus

Scientific Classification :

Kingdom	:	Animalia
Phylum	:	Arthropoda
Class	:	Insecta
Order	:	Orthoptera
Family	:	Gryllidae
Genus	:	Acheta
Species	:	A. domesticus

Importance :

- ▣ Crickets are important agents in the decomposer communities of many ecosystems. They consume large quantities of often highly resistant, cellulose rich plant materials and produce fecal pellets that are easily decomposed by bacteria and fungi.

Harmful Effects :

- ▣ Crickets frequently become a pest in homes and other buildings.
- ▣ Crickets also feed on a variety of fiber and food products found in home.

BUTTERFLY



Scientific Name: Danaus plexippus

Scientific Classification:

Kingdom : Animalia

Phylum : Arthropoda

Class : Insecta

Order : Lepidoptera

Family : Nymphalidae

Genus : Danaus

Species : D. plexippus

Importance :

- Butterflies are central pollinators to many agricultural crops.
- Butterflies are also a food source to predators like birds, spiders, lizards and other animals.
- Butterfly has developed its own set of chemicals to prevent predators and parasites, discover a mate and conquer the chemical defences of its host plant.
- They are all really good for the environment and play a role in increasing biodiversity. They are an indicator of a healthy environment.

CONCLUSION

The flora and fauna both are so important for us, that we can even think about living without them. Plants produce oxygen and absorb carbon dioxide during photosynthesis. Plants support life both on the land and in the oceans. Animals also bring a balance of life. They inhale the oxygen which plant produces and exhales the carbon dioxide, which plants use to synthesize food.

So, both flora and fauna are inevitable for each other.

But, now a days, flora and fauna ecosystem are in danger. The human being is the main responsible of the destruction of flora and fauna. So, people can do many efforts to respect the law of protection of flora and fauna.

Forest and wildlife can be conserved by developing many areas such as sanctuary, national park, biosphere reserve etc. People have to take necessary step to save the wildlife and the ecological balance.

This project helped me to learn about the significance, uses and harmful effects of different species of plants, flowers, birds, animals, insects of my area and also made me aware about the environment of my surrounding area.

ACKNOWLEDGEMENT

It is important for every student to be acquainted with the nature through study of flora and fauna. I got the opportunity to make a project on the topic 'STUDY OF FLORA AND FAUNA IN MY LOCALITY' by which I got the scope to research and gather information on different plants, animals, flowers, birds, insects etc. in my locality.

My sincere gratitude and special thanks to my respectful professors of the Department of MICROBIOLOGY and also to the Principal and the Vice Principal of our college who gave me the opportunity of this valuable study. I am also thankful to my parents and friends who helped me to carry out this project.

STUDY OF
FLORA AND FAUNA
FOUND IN LOCAL AREA

(**AREA OF STUDY** :: **SHYAMBAZAR**)



ENVIRONMENTAL SCIENCE PROJECT

(**DEPARTMENT NAME : MICROBIOLOGY**)

- **CU ROLL NUMBER : 2 0 3 2 2 3 - 1 1 - 0 0 2 0**
- **CU REGISTRATION NUMBER : 2 2 3 - 1 2 1 1 - 0 2 7 7 - 2 0**
- **SUBJECT NAME : ENVIRONMENTAL SCIENCE
(AECC 2)**
- **TOPIC NAME : STUDY OF FLORA AND FAUNA
FOUND IN LOCAL AREA**
- **COURSE NAME : MICROBIOLOGY HONOURS (B. Sc)**

C O N T E N T

1) INTRODUCTION

2) FLORA AND FAUNA (CHARACTERISTICS,
USES, ECONOMIC IMPORTANCE, HARMFUL
EFFECTS, SIGNIFICANCE)

3) CONCLUSION

4) ACKNOWLEDGEMENT

INTRODUCTION

- **“Flora”** comes from the Latin name of *Flora*, the goddess of plants, flowers and fertility in Roman mythology.

Flora is the plant life occurring in a particular region or time, generally the naturally occurring or indigenous native plant life.

- **“Fauna”** comes from the Latin name of *Faunus*, a Roman god of earth and fertility and the related forest spirits called Fauns.

The term was first used by **Carolus Linnaeus** in 1745. Fauna includes all the members of kingdom Animalia from invertebrates to human.

- Flora and Fauna forms the nature and nature’s beauty. A wildlife expert once said that, **“We can Marvel at the colours of Butterfly, the grace of the giraffe, the power of an elephant and the delicate structure of the diatom. Every time a species goes extinct we are irreversibly improvised.”**

FLORA

- 1) **FIVE TREES:-**
- a) Mango
 - b) Neem
 - c) Banyan
 - d) Holy Basil
 - e) Banana

- 2) **FIVE FLOWERS:-**
- a) Hibiscus
 - b) Jasmine
 - c) Marigold
 - d) Rose
 - e) Dahlia

FAUNA

- 1) **FIVE BIRDS:-**
- a) Crow
 - b) Pigeon
 - c) House Sparrow
 - d) Common Myna
 - e) Owl

- 2) **FIVE INSECTS:-**
- a) Mosquito
 - b) Black Garden Ant
 - c) Housefly
 - d) Painted Lady Butterfly
 - e) Indian Bee

- 3) **FIVE ANIMALS:-**
- a) Dog
 - b) Cat
 - c) Squirrel
 - d) Rabbit
 - e) Mice

FLORA

1) TREE – a) MANGO (*Mangifera indica*)

• CHARACTERISTICS :--

The tree is evergreen, often reaching 15-18 metres (50-60 feet) in height and attaining great age. The simple leaves are Lanceolate, upto 30 cm (12 inches) long. The flowers of Mango tree are small, pinkish, and fragrant. They are borne in large terminal panicles (loose clusters).

• USES :--

Eating Mango boosts immunity, improves digestion, prevents **Anaemia** as it is rich in iron, vitamin C, zinc, vitamin B6 and other minerals. The tender green leaves of mangoes contain tannins called **Anthocyanids**, which is effective in treating early Diabetes. They also help to treat **Diabetic Angiopathy** and **Diabetic Retinopathy**.

• ECONOMIC IMPORTANCE :--

Mango fruit is one of the delicious fruit of india exported to many countries. The green unripe mangoes are used in curries, sharbats and pickles. Dried mango flowers are of medicinal value and used in curing dysentery and catarah of bladder. It is a cure for wasp sting, rubbed between hands and left to dry. Hence, Mango tree is economically very important.

• HARMFUL EFFECTS :--

High consumption of fibrous fruits like Mango can cause **Diarrhoea** issues. Mango contains a chemical called **Urushiol**. People who are sensitive to this chemical can start experiencing Dermatitis too. It's a skin issue where people get inflamed skin that can become flaky, blistery and itchy.

• SIGNIFICANCE :--

MANGO the **NATIONAL FRUIT OF INDIA** has a huge significance. Despite having nutritional value Mango is also considered as the “**FRUIT OF GOD**” and it symbolizes fertility, love, prosperity, wealth and happiness.



b) **NEEM** (*Azadirachta indica*)

• **CHARACTERISTICS** :--

Neem trees are fast growing, medium sized trees, usually attaining a height of 50 to 65 feet. It's trunk is short and straight with deeply fissured bark. The **Pinnate leaves are purple-red when young, developing to a medium green colour when mature.**

• **USES** :--

Neem has anti-inflammatory and anti-septic properties for which it can be used for **Leprosy, eye disorders, bloody nose, intestinal worms, stomach upset, loss of appetite, skin ulcers, acne problems, cardiovascular disease, Diabetes, Gingivitis and liver problems.** **Neem leaves are natural source of Flavonoids, Polyphenols, Isoprenoids, Sulphurous and Polysaccharides.**

• **ECONOMIC IMPORTANCE** :--

The Neem tree is now gaining the importance due to its wide scope of commercialization in the areas of **Agriculture, Veterinary, Cosmetics, Medicine, Toiletries** and various industries. Due to its fast growing property Neem is used in various industries.

• **HARMFUL EFFECTS** :--

Neem can cause serious side effects in infants, small children and hypersensitive patients. This serious side effects include **Vomiting, Diarrhoea, Drowsiness, Blood disorders** etc. It can cause **skin irritation** and **itchiness** in hypersensitive patients.

• **SIGNIFICANCE** :--

Besides having some mild side effects **Neem leaves are very good Detoxifying agent with some Anti-fungal and Anti-bacterial properties.** It can also be used as pesticide and insecticide to get rid of mosquitoes, worms etc. Neem is extremely beneficial plant and people should plant Neem tree in their houses and nearby areas.



c) **BANYAN** (*Ficus benghalensis*)

• **CHARACTERISTICS** :--

Banyan tree is characterized by a tangle of branches, roots and trunks. The tree is deeply rooted, which may spread across several acres. It is huge in size, thereby giving protection from hot sun. Banyan trees have **Prop roots** which is a type of adventitious roots that are modified to provide support. An old Banyan tree can reach more than **656 feet** in diameter and can be as tall as **98 feet**.

• **USES** :--

The bark and seeds of Banyan tree can be used as a tonic to maintain body temperature and treat **Diabetes**. The roots can be used to strengthen teeth and gums by brushing with them. The sap treats external skin bruising and inflammation. The prop root paste can keep hair healthy and shiny.

• **ECONOMIC IMPORTANCE** :--

Banyan tree has a huge contribution in **medical industries** and **plywood industries**. Its leaves, bark and seeds and fig are used for the variety of disorders like **Diarrhoea, Polyuria, Diabetes and Urine disorders**. The wood of the Banyan tree is used in making door panels, boxes and other items.

• **HARMFUL EFFECTS** :--

Some parts of Banyan tree are poisonous (if ingested). Caution should be used while handling it, as sensitive individuals may be susceptible to **skin irritations** or **allergic reactions**.

• **SIGNIFICANCE** :--

The Banyan tree is important for the myriad of health benefits that can be derived from it. It can cure **chronic Diarrhoea, Dysentery and Piles**. It eases **Leucorrhoea** too. It treats gum and teeth disorders and lowers back pain and **Rheumatic pain**. Banyan tree also has some religious significance and it symbolizes **Longevity** and **Strength**.



d) **HOLY BASIL** (*Ocimum tenuiflorum*)

• **CHARACTERISTICS** :--

Holy Basil is an erect, many-branched subshrub. Leaves are **green** or **purple** and they are simple, petioled with an ovate blade up to **5 cm (2 inches)** long which usually has a slightly toothed margin. They are strongly scented and have a **decussate phyllotaxy**.

• **USES** :--

Holy Basil is used for the **Common Cold (Rhinitis), Influenza, H1N1 (Swine) Flu, Diabetes, Asthma, Bronchitis, Earache, Headache, Stomach upset, Heart disease, Fever, Viral Hepatitis, Malaria, Stress and Tuberculosis.**

• **ECONOMIC IMPORTANCE** :--

Holy Basil or Tulsi has a huge impact on medical industries and herbal toiletry. Its oil is also used against the insects and bacteria. Tulsi is the effective remedy for the severe acute Respiratory Syndrome. Juice of its leaves give relief in cold, fever, bronchitis and cough. Tulsi is used in Ayurvedic treatment to cure severe diseases.

• **HARMFUL EFFECTS** :--

Research shows that Tulsi can have some side effects too. Taking Holy Basil might cause Nausea or Diarrhoea. In some rare cases, Tulsi can promote bleeding, low blood sugar and decrease fertility. Moreover, Tulsi leaves have **MERCURY** in them which is not good for

• **SIGNIFICANCE** :--

Holy Basil tree or Tulsi is considered as the **“ MOTHER MEDICINE OF NATURE . “** Tulsi has been shown to boost body’s health in a variety of ways. Holy Basil is also used for Anxiety, Stress, Diabetes, High Cholesterol and many other conditions. Hence, Tulsi the **“ QUEEN OF HERBS “** has a huge significance.



e) **BANANA** (*Musa acuminata*)

- **CHARACTERISTICS :-**

The Banana plant is a gigantic herb that springs from an underground stem or **Rhizome** to form a false trunk **3-6 metres (10-20 feet)** high. The fruit is variable in size, colour and firmness but is usually elongated and curved, with soft flesh rich in **Starch** covered with a rind, which may be green, yellow, red, purple or brown when ripe. The fruits grow in clusters hanging from the top of the plant.

- **USES :-**

Banana is enriched with **Potassium** as well as it is effective to treat **Cholesterol and High Blood Pressure**. Bananas also relieve stomach issues like constipation and stomach ulcers. **The banana flower is good for people looking to prevent and control Type II Diabetes** because it balances out blood sugar levels in the body.

- **ECONOMIC IMPORTANCE :-**

Bananas are grown in all tropical regions and play a key role in the economies of many developing countries. In terms of gross value of production, bananas are the **World's Fourth Most Important Food Crop** after rice, wheat and maize. They are a staple food and an export commodity.

- **HARMFUL EFFECTS :-**

Side effects of Banana are rare but may include bloating, gas, cramping, softer stools, nausea and vomiting. In very high doses bananas might cause high blood levels of potassium. **Some people are allergic to Banana.**

- **SIGNIFICANCE :-**

The fruit is a source of vital nutrients. It is also a great digestive, which aids bowel movement and contains good fibre for gut. It also symbolizes good luck and prosperity. Hence, it also has a religious significance.



2) FLOWER – a) HIBISCUS (*Hibiscus rosa sinensis*)

- **CHARACTERISTICS :--**

The leaves of the hibiscus plant are alternative, ovate to lanceolate, often with a toothed or lobed margin. The flowers are large, conspicuous, trumpet shaped with five or more petals, colour from **white to pink, red, blue, orange, peach, yellow or purple and from 4 – 18 cm broad.**

- **USES :--**

All parts of Hibiscus plants are used traditionally. Due to their soothing and astringent properties, the flowers and leaves have been traditionally used to treat conditions such as **cancer and gall bladder attacks, to low blood pressure, to relieve dry coughs and topically to treat skin afflictions.**

- **ECONOMIC IMPORTANCE :--**

The leaves, roots and flowers have various medicinal properties. The leaves and calyces have been used as food and the flowers steeped for tea. **Hibiscus has been used in folk medicine as a diuretic and mild laxative as well as in treating cancer, cardiac and nerve diseases. Hibiscus has a huge economical contribution in medicinal fields.**

- **HARMFUL EFFECTS :--**

Side effects of Hibiscus are uncommon but might include **temporary stomach upset or pain, gas, constipation, nausea, painful urination, headache, ringing in the ears or shakiness.**

- **SIGNIFICANCE :--**

Hibiscus is a very delicate flower and it also symbolizes the fleeting and beauty of personal glory. The blossoms may also be associated with wealth. Hibiscus also provides many critical resources for humans.



b) **JASMINE** (*Jasminum officinale*)

- **CHARACTERISTICS** :--

Jasmine can be either **deciduous** or **evergreen** and can be erect, spreading or climbing shrubs and vines. Their leaves are borne in opposing or alternating arrangement and can be of simple, trifoliate or pinnate formation.

- **USES** :--

The flower is used to make medicines. **Jasmine has been used for Hepatitis, Liver pain due to Cirrhosis and Abdonimal pain due to severe Diarrhoea. It is also used to cause Relaxation (as a Sedative) and also in Cancer treatment.**

- **ECONOMIC IMPORTANCE** :--

The flower is used for making garlands, adoring hairs for women, in religious and ceremonial functions and for producing perfumery oil. Hence, **Jasmine has a huge contribution in Beauty Industries.**

- **HARMFUL EFFECTS** :--

Side effects of Jasmine are uncommon but Hypersensitive people can have allergic reactions and skin irritations.

- **SIGNIFICANCE** :--

Jasmine's meaning varies by place and culture but it often symbolizes Love, Beauty or Sensuality. Because the small, unassuming white flowers bloom at night with such a powerful scent, Jasmine sometimes symbolizes the value of modesty.



c) MARIGOLD (*Tagetes erecta*)

• CHARACTERISTICS :--

The Marigold is an **Annual Herbaceous** plant which can reach stature heights up to **80 cm (32 inches)**. However, it is usually much smaller with between **40 and 50 cm (15 and 20 inches)**. Marigold forms **Tap roots** which usually have a spindle-shaped appearance with finely branched fibres.

• USES :--

Marigold flower and its leaves are beneficial for good health. **It lowers inflammation, free radical damage, reduces eye inflammation and conjunctivitis. It has natural Antiseptic properties, heals skin wounds, helps to reduce Hemorrhoid pain. Marigold eases cramps, spasms and it naturally repels Bugs.**

• ECONOMIC IMPORTANCE :--

Marigold is one of the most important commercially grown loose flower crops in India. It is used as loose flower or to make garlands, which are extensively used in Religious and Social Functions. Hence, it is being grown for flowers in addition to its medicinal value compared to ornamental plants like lilies.

• HARMFUL EFFECTS :--

An allergic reaction to Marigold is unlikely but seek immediate medical attention if it occurs. Symptoms of an allergic reaction include Rash, Itching, Swelling, Dizziness, Trouble Breathing.

• SIGNIFICANCE :--

Marigold flowers are called '**HERB OF THE SUN**.' The **Orange** and **Yellow** colour of Marigold is considered auspicious for new beginnings and important events of life. Marigolds are especially good for for repelling insects and pests from garden plants.



d) **ROSE** (*Rosa indica*)

• **CHARACTERISTICS** :--

Roses are erect, climbing or trailing shrubs. The stems of which are usually copiously armed with prickles of various shapes and sizes, commonly called **Thorns**. The leaves are **Alternate** and **Pinnately Compound (feather-formed)**, usually with **Oval Leaflets** that are sharply toothed.

• **USES** :--

Rose plant having so many medicinal properties, which makes it very useful as **Blood Purifier**. **Anti-inflammatory** and **Aphrodisiac** action of this plant is effective in various health issues like in **Intestinal Ulcer**, **Diarrhoea** etc. In Ayurveda, whole plant has been used for medicinal purpose.

• **ECONOMIC IMPORTANCE** :--

Roses are best known as Ornamental plants grown for their flowers in the garden and sometimes indoors. They have been also used for Commercial Perfumery and Commercial cut flower crops. Some are used as landscape plants, for hedging and for other utilitarian purposes such as game cover and slope stabilization.

• **HARMFUL EFFECTS** :--

Side effects of Rose water may include skin irritation, redness, stinging etc. Having rose water may cause **Diarrhoea**, **Nausea**, **Headaches** and **Heartburn**.

• **SIGNIFICANCE** :--

Roses symbolize Love, Friendship, Innocence, Purity, Gratitude, Grace, Admiration and Joy. Roses are utilized in Ayurveda for their healing properties and have been an important part of Indian culture and daily life for more than 5000 centuries.



e) **DAHLIA** (*Dahlia pinnata*)

- **CHARACTERISTICS :--**

Evergreen fast growing herb (**2-6 m tall**), stems are erect, 4 angled, brittle and woody (**8 cm wide**), usually branched from the base with swollen nodes and with **underground Tubers**.

- **USES :--**

Tubers of Dahlia were used due to high content of Fructose and Inulin. Petals and Tubers were used for treating infected grazes, rasahes and cracks in skin. Dahlia tubers are rich in Antibiotic compounds. The crushed and mashed up petals are used to provide relief from stings or insect bites.

- **ECONOMIC IMPORTANCE :--**

Dahlia is widely used even in economical purpose, in landscaping, in floristry as a cut flower for Pharmaceutical Industry, Cosmetic , Food and as raw material for the extraction of Dyes. Both the tuberous roots and the flowers of this ornamental and medicinal plant are used for therapeutic purposes.

- **HARMFUL EFFECTS :--**

Harmful effects of Dahlia in Human is very rare. But it is among the many plants toxic to **Dogs, Cats and Horses**. If they consume this plant, they will experience Salivation, Vomiting, Diarrhoea, Depression and Weakness.

- **SIGNIFICANCE :--**

Dahlias can be used for dyeing. Most of the Dahlias produce warm yellows and oranges with an alum mordant and greens with iron mordants. A mordant is a substance that helps to fix the colours to **Textiles**.



F A U N A

1) BIRD— a) CROW (*Corvus splendens*)

- **CHARACTERISTICS :--**

Crows are Black Birds known for their Intelligence and Adaptability and for their loud, harsh ‘ Caw ‘ sound. Adult crow weights on **average 450 g**. The feathers have a glossy and slightly iridescent look. Crows have strong legs.

- **USES :--**

A crow family can eat 40,000 grubs, caterpillars, armyworms and other insects in one nesting season. That's a lot insects many gardeners and farmers consider pests. These good environmental citizens also transport and store seeds, thus contributing to forest renewal.

- **ECONOMIC IMPORTANCE :--**

Crows play a vital role in Waste Management. They consumes tons of waste every year, preventing the spread of diseases and bad odour. Crows have highly efficient digestive systems like those of Vultures and as Omnivorous bird, they can feed on meat and plants.

- **HARMFUL EFFECTS :--**

When crows are flocking, hundreds of Noisy Pest Birds take over trees or buildings, creating tremendous amounts of Noise while harassing both people and animals. Another crow problem is their droppings which can lead to structural damage. The uric acid in the excrement can eat away stone, metal and masonry.

- **SIGNIFICANCE :--**

Crows are **OMNIVOROUS BIRD**, which helps to keep environment fresh and clean. The crow is the spirit animal of many people and it is considered to have some magic and mystery in it. In Urban area Crow is the most commonly found bird.



b) **PIGEON** (*Columba livia*)

- **CHARACTERISTICS** :--

Pigeons are short-necked and stout-bodied birds carrying short slender bills which feature fleshy ceres in certain species. An adult Pigeon is **32-37 cm long**, with **64-72 cm wingspan**, black bill with off-white cere and it has red feet and legs.

- **USES** :--

Although the Pigeon is one of the most intelligent of all bird species, man has found limited uses for the birds other than for the purposes of sport, food and as a message carrier. A team of navy researchers however has found that pigeons can be trained to save human lives at sea with high success rates.

- **ECONOMIC IMPORTANCE** :--

Pigeons are a huge source of commercial meat. The large white pigeon variety also called as **KING PIGEON** is used for the selective breeding and many of them are sold as source of meat. The breed named **TIPPLERS** are flown and participated in the contests by the owners.

- **HARMFUL EFFECTS** :--

A small health risk can be associated with pigeon contact. **Three Human Diseases, HISTOPLASMOSIS, CRYPTOCOCCOSIS and PSITTACOSIS** are linked to pigeon droppings. **A FUNGUS** that grows in bird droppings and soil causes **HISTOPLASMOSIS**, a disease that affects the **Lungs**.

- **SIGNIFICANCE** :--

Through out Human History, Pigeons have symbolized LOVE, COMPASSION, WISDOM and POWER and have been honored as sacred messengers from the Gods. The most common Pigeon symbolism and spiritual meanings in the ancient cultures that worshipped pigeons were of good luck, divination, healing, peace and happiness.



c) HOUSE SPARROW (*Passer domesticus*)

- CHARACTERISTICS :--

The House Sparrow is typically about **16 cm (63 inches)long**, ranging from **14 to 18 cm (5.5 to 7.7 inches)**. Sparrows have beautiful voices and their chirping and singing can be heard all over. Other unique characteristics are their smooth, round heads and round wings. **Males have Reddish feathers on their backs and Females are Brown and Striped.**

- USES :--

Sparrows feed their children with insects called **Alpha** and **Catworm**. These insects are extremely dangerous for crops. They kill the leaves of crops and destroy them. In addition, Sparrow eats insects that appear during Monsoon season.

- ECONOMIC IMPORTANCE :--

Sparrows are very useful **Biocontrol Agent**. They help plants to get rid of dangerous insects that can damage crops. However, Sparrows are not that significant in the economical field.

- HARMFUL EFFECTS :--

A single Sparrow eats about 6 1/2 lb. of food per year and as this is only partly and seasonally grain, it is the great numbers of the bird which constitute the economic menace. **Cases are recorded in which 25% of an acre of wheat was destroyed by sparrows and in Russia up to 30% of a crop is generally lost.**

- SIGNIFICANCE :--

The Sparrow symbolism means power, creativity, community, simplicity and empowerment. In Urban area Sparrows can be found easily.



d) COMMON MYNA (*Acridotheres tristis*)

- CHARACTERISTICS :--

The Common Myna is readily identified by the **Brown body, Black hooded head** and the **bare Yellow patch behind the eye**. The bill and legs are bright yellow. There is a White patch on the outer primaries and the wing lining on the underside is White . Mynas are usually weighing between **3 to 5 pounds**. The sexes are similar and birds are usually seen in pairs.

- USES :--

The Common Myna was also introduced to control pest, armyworms and cutworms. In Sugarcane crops, the bird has helped to spread the robust *Lantana camara* weed across the open grasslands.

- ECONOMIC IMPORTANCE :--

Common Mynas can be used as a flagship species of an ecosystem. They help in pest control, pollination, cleaning the environment and also serve as an environmental indicator.

- HARMFUL EFFECTS :--

Common Mynas can cause considerable damage to ripening fruit, particularly Grapes but also Figs , Apples, Pears, Strawberries, Blueberries, Guava, Mangoes and Breadfruit. **Cereal crops such as Maize, Wheat and Rice are susceptible where they occur near urban areas.**

- SIGNIFICANCE :--

Common Myna can be found very easily in urban area. Despite of having some damaging effects, it has some significance for participating and maintaining food chain.



e) OWL (*Bubo bengalensis*)

- CHARACTERISTICS :--

Owls are Nocturnal Bird. They can rotate their heads and necks as much as 270 degree. They are approximately **13.5 to 71 cm in length**. They have unique wing and feather features that help them fly almost soundlessly through trees. **Their sound-dampening structures help them fly inaudibly so that their prey can't hear them coming.** This quality may also help Owls in hearing their prey more intently.

- USES :--

Nocturnal owls are valued for their sense of hearing. People might use them to hunt Rodents, Small Birds etc. Primarily, Owl provides **Natural Pest Control** for the environment. Owl can be kept as pet too. The practice of capturing Owls for various purposes is prevalent.

- ECONOMIC IMPORTANCE :--

As predators, Owls play an important role in the environment by controlling small populations. Because Mammals are the prey item, this can be especially beneficial to humans, reducing the amount of food lost each year to Rodents.

- HARMFUL EFFECTS :--

Owls of all kinds have been known to attack people when defending their young ones, their mates or their territories. **An Owl attack can hurt a lot. It can cause serious and permanent injury.**

- SIGNIFICANCE :--

People generally consider Owl as symbols of Wisdom and Knowledge. Owl symbolism can also mean Transition and Time. Overall, Owl has a great significanc .



2) INSECT- a) MOSQUITO (*Anopheles sp.* / *Aedes sp.* / *Culex sp.*)

- CHARACTERISTICS :--

Mosquitos have thin, long bodies and three pairs of extremely long legs. They have scales along the veins of their wings and long beak like sharp sucking mouth parts are called **PROBOSCIS**. These two features distinguish mosquitoes from other flies. **Mosquitoes also have feathery or hairy Antennae.**

- USES :--

Despite of having so many harmful effects, Mosquitoes (especially **male ones**) act as pollinators. Male mosquitoes transfer pollen from flower to flower as they feed on Nectar of fertilizing plants and allow them to form seeds and reproduce. **It's only Female Mosquito lays eggs hence she seek blood meal for the protein.**

- ECONOMIC IMPORTANCE :--

Larval mosquitoes contribute to Aquatic Food Chains by serving as food sources for many predators, including fish and birds. Adult mosquitoes that die , then decompose, turning the microbes they consumed as larvae into nutrients for plants, completing another important ecological function.

- HARMFUL EFFECTS :--

Mosquitoes infect humans with the **Zika Virus, Yellow Fever, Dengue, Malaria** and other diseases. Mosquitoes have bedeviled humans for centuries, spreading disease and death to millions. **Today, the latest Plague they bring is the ZIKA VIRUS.**

- SIGNIFICANCE :--

Mosquitoes are responsible for the transmission of many medically important pathogens and parasites such as viruses, bacteria, protozoans and nematodes which cause serious diseases like **Malaria, Dengue, Yellow Fever, Encephalitis or Filariasis.**



b) **BLACK GARDEN ANT** (*Lasius niger*)

- **CHARACTERISTICS** :--

Ants have six legs with three joints each and a hooked claw for climbing , large heads with compound eyes , elbowed antennae, a narrow constriction called **PETIOLE** between the abdomen and thorax, a hard exoskeleton covering the body and powerful mandibles.

- **USES** :--

Many human cultures make use of ants in Cuisine, Medication and Rites. Some species are valued in their role as Biological Pest Control Agents. Ants act as decomposers by feeding on organic waste, insects or other dead animals and helps to clean the environment.

- **ECONOMIC IMPORTANCE** :--

Ants are efficient cleaners. Ants act as Decomposers by feeding on organic waste, insects or other dead animals. They help to keep the environment clean. Ants which make their nests in dead or diseased wood, considerably accelerate the decomposition process of timber.

- **HARMFUL EFFECTS** :--

Ants can pose a serious problem if they get into food supplies. Ant bites can be painful. Ants carry and can spread bacteria, like *Salmonella sp.* Ant infections can quickly become a serious problem because ants are highly sophisticated insects.

- **SIGNIFICANCE** :--

Ants is a symbol of discipline, hard work, strength etc. Ants are attracted to most types of human food, but they are especially fond of sweet foods. Ants are found in each and every corner of house.



c) **HOUSEFLY** (*Musca domestica*)

• **CHARACTERISTICS** :--

The adult Housefly is **5 to 7 mm long**, with the **female usually larger than the male**. Its head has reddish eyes and sponging mouthparts. The thorax bears four narrow black stripes and there is a sharp upward bend in the fourth longitudinal wing vein.

• **USES** :--

The biggest benefit from flies comes from the parasitic species. They attack caterpillars, grasshoppers and other insects that eat our food plants. Some flies also help to pollinate plants that we grow. Flies are also important food source for other animals like fish.

• **ECONOMIC IMPORTANCE** :--

Houseflies can be used in many scientific experiments in laboratories like **MAGGOT THERAPY**. **MAGGOT DEBRIDEMENT THERAPY is when fly larvae (maggots) are used to clean wounds and bone infections**. The maggots not only eat the dead tissue, but they also secrete Ammonia and Calcium Carbonate, which disinfects the wound. *Musca domestica* is best for this therapy.

• **HARMFUL EFFECTS** :--

Housefly can transmit many disease causing organisms such as *Salmonella sp.* , *Escherichia coli* etc. and housefly can be a nuisance in and around farms and houses. **The diseases that flies can transmit include Enteric Infections (such as Dysentery, Diarrhoea, Typhoid, Cholera and certain Helminth Infections), Eye Infections (such as Trachoma and Epidemic Conjunctivitis).**

• **SIGNIFICANCE** :--

Houseflies play an important ecological role in breaking down and recycling organic matter. Adults are mainly carnivorous, their primary food is animal matter, carrion and faeces but they also consume milk, sugary substances and rotting fruit and vegetables.



d) **PAINTED LADY BUTTERFLY** (*Vanessa cardui*)

• **CHARACTERISTICS** :--

Painted Lady Butterflies have a pale buffy orange background colour to the upper wings. The forewings have black tips marked with white spots and the hindwings have rows of black spots, The undersides are pale with blue eyespots. Painted ladies do not hibernate, instead they migrate from one area to other.

• **USES** :--

Butterflies are very good pollinators and they help to pollinate Entomophilous Flowers. This butterfly species commonly used for release at weddings and other celebratory events.

• **ECONOMIC IMPORTANCE** :--

Vanessa cardui and other painted lady butterfly species are bred in gardens, parks, schools for conservation and educational purposes. They represent the beauty of the nature very well.

• **HARMFUL EFFECTS** :--

Butterflies themselves are not harmful to plants. However, leaves on a plant may die in response to butterfly eggs being laid on them. At the same time, butterflies pollinate flowers and are an indication of overall healthy wildlife ecology.

• **SIGNIFICANCE** :--

The painted lady butterfly species is the most widely distributed butterfly in the world. They are a long distance migrant, which causes the most spectacular butterfly migrations.



e) **INDIAN BEE** (*Apis cerana indica*)

- **CHARACTERISTICS** :--

The individuals are defined by long, erect hairs that cover the compound eyes and assist in pollen collection, strongly convex **Scutellum** and a jugal lobe in the hindwing. Adult bees are black in colour with four yellow abdominal stripes. There are also distinctions between **Worker Bees** (sterile female bees), **Queens** (fertile female bees) and **Drones** (fertile male)

- **USES** :--

These Indian honey bees make very small and exposed nests in the tree. Indigenous people traditionally use these species of bees for Honey and Beewax and this process is known as Bee Hunting.

- **ECONOMIC IMPORTANCE** :--

Apiculture (rearing of honey bees) plays an important role in increasing agricultural production and horticultural production, as the bee carries out pollination activity in **Entomophilous flowers**, which leads to an additional one-fourth increase in crop production.

- **HARMFUL EFFECTS** :--

Bee stings can be very dangerous for Humans and other animals. To sting, a bee jabs a barbed stinger into the skin. Bee sting venom contains proteins that affect skin cells and the immune system, causing pain and swelling around sting area. In people with a bee sting allergy, bee venom can trigger a more serious immune system reaction.

- **SIGNIFICANCE** :--

Honey bee is very fruitful economically. Apiculture is a great source of money and it is valued all over the world. Hence, honey bees are of great ecological as well as economical significance.



3) ANIMAL- a) DOG (*Canis lupus familiaris*)

- CHARACTERISTICS :--

The dog is probably the most abundant carnivoran living in the human environment. Dogs have been described as Omnivores. **Similar to humans , some dog breeds produce Amylase in their saliva and are classified as having a high starch diet. Dogs can only produce Bile Acid with Taurine and they cannot produce Vitamin D, which they obtain from animal flesh. Dogs require Arginine to maintain its nitrogen balance.** These nutritional requirements place dogs halfway between carnivores and omnivores.

- USES :--

Dogs provide company to human. They can reduce stress, anxiety and depression , ease loneliness, encourage exercise and playfulness and even improve cardiovascular health. They also serves as Guide dogs, Utility dogs, Assistance dogs and Hearing dogs.

- ECONOMIC IMPORTANCE :--

If trained properly and treated well dogs are loyal and protective animals. Domestic dogs have been bred to many purposes throughout the milenia, including as draft animals, guards, hunting, herding and fishing aids and as lap animals. Hence, they have a huge economical importance.

- HARMFUL EEFECTS :--

Dogs can carry harmful germs like Lyssaviruses (it causes Rabies), Tapeworms, Hookworms, Roundworms etc. That is why people should take care of dogs (including street dogs) and dogs should have vaccinated properly.

- SIGNIFICANCE :--

Dogs are faithful companion and reliable protector. They can be a comfort to people who crave unconditional interaction with another living being.



b) **CAT** (*Felis catus*)

• **CHARACTERISTICS** :--

The cat is similar in anatomy to the other field species. It has a strong flexible body, quick reflexes, sharp teeth and retractable claws adapted to killing small prey. It's night vision and sense of smell are well developed. The toes and paws as well as the tip of the nose are also very sensitive to touch. Cats also have an acute sense of hearing. **Their ears contain almost 30 muscles as a result they can turn them many times more quickly in the direction of sound.**

• **USES** :--

Cat lowers stress and anxiety which can improve cardiovascular health. **A study reveals that there is a 30% chance that people who own cats can dodge stroke and other heart problems compared to those who do not own felines.** Moreover felines can make people less agitated since keeping them as pet takes less effort than having dogs.

• **ECONOMIC IMPORTANCE** :--

People loves to keep cats as pets that is why they are economically very much fruitful. Sometimes people suffering from depression and anxiety loves to keep cats so they could improve their mental health.

• **HARMFUL EFFECTS** :--

Many diseases can be associated with cats such as Cats Scratch Disease, Round worms, Rabies, Toxoplasmosis, Campylobacteriosis, Salmonellosis, Cryptosporidiosis, Giardiasis etc. People with compromised immune systems are especially vulnerable to this.

• **SIGNIFICANCE** :--

Cats are strict carnivores. This puts them at the top of the food chain where they play important ecological role by regulating prey populations and structural animal community. Owning a cat can be an extremely rewarding relationship.



c) SQUIRREL (*Funambulus palmarum*)

- CHARACTERISTICS :--

Squirrels are day active animals with slender bodies, sleek, thick fur, bushy tails. Squirrels are generally ranging in size from **10-14 cm. (3.9 - 5.5 inches)** and **weights about 12-26g**. Their coats are black, grey, brown or reddish above and light colored below.

- USES :--

Squirrels don't dig up all of their buried knots, which results in more trees. They have accidentally contributed countless tree to the nation's forests. **Squirrels play a vital role in planting many oak trees.**

- ECONOMIC IMPORTANCE :--

Now a days Squirrels are widely accepted as pet due to their cuteness and friendly behavior. Moreover squirrels are actually extremely intelligent and can be trained as a good pet. That is why they are economically important.

- HARMFUL EFFECTS :--

Squirrels are known to carry numeral diseases like Rabies, Salmonellosis, Leptospirosis, Lyme disease, Plague, Ringworm etc. Such diseases are transmitted through bites or other forms of direct contact with infected squirrels. Though only a few of them are dangerous to humans.

- SIGNIFICANCE :--

Squirrels are like wise extremely intelligent animals that have demonstrated that they have superb memories. Squirrels can be seen stocking up on nuts for the cold dark winter days ahead that reflects their intelligence.



d) **RABBIT** (*Oryctolagus cuniculus*)

- **CHARACTERISTICS** :--

Rabbits are small, furry mammals with long ears, short fluffy tails and strong large hind legs. They have **2 pairs of sharp incisors (front teeth)**, **one pair on top and one pair on the bottom**. They also have **2 peg teeth behind the top incisors**. The coat colour of the rabbit can be **White, Black, Brownish, Agouti** which aids in camouflage.

- **USES** :--

Rabbits are an important part of the planet's ecosystem. This is because they help to keep **invasive plants and weeds under control**. In turn, this encourages other plants, insects and birds to thrive. Rabbits can provide enough meat for a family meal. Also, pet rabbits are good for humans because they enhance physical and mental health.

- **ECONOMIC IMPORTANCE** :--

Like a chicken, one rabbit can provide enough meat for a family meal. Some breeds of rabbit have long hair which is collected and spun to give wool for clothing. Rabbit skins can be dried and treated to give good pelts (skins with fur) to be used in clothing and other use.

- **HARMFUL EFFECTS** :--

Problems related to Rabbit can arise sometimes—usually not from diseases but from **Allergies, Bites and Scratches**. While Rabbits can carry parasites like **Tapeworm and Roundworm**, their waste is not known to transmit any diseases to humans.

- **SIGNIFICANCE** :--

Rabbits are springtime animals, symbolic of fruitfulness and renewal. Rabbits has a huge contribution in economical and ecological fields.



e) MICE (*Mus musculus*)

- CHARACTERISTICS :--

Mice have a slender body, blunt or tapered muzzle, scantily haired, prominent ears, narrow hind feet with bald soles and sharp, small claws. The thinly furred tail appears hairless, it may be about as long as the head and body or it can be much shorter.

- USES :--

Mice are used in behavioral, sensory, aging, nutrition and genetic studies as well as testing anti-craving medication that could potentially end drug addiction. Research in mice provides insights into the genetic risk factors for several diseases in the human population.

- ECONOMIC IMPORTANCE :--

Mice are extremely useful for studying complex diseases such as **Atherosclerosis** and **Hypertension** as many of the genes responsible for these diseases are shared between mice and humans. Mice are versatile, that they are used in a range of research from **Genetics to Virology, Oncology and many more**. Notably, **Mice have been very important in the development of Herceptin, a Monoclonal Antibody used in certain types of Breast Cancer**. Hence, Mice (especially **KNOCKOUT MICE**) has a huge demand in laboratories, genetic and health research institutes.

- HARMFUL EFFECTS :--

They can spread a number of Viruses and diseases through their faeces , which can be harmful when dried and breathed in and they can also contaminate food and infect people that way. **These Viruses and diseases include HANTAVIRUS, BUBONIC PLAGUE, SALMONELLOSIS and RAT-BITE FEVER.**

- SIGNIFICANCE :--

Mice are Keystone Species in almost every ecosystem. Mice represent food to predators in every terrestrial ecosystem. Overall, Mice have great significance in ecological as well as in economical fields.



CONCLUSION

Flora and Fauna are two of the most important groups of species that our planet provides to us. To keep our environment safe each and everyone need to take care of the plants and animals of their local area. **Those who lives in Urban area should plant trees as much as they can. Everyone should plant trees in their balcony, terrace and the field surrounding their houses.** It can help to keep the environment clean and with full of fresh air.

People should take care of the animals like street dogs, cats, birds, fishes and should feed them each and everyday. Street dogs and cats should be vaccinated in the sake of their safety as well as our safety. It is our duty to take care of them and make sure that they do not get extinct from the earth.

Various **NGOs (NON-GOVERNMENTAL ORGANIZATION)** are acting in front line to protect local flora and fauna of urban area. The local people should also step forward and take necessary steps to protect the environment. In crowded urban area, protecting flora and fauna is a necessary work to do.

A C K N O W L E D G E M E N T

I would like to express my special thanks of gratitude to **our respected College Professors, our respected Principal Madam, our honorable Vice Principal Sir,** who gave me the golden opportunity to do this wonderful project (**STUDY OF FLORA AND FAUNA FOUND IN LOCAL AREA**) of **ENVIRONMENTAL SCIENCE**. They also helped me in completing my project . I came to know about so many new things related to the plants and animals of our locality.

Secondly, I would also like to thank my parents , my elder sister and my friends who helped me a lot in finalizing this project within the limited time frame.

AECC 2- ENV'S PROJECT

REPORT

FLORA AND FAUNA

AUDITING OF

DUMDUM MOTIJHEEL

AREA, KOLKATA



COLLEGE ROLL NO.- MCBA20F416

CU ROLL NO.- 203223-11-0013

CU REG. NO. – 223-1211-0259-20

SEMESTER- 2

DEPARTMENT- MICROBIOLOGY

SUBJECT- AECC2 (ENVS)

CONTENTS

1. INTRODUCTION

2. FLORA AUDITING

A) TREES

B) FLOWERS

3. FAUNA AUDITING

A) ANIMALS

B) BIRDS

C) INSECTS

4. CONCLUSION

5. ACKNOWLEDGEMENT

INTRODUCTION

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of **environmental** diversity of various establishments.

This project is a record of the flora and fauna of Dumdum Motijheel area, Kolkata which includes trees, flowers, animals and birds, along with their ecological importance. Flora and fauna constitute important components of our ecosystem and in a way, it is a symbiotic relationship between humans and nature. Hence, it is necessary to understand the environment around us and know how they maintain the ecological balance.

FLORA

A) TREES:

(i) MANGO (*Mangifera indica*)

Systematic position:

- Kingdom: Plantae
- Division: Angiospermae
- Class: Dicotyledonae
- Order: Sapindales
- Family: Anacardiaceae
- Genus: *Mangifera*
- Species: *indica*

USES:

- Mango is a vital fruit for human nutrition and has medicinal benefits

like speeding up tissue regeneration among others.

- It has a thick bark and provides shade in sunny areas.
- Mango production among small farmers will reduce poverty and increase family incomes.
- It is a tropical refreshing fruit and has great cultural importance in our country.



(ii) NEEM (*Azadirachta indica*)

Systematic position:

Kingdom- Plantae

Division- Magnoliophyta

Class- Magnoliopsida

Order- Sapindales

Family- Meliaceae

Genus- *Azadirachta*

Species- *indica*

USES:

- Neem leaves have antibacterial properties so it can work wonders on wounds, burns or other skin problems.
- It has pesticidal and insecticidal properties.
- Promotes oral health and boosts immunity.

- Aids in digestion and treats wounds and ulcers.



(iii) GUAVA (*Psidium guajava*)

Scientific name: *Psidium guajava*

USES:

- Guava leaves lower blood cholesterol, aids in digestion and treats diarrhoea and dysentery.
- The fruit is used for high blood pressure.
- Guava tree bark has antibacterial properties which can treat cuts, wounds, abrasions, ulcers.
- The guava tree in my locality is a place for birds to build nests and lay eggs.



(iv) Aloe vera (*Aloe barbadensis miller*)

Uses:

- Often referred to as wonder plant because of its medicinal properties.
- It accelerates wound healing as aloe gel increases collagen content of the wound and collagen cross linking.
- It has anti inflammatory action and may protect our skin from radiation damage or UV damage.
- It has laxative effect which increases intestinal water content , stimulates mucus secretion and increases intestinal peristalsis.



B) FLOWERS:

(i) China Rose

Scientific name- *Hibiscus rosa sinensis*

Significance:

- They are used for their beautiful flowers to attract birds and insects for pollination.
- It is a versatile flower which is perennial and adapts itself in urban spaces and enhances the beauty of any place.
- It has a number of medicinal uses in Indian ayurveda.

- Hibiscus species are used as food plants by many lepidopteran species like the nutmeg moth, turnip moth, etc.



(ii) Jasmine

Scientific name- *Jasminum*

Economic importance:

- It has economic significance as it is used to make garlands for religious and ceremonial purposes.
- It is used to make perfumery oil.

Significance:

- Several countries and states consider jasmine as a national flower.

- Jasmine tea is consumed traditionally in china.
- It enhances the beauty of any place or garden where it is planted.



(iii) **Dahlia**

Scientific name- *Dahlia pinnata*

Uses:

- It has economic importance in landscaping, floristry, and as a cut flower.
- It is used in the pharmaceutical industry, cosmetic, food and as a raw material in extraction of dyes.
- It is an important flower for entemophily and is pollinated by bees and butterflies.

- Both the tuberous roots and flowers of this ornamental plant is used for therapeutic purposes.



(iv) Rose

Scientific name- *Rosa*

Significance:

- They are very important ornamental plants grown for their attractive or scented foliage.
- Rose perfumes are made from rose oil. Rose water is used in cooking, cosmetics, medicine and religious practices.

- Rose water is also used in south asian sweets like gulab jamun. Rose hips are often made into jams, jellies.
- Roses are pollinated by bees, butterflies, hummingbirds or by wind transfer.



FAUNA

A) ANIMALS

(i) DOG

Scientific name- *Canis lupus familiaris*

Significance:

- Keeping of dogs as companions has a long history, where dogs can provide emotional support and companionship to humans.
- They have also been bred for herding livestock, hunting, as search and rescue dogs, guard dogs, for rodent control.
- They can suppress populations of introduced predators and in turn can benefit smaller native prey.



(ii) CAT

Scientific name- *Felis catus*

Significance:

- The most direct way in which domestic cats influence wildlife is through predation. Cats are opportunistic

hunters, and prey items include a wide range of animals, including birds, mammals, reptiles, amphibians, fish, and invertebrates like butterflies and dragonflies.

- Birds, the most important seed predators in most ecosystems overlap with wild cats in every habitat . This means that cats may aid in long distance seed dispersal, ensuring gene flow between plant populations.
- Cats are common pets throughout the world, and have been used for millennia to control rodents.
- Cats are good companions and are popular pets, keeping humans happy.



(iii) Mouse

Scientific name- *Mus musculus*

Significance:

- **Mice** are keystone species in almost every ecosystem. In forests, fields, and

deserts, **mice** represent food to predators of all sizes.

- They link plants and predators in every terrestrial ecosystem.
- Where house mice are abundant, they consume huge quantities of grain, making these foods unavailable to other(perhaps native) animals.
- Domestic forms are used in laboratories (in medicine and genetics) and as pets.
- They destroy furniture, clothing, woodwork and also contribute to the spread of many diseases like murine typhus and food poisoning.



(iv) Indian Palm Squirrel

Scientific name: *Sciuridae*

Significance-

- Squirrels help the ecosystem in forest regeneration. They help in shaping plant composition due to their eating and food saving habits.
- When they bury seeds for future consumption, they forget the spot and thus a new tree grows there.
- They are an important food source for other animals. They hold a place in the natural food chain and are preyed on by land and air predators.
- They aid in stroke research where scientists use squirrels for their research.



B) BIRDS

(i) Crow

Scientific name- *Corvus*

Significance:

- Crows are intelligent birds; they are capable of solving basic problems and possess excellent communication skills. They have a good memory and can identify a person with bad intentions from a group of people.
- Crows are social birds; they live in extended families and look out for each other.
- Crows play a vital role in waste management. They consume tons of waste every year, preventing the spread of diseases and bad odor. Crows have highly-efficient digestive systems like those of vultures, and as omnivorous birds, they can feed on meat and plants.
- They prefer meat to vegetation and stick around gardens to eat grubs and insects rather than vegetables and fruits. Considerably, their ability to clear pests and parasites from farmlands greatly outweigh the minimal damage they inflict on vegetation.



(ii) Pigeon

Scientific name- *Columba*

Uses:

- Pigeons play a vital role in the environment, they serve as food for peregrine falcons, hawks, foxes and martins.
- They also maintain and regulate insect species in an environment as well as weeds such as thistles.
- These birds also play a part in seed dispersal by eating seeds and distributing them.
- These feathered friends are one of nature's weed killers. They eat thistles in large quantities. Ripping them out and eating them prevents them from overgrowing.
- However, pigeon droppings are highly acidic and cause illnesses in humans. They can also lift roof coverings, tiles in an attempt to make their nests.



(iii) House Sparrow

Scientific name- *Passer domesticus*

Significance:

- Sparrows are common birds seen in nests in our houses.
- When sparrows feed on seeds, they help in dispersing the seeds from their trees, which is important for seed germination.
- They feed on many plant destroying insects such as caterpillars, beetles, aphids.
- They are food for the secondary consumers like eagles, falcons, snakes, and thus play a role in their survival and in preserving the ecosystem.



(iv) Bald Eagle

Scientific name- *Haliaeetus leucocephalus*

Significance:

- The bald eagle is a bird of prey (raptor) and occupies a position at the top of the food chain.
- It feeds by swooping over open water or land and catching prey with its sharp curved talons. It also eats dead animals (carrion).
- Eagles are meat-eaters (carnivores) and hunt during the day (diurnal) usually from a high perch. Adults have few predators. Owls prey upon young bald eagles.
- Some species of eagles are indicators of ecosystem health.



C) INSECTS:

(i) Butterfly

Scientific name- *Rhopalocera*

Significance:

- Butterflies help in pollen dispersal (entomophily), as when they feed on nectar from flowers the pollen gets stuck on the butterfly's body and moves with it.
- An abundance of butterflies is often an indication that an ecosystem is thriving. This is due to the fact that butterflies are an important component of a food chain, as predators and prey.
- Some species also provide a natural form of pest control. For example, the harvester butterfly eats aphids while it is in its caterpillar form.



(ii) Mosquito

**Scientific name- *Anopheles sp.* , *Culex sp.* ,
*Aedes sp.***

SIGNIFICANCE-

- In India, about 40 million people contract mosquito borne diseases annually.
- Mosquitoes are the root cause of diseases such as malaria, dengue, chikungunya, etc.
- These diseases can turn out to be deadly if not treated in time.
- Larval mosquitoes contribute to aquatic food chains by serving as food sources for many predators, including fish and birds.
- Adult mosquitoes that die (or are eaten and excreted) then decompose, turning the microbes they consumed as larvae into nutrients for plants, completing another important ecological function.



(iii) Honey bee

Scientific name – *Apis indica*

SIGNIFICANCE:

- Globally there are more honey bees than other types of bee and pollinating insects, so it is the world's most important pollinator of food crops.
- It is estimated that one third of the food that we consume each day relies on pollination mainly by bees, but also by other insects, birds and bats.
- By pollinating trees, bushes and herbaceous plants, the bees are important for the food production of all the other animals and birds in the forest ecosystem dependent on it for food berries, seeds and fruits.
- They produce large amount of honey and other products like beeswax which are important commercial products.



CONCLUSION

THE FOLLOWING PROJECT REPORT HAS GIVEN US AN OPPORTUNITY TO INTROSPECT AND THINK ABOUT THE ENVIRONMENT AROUND US. IT HAS MADE US AWARE OF THE LIVING ORGANISMS WHICH ARE A PART OF OUR DAILY LIVES AND SHARE THE EARTH WITH US. THE FLORA AND FAUNA ARE IMPORTANT COMPONENTS OF OUR ECOSYSTEM AND HELP TO MAINTAIN THE ECOLOGICAL BALANCE, WHICH WE HAVE BEEN MADE AWARE OF ONCE MORE WITH THE HELP OF THIS PROJECT REPORT.

ACKNOWLEDGEMENT

**I WOULD LIKE TO THANK PRINCIPAL
MA'AM, VICE PRINCIPAL SIR,
TEACHERS OF SCOTTISH CHURCH
COLLEGE MICROBIOLOGY
DEPARTMENT, AND MY PARENTS
FOR CONSTANTLY HELPING ME AND
PROVIDING ME WITH INFORMATION
AND SUPPORT FOR THIS PROJECT
REPORT.**

**PROJECT-ENVIRONMENTAL
STUDY**

PAPER CODE- AECC 2

SUBJECT CODE-ENVS

EXAM: SEM 2 (UNDER CBCS)

CU ROLL NO: 203223-11-0018

CU REGISTRATION NO: 223-1211-0273-20

COLLEGE ROLL NO: MCBA20F419



INTRODUCTION:

EVERYTHING THAT SURROUNDS OR AFFECTS AN ORGANISM DURING ITS LIFE TIME IS COLLECTIVELY KNOWN AS ITS ENVIRONMENT. THE ENVIRONMENT IS DEFINED AS THE SUM TOTAL OF LIVING AND NONLIVING COMPONENTS ; INFLUENCES AND EVENTS,SURROUNDING AN ORGANISM.

IN THIS PROJECT WE ARE SURVEYING THE FLORA AND FAUNA OF OUR LOCAL ENVIRONMENT.





AGENDA

Topic one - ABOUT 5 TREE OF MY LOCALITY

Topic two –ABOUT 5 ANIMAL OF MY LOCALITY

Topic three –ABOUT 5 INSECT OF MY LOCALITY

Topic four –ABOUT 5 FLOWER OF MY LOCALITY

Topic five – ABOUT 5 BIRD OF MY LOCALITY

- 5 TREE OF MY LOCALITY: 1)NEEM TREE
2) MANGO TREE
3) BANANA TREE
4)HOLY BASIL TREE
5)BANYAN TREE

NEEM (*Azadirachta indica*) : it is a medicinal plant with great economic value. IT HAS ANTI FUNGAL PROPERTIES . AN EXTREMELY IMPORTANT INSECTICIDE.



THAT'S WHY IT IS USED IN COSMETICS, VETERINARY, MEDICINE ,TOILETRIES AND VARIOUS INDUSTRIES.

MANGO TREE (*Mangifera indica*) : THIS TREE PRODUCE JUICY MANGO WHICH IS DELICIOUS . MANGO IS ECONOMICALLY IMPORTANT. MANGO WOOD IS USED FOR LOW COST FURNITURE.



BANANA TREE (*Musa sp.*) : It produces edible sweet bananas. Stem is also edible. Leaves of bananas are used as food plate in south india . IT IS BELIEVED THAT BANANA TREE IS THE SYMBOL OF PROSPERITY.



HOLY BASIL(*ocimum trnuiflorum*) is a flowering plant of the mint family, grown for its aromatic leaves.



SIGNIFICANCE: THE RAMA TULSI IS THE EFFECTIVE REMEDY FOR THE SEVERE ACUTE RESPIRATORY SYNDROME. THE JUICE OF ITS LEAVE GIVES RELIEF IN COLD , FEVER, BRONCHITIS AND COUGH.

BANYAN TREE (*Ficus benghalensis*) – IT IS UNUSUAL SHAPED TREE.



SIGNIFICANCE:- THIS TREE IS MENTIONED IN MANY ANCIENT INDIAN TEXTS AND SCRIPTURES , REPRESENTING THE DEVINE CREATOR AND SYMBOLIZING LONGEVITY. IN HINDU MYTHOLOGY , THIS TREE IS BELIEVED TO PROVIDE THE FULFILLMENT OF WISHES AND PROVIDE MATERIAL GAINS.

BUT THE BANYAN TREE IS MORE IMPORTANT ECOLOGICALLY . IT GIVES SHELTER TO VARIOUS ANIMALS AND BIRDS . IT PREVENTS SOIL EROSION, FLOOD AND DROUGH.

TREE

- 5 ANIMAL OF MY LOCALITY :
- 1) DOG
 - 2) CAT
 - 3) COW
 - 4) GOAT
 - 5) HORSE

DOG (Canis familiaris) is a loyal animal. It gaurds our house at night.

HARMFUL EFFECT: A BITE FROM RABIES INFECTED DOG CAN CAUSE HYDROPHOBIA.



CAT (Felis catus) is not as loyal as dog but it is adorable carnivorous mammal.

HARMFUL EFFECT:- 1) steals fish and milk

2) CAN CAUSES
CAMPYLOBACTEROSIS, CRYPTOSPORIDIOSIS,
HOOKWORM, DIPHTHERIA ETC DISEASE.



COW (Bos taurus) is very useful animal. It gives us milk . we respect it as our mother .



ECONOMIC IMPORTANCE:- 1) MILK AND BY PRODUCT OF MILK HAS A GREAT ECONOMIC VALUE 2) COW DUNG IS USED AS FUEL AND FERTILIZER.

GOAT (*Capra aegagrus*) : IT IS A DOMESTIC ANIMAL.



MEAT OF GOAT IS OF HIGH ECONOMIC VALUE . GOAT- MILK IS ALSO DELICIOUS AND HEALTHY.

HORSE (*Equus caballus*) : IT WAS USED IN TRAVELLING AND WAR IN ANCIENT TIME .



NOWDAYS HORSE RACING AND HORSE RIDING IS A FASHION . PEOPLE SPEND A LOT OF MONEY IN IT. SO IT HAS ECONOMIC VALUE.

THE SERUM OF HORSE HAS SOME ANTI VENOM PROPERTIES WHICH IS USED IN MEDICAL SCIENCE.

- 5 INSECT OF MY LOCALITY:-
- 1) BUTTERFLY
 - 2) BEE
 - 3) BEETLE
 - 4) LADY BUG
 - 5) ANT

BUTTERFLY:- IT IS THE MOST BEAUTIFUL INSECT . IT EATS NECTER.THEY ARE HARMLESS.
THEY ALSO HELP IN POLLINATION.



SCIENTIFIC NAME:- Danaus plexippus

Monarch butterfly

BEE:- THEY ARE KNOWN FOR POLLINATION AND PRODUCING HONEY IN OUR LOCALITY



SCIENTIFIC NAME:- Apis mellifera

BEEBLE:- OUR LOCALITY IS RURAL SO THERE IS A HABITAT OF DUNG BEETLE.



**SCIENTIFIC NAME:-
Scarabaeoidea sp.**

LADY BUG:- THEY ARE OFTEN FOUND IN FORESTS , GARDENS, WEED PATCHES. THEY ARE A KIND OF BEETLE.



SCIENTIFIC NAME:-

Coccinellidae septempunctata

ANT :- ANTS ARE EUSOCIAL INSECTS AND RELATED TO BEES AND WASPS . THEY ARE HARD WORKING INSECT.



SCIENTIFIC NAME:- Solenopsis sp.

5 FLOWER OF MY LOCALITY :- 1) HIBISCUS
2) LOTUS
3) MARIGOLD
4) PERIWINKLE
5) JASMINE

AS IT IS A RURAL AREA THERE ARE SO MANY FIELD GARDEN AND POND WHERE THESE FLOWER BLOSSOMS.

USES OF THESE FLOWERS IN MY LOCALITY : 1) DECORATION IN VARIOUS CEREMONY
2) ALSO USED AS AN OFFERING TO GOD

IN OUR LOCALITY NO HARMFUL FLOWER IS FOUND . THESE ARE KNOWN FOR THE HEVENLY AROMA IN MY LOCALITY .

HIBISCUS (*Hibiscus rosa-sinensis*)



ECONOMIC IMOPORTANCE: IT HAS BEEN USED IN FOLK MEDICINE AS A DIURETIC AND MILD LAXATIVE, AS WELL AS IN TREATING CANCER AND CARDIC AND NERVE DISEASES.

LOTUS (*Nelumbo nucifera*): This is our national flower . IT IS AN AQUATIC FLOWER , FLOATS ROYALLY IN THE WATERBODIES



ECONOMIC IMPORTANCE: 1) LEAVES ARE USED AS FOOD PLATES 2) FLOWER IS USED AS THE SOURCE OF LOTUS PERFUME 3) DRIED FLOWERS USED IN PREPARATION OF FRAGRANT HERBAL TEA.

MARIGOLD (*Tagetes sp.*) is a seasonal flower in my locality . In winter it blooms. It can be red, yellow , orange and reddish orange.



ECONOMIC IMPORTANCE:- 1) PETAL OF THESE FLOWERS SERVE AS A MAJOR SOURCE OF CAROTENOIDS 2) HUGELY CULTIVATED FOR DECORATION AND WORSHIPPING .

PERIWINKLE (*Catharanthus roseus*)

ECONOMIC IMPORTANCE: It is used for treating diarrhea, vaginal discharge, throat ailments, high blood pressure, edema etc.



JASMINE (*Jasminum sp.*) is a fragrant flower which is used in beauty and skin care by women. This is used for making garlands adorning hairs of women in religious and ceremonial functions.

ECONOMIC IMPORTANCE: 1) Used in making perfume 2) used as medicine in liver diseases.



- 5 BIRD OF MY LOCALITY :-
- 1) MAYNA
 - 2) DOVE
 - 3) PIGEON
 - 4) WAGTAIL
 - 5) DUCK

BIRD

MAYNA:- THIS IS A HIGHLY COMMENSAL PASSERINE THAT LIVES IN CLOSE ASSOCIATION WITH HUMANS, BEING MOST SUCCESSFUL IN DISTURBED HABITATS.

SCIENTIFIC NAME:- [Acridotheres tristis](#)

EXISTENCE- NOT IN DANGER



DOVE:- THERE ARE VARIOUS KINDS OF DOVE SPECIES SUCH AS MOURNING DOVE, LAUGHING DOVE, NAMAQUA DOVE ETC . BUT IN MY LOCALITY THERE IS ONLY SPOTTED DOVES ARE FOUND.

SCIENTIFIC NAME:- [Spilopelia chinensis](#)

EXISTENCE :- NOT IN DANGER



PIGEON:- IN MY LOCALITY THERE ARE ROCK PIGEON AS WELL AS WHITE PIGEON
IT IS BELIEVED THAT WHITE PIGEON IS THE SYMBOL OF PEACE.



ROCK PIGEON



WHITE PIGEON

SCIENTIFIC NAME:- columba livia

EXISTENCE :- NOT IN DANGER

WAGTAIL:- THESE ARE SMALL PASSERINE BIRD WITH BLACK AND WHITE FEATHERS.

SCIENTIFIC NAME:- [Motacilla maderaspatensis](#)

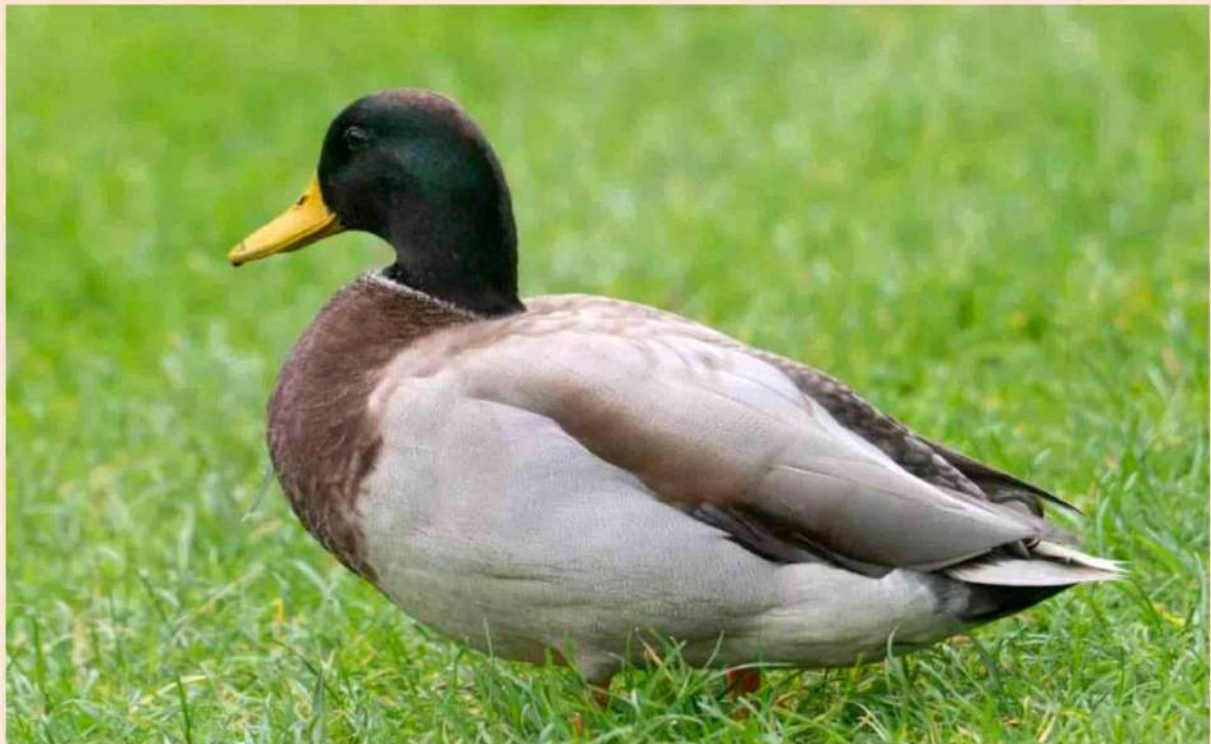
EXISTENCE:- THOUGH WHITE WAGTAILS ARE ENDEMIC TO INDIA THIS SPECIES IN OUR LOCALITY IS NOT IN DANGER .



DUCK:- IT IS A DOMESTIC BIRD IN OUR LOCALITY.

SCIENTIFIC NAME:- Anas platyrhynchos

EXISTENCE:- NOT IN DANGER





CONCLUSION

AFTER DOING THESE SURVEY ON MY ENVIRONMENT I GAINED MORE KNOWLEDGE ABOUT THE IMPORTANCE, HARMFUL EFFECTS AS WELL AS ECONOMIC IMPORTANCE OF MY SURROUNDING LIVING BEINGS .



ACKNOWLEDGEMENT

ON THIS SURVEY LOCAL PEOPLE HELPED ME A LOT . OUR TEACHER MRS. RICHA ARORA GUIDED ME THROUGH THE WHOLE PROCESS . I AM GRATEFUL FOR THOSE KIND HELP.

30/6/2021



**STUDY OF FLORA AND
FAUNA
IN
RISHRA AREA**

CU ROLL NO.- 203223-11-0094

CU REGISTRATION NO.-223-1211-0497-20

COLLEGE ROLL NO. - MCBA20F441

DEPARTMENT- MICROBIOLOGY

SUBJECT - ENVS (PROJECT)



CONTENTS

❖ INTRODUCTION

❖ FLORA OF THE LOCALITY

□ PLANTS

1. Tulsi Plant
2. Neem Plant
3. Coconut Tree
4. Mango Tree
5. Aloe vera Plant

□ FLOWERS

1. Hibiscus
2. Marigold
3. Rose
4. Asianpigeonwings
5. Night Jasmine

❖ FAUNA OF THE LOCALITY

□ BIRDS

1. Pigeon
2. Hen
3. Crow
4. Sparrow
5. Cuckoo

□ ANIMALS

1. Dog
2. Cat
3. Cow
4. Goat
5. Squirrel

□ INSECTS

1. Mosquito
2. Housefly
3. Cockroach
4. Butterfly
5. Ant

❖ CONCLUSION

❖ ACKNOWLEDGEMENT

Introduction

Of all the living organisms on the planet, the most commonly seen by us are the plant life and the animal life. Apart from these two, more forms of life abound in the earth, but are harder to see with the naked eye. This is why the flora and fauna i.e. plant and wildlife of the earth are fascinating to observe and study.

Here I am presenting a small study of "Flora and Fauna" to distinguish different kinds of plants, flowers, animals, birds, insects in Rishra, Hooghly.

PLANTS

1. TULSI PLANT

❑ **SCIENTIFIC NAME – Ocimum tenuifloram**

❑ **USES & BENEFITS OF TULSI PANT**



In respiratory disorders like asthma, bronchitis, cold, influenza tulsi leaf extract is very beneficial.

Leaf extract is sufficient to treat skin disorders like ringworm etc.

Dried leaf powder is used for brushing the teeth. In the preparation of toothpaste for dental health.

Extract of black tulsi leaves is used to treat sore eyes and night-blindness.

As an expectorant to help remove phlegm from bronchi and also to treat bronchitis

In relieving coughs due to any irritants.



2. NEEM PLANT

❑ **SCIENTIFIC NAME– Azadirachta indica**

❑ **USES & BENEFITS OF NEEM PLANT**



Neem is infamous for its bitter taste and it also happens to be detoxifying agent which cleans out toxins from the liver and blood.

As it has strong **antibacterial** properties and that's why it is used in the treatment of chickenpox, smallpox, herpes and even Hepatitis B.

Neem leaves support the circulatory system by dilating blood vessels and improving blood circulation.

Ayurvedic Neem oil eye drops to soothe, cool and protect your eyes from infections.

Neem is its potential to treat something as complex as anorexia.



3. COCONUT TREE

❑ **SCIENTIFIC NAME- Cocos nucifera**

❑ **USES OF COCONUT TREE**



The Flesh: Food, Milk, and Flour

The Water: A Healthy, Refreshing Drink

The Oil: For Cooking, Skin, and Hair

The Shells: To Steam Food and Craft With

The Husks: A Natural Scrubber and Craft Material

The Husks: Ropes

Tree Leaves: Thatching

The Sticks: Brooms

The Flowers: Medicine



4. MANGO TREE

❑ **SCIENTIFIC NAME – Mangifera indica**

❑ **SIGNIFICANCE OF MANGO TREE**



Mango is rich in iron. Consuming mango in adequate quantities helps in increasing iron levels. Being rich in fiber and polyphenols, consuming mango aids in decreasing constipation and inflammation of the bowels.

Apart from vitamin C, mango also contains folate, zinc and vitamin B6.

Mangiferin, a natural polyphenol present in mango, has been shown to exert anti-cancer properties.

Extract of mango tree leaves has antihypertensive properties.

Consuming the powder of dried mango bark provides relief from diarrhea.





5. ALOEVERA PLANT

❑ **SCIENTIFIC NAME – ALOE barbadensis**

❑ **USES & BENEFITS OF ALOEVERA PLANT**



Research has shown that aloe vera contains six chemical compounds that all have potent antiseptic properties.

They allow the production of collagen, which can help maintain the skin's elasticity and slow down the development of wrinkles. Aloe vera's rich amino acid content has also been known to help tighten pores and treat skin dryness.

Studies have shown that the chemical compound C-glucosyl chromone, typically found in aloe vera gel, may provide a potent activity against inflammation.

Scientists have also found that aloe vera gel may have the ability to fight against tumors and cancers.

Aside from helping to provide relief from constipation, aloe vera may also help you to digest food properly.

FLOWERS

1.HIBISCUS

❖ **SCIENTIFIC NAME – Hibiscus rosa**

❖ **SIGNIFICANCE OF HIBISCUS FLOWER**



- **The most common use is in the treatment of headaches, swellings, colds, and venereal diseases.**
- **Moreover, the flower is helpful for women in treating constipation, menstrual cramps, and inducing short-term infertility.**
- **This flower attains a prominent position in the beauty industry and is used for hair and skin care.**
- **Another popular use is in cuisines. A number of soups and curries use the flower as the main ingredient.**
- **Its petals are dried and used for making teas**



2. MARIGOLD

❖ **SCIENTIFIC NAME – Tagetes sp.**

❖ **SIGNIFICANCE OF MARIGOLD FLOWER**



- Marigolds make excellent companion plants in vegetable gardens.
- Marigolds have antiseptic, anti-inflammatory, and antioxidant properties. As a result, marigold extracts can be applied topically to soothe the skin.
- Marigold petals are safe to ingest, but some taste better than others
- Marigolds also have antispasmodic properties, meaning they can help relax your muscles. Apply marigold drops or creams topically to help relax muscle cramps and tension.



3. ROSE

❖ **SCIENTIFIC NAME – Rosa sp.**

❖ **SIGNIFICANCE OF ROSE FLOWER**



- Rose water is an effective astringent that reduces swelling of capillaries beneath the skin.
- Rose petal tea is efficient in cleansing the gall bladder and liver, and it helps improve bile secretion. Rose petals are dried and crushed to make tea.
- Rose tea also helps in alleviating mild sore throats and bronchial infections. The tea cools the body and reduces fever-related rashes.
- Rose petals are an important ingredient in eye washes as well, as it is antiseptic in nature.
- Rose water benefits include nourishing the scalp and improving hair growth. It is medicinally used as an antibacterial, antiseptic, and anti-inflammatory product. It is also used to treat dry scaly skin, dermatitis, and eczema.



4. ASIAN PIGEONWINGS



❖ **SCIENTIFIC NAME – Clitoria ternatea**

❖ **SIGNIFICANCE OF ASIAN PIGEONWINGS FLOWER**



- It has been well known widely among Asian that *Clitoria ternatea* could be used home remedy to diuretic.
- Due to its antibacterial properties, this flower could treat some digestion problems including food poisoning. Though further treatment from professional is still required.
- Some animal studies have shown how effective *Clitoria ternatea* in improving ability of a mouse in memorizing, so it is possible to treat dementia in human.
- Allergic reaction could be the trigger of asthma. However, some studies have shown the effectiveness of *Clitoria ternatea* in treat this condition.

5. NIGHT JASMINE

❖ **SCIENTIFIC NAME – Nyctanthes arbor-tristis**

❖ **SIGNIFICANCE OF NIGHT JASMINE**



- In Harivansh Puran, the tree is referred to as the 'Kalpa-Vriksha'.
- This is also known as the wish bearing tree and therefore, newly married couples are advised to worship this tree and seek blessings from the same to ensure eternal love and marital bliss
- .
- This tree bears white flowers that have five thin white petals with a pleasant fragrance.

- The flowers of this tree bloom during the night and fall on the ground without any external force. Therefore, these are the only flowers that can be offered to God even if they are picked up from the ground.

- The flowers usually spread its fragrance during the night and therefore is also known as the 'Night Jasmine'.



BIRDS

1. PIGEON

❑ **SCIENTIFIC NAME – Columba livia**

❑ **SIGNIFICANCE OF PIGEON**

- The rock dove breeds at any time of the year, but peak times are spring and summer. Nesting sites are along coastal cliff faces, as well as the artificial cliff faces created by apartment buildings with accessible ledges or roof spaces.
- Rock doves are omnivorous, but prefer plant matter: chiefly fruits and grains.
- Pigeons primarily use powder down feathers for preening, which gives a soft and silky feel to their plumage.
- Pigeons have notably been "employed" as medical imaging data sorters, and have been successfully trained under research conditions to examine data on a screen for the purposes of detecting potentially dangerous abnormalities with good repeatability using far less training than a human operator. In this case it appears to use their innate visual navigation skills.
- Domesticated pigeons are used as homing pigeons as well as food and pets.

2. HEN

❑ SCIENTIFIC NAME – Gallus gallus domesticus

❑ SIGNIFICANCE OF HENS

- The chickens or hens are very soft hearted especially the mother hens as they are very sensitive towards their chicks.
- They react really weird if somebody bothers their baby chicks.
- They also have a very good memory.
- Their brain is so powerful that it can make a century in remembering individuals, which means hens can remember almost hundred humans and recognize them very easily.
- Hens feel themselves so secure when their male chicken is around.
- They prefer to feed in the presence of a cock knowing that their male chicken (cock) would guard them against dangers.

3. CROW

❑ **SCIENTIFIC NAME – Corvus sp.**

❑ **SIGNIFICANCE OF CROW**

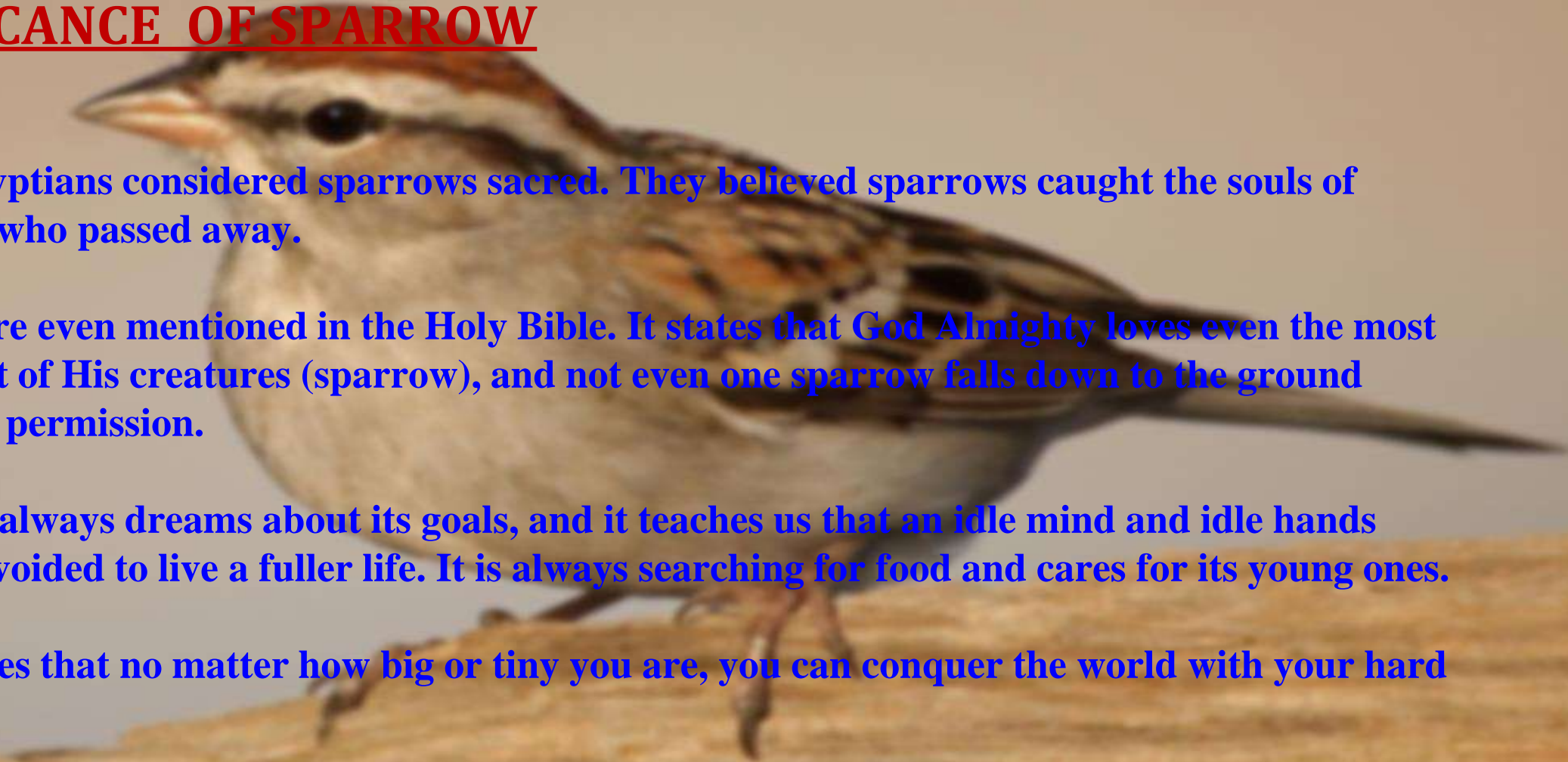
- **Crows live in large, close-knit families, and, like social mammals, they not only hunt and forage together but also defend territories and care for the young together.**
 - **Young crows may spend up to six years with their parents before breeding on their own.**
 - **Highly intelligent, crows can be masterful mimics.**
 - **In Chatham, Ontario, crows began using the town as a sort of rest stop along their migration route.**
- 

4. SPARROW

❑ **SCIENTIFIC NAME – Passer domesticus**

❑ **SIGNIFICANCE OF SPARROW**

- **Ancient Egyptians considered sparrows sacred. They believed sparrows caught the souls of individuals who passed away.**
- **Sparrows are even mentioned in the Holy Bible. It states that God Almighty loves even the most insignificant of His creatures (sparrow), and not even one sparrow falls down to the ground without His permission.**
- **A sparrow always dreams about its goals, and it teaches us that an idle mind and idle hands should be avoided to live a fuller life. It is always searching for food and cares for its young ones.**
- **It symbolizes that no matter how big or tiny you are, you can conquer the world with your hard work.**



5. CUCKOO

❑ **SCIENTIFIC NAME – Cuculus micropterus**

❑ **SIGNIFICANCE OF CUCKOO**

- **The best time to hear a cuckoo is during most evenings between mid-April and June.**
- **The cuckoo is a brood parasite. It is well-known for its habit of laying an egg in the nest of another bird, then leaving the offspring to be hatched and fed by 'foster parents'. This cunning tactic allows for more young cuckoos to be reared than would otherwise be possible.**
- **The mother will try and find the nest later to ensure the foster parents are feeding her chick the right diet for her young, which includes caterpillars, grasshoppers, flies, beetles, and small snails**
- **.**
- **The cuckoo's favoured foster parent species include pipits, warblers, dunnocks and robins.**
- **A cuckoo chick's call can be so loud and demanding when wanting food that it can persuade birds other than its foster parent to feed it.**
- **Juveniles migrate several weeks later than their real parents, yet they can still find their way to the regular wintering area despite never having visited it before.**

ANIMALS



1. DOG

- **SCIENTIFIC NAME- Canis lupus familiaris**

- **SIGNIFICANCE OF DOG**

- As the world's first domesticated animal, dogs have a long history of being by humans' side – doing everything from working hard to hanging out. There is no question that nothing compares to the relationship between a human and their pup. I mean, my dogs love me so much they're happy to come to work even when they don't have to.
- Dogs have been used in combat since ancient times. Today's war dogs have a **98% success rate** in bomb detection making them incredible assets in providing safety to their battalions.
- A therapy dog's sole **purpose** is to make people feel better.
- Herding dogs maintain control over livestock, rounding them up when it's time to get back to farm. Talk about having influence, these dogs can gather up to hundreds of livestock at a time.

2. CAT

- **SCIENTIFIC NAME – Felis catus**

- **BENEFITS OF CATS**

- Reduce Stress
- Petting a Cat Helps Us Reduce the Stress-causing Hormone
- They Help People With Autism to Socialize
- Autistic Children Who Have a Cat Are Happier
- They Are Good for Your Heart Health
- They Help People With Depression
- Watching Cat Videos Also Produces Positive Feelings
- Improves Overall Health
- Physical Benefits
- The Routines We Should Have With Them Will Make Us More Active
- Inspire Positive Emotions
- They Are Hygienic



3. C O W

▪ **SCIENTIFIC NAME - Bos taurus**

▪ **BENEFITS OF COW**

- **Dried cow manure is the best fuel. In many villages, manure from local cows is routinely gathered and dried for fuel.**
- **A mud and cow dung fertilizer that is often applied on the floors of country homes in India and might be used on the walls as well.**
- **Cleaning the house with cow dung water is a ritual in India.**
- **Cow milk is high in protein, vitamin B, vitamin D, various minerals, organic compounds, and antioxidants that can affect and stimulate the body in many ways.**
- **Research has shown that milk can aid in weight loss for a number of reasons. It can help satiate your hunger due to its high protein content, along with contributing a low level of calories.**



4. GOAT

- **SCIENTIFIC NAME – Capra aegagrus hircus**
- **BENEFITS OF GOAT**
 - **Goat milk is easier to digest than cow milk and people with mild to moderate lactose intolerance handle goat milk with no problems.**
 - **Goat meat has the same amount of protein as beef, with about half the calories. It is lower in fat and cholesterol and higher in iron than beef, pork, lamb, and chicken.**
 - **Goats produce cashmere and mohair, some of the softest and most luxurious materials in the world.**
 - **Goats are browsers rather than grazers. This means they eat mainly leafy plants and shrubs rather than grasses.**
 - **Goats have been called the gateway animal to farming.**



5. SQUIRREL

- **SCIENTIFIC NAME – Sciuridae palmarum**

- **BENEFITS OF SQUIRREL**

- Squirrels are fluffy-tailed rodents that feed on fruits, nuts, and vegetables. We see them most active in the autumn as they forage for food preparing for the coming winter months. They can be a bit notorious for gnawing away at things around our homes.

- The most important role of squirrels in the ecosystem is forest regeneration. They are huge contributors in shaping plant composition due to their eating and food saving habit.

- Another important role of squirrels in the ecosystem is being a food source for other animals.

- Mushrooms grow above ground, so their spores are easily spread by the air. However, truffles grow underground, therefore their spores can't be spread through the air. For their spores to reach the host plants, truffles rely heavily on animals like rodents and squirrels.



INSECTS

1. MOSQUITO



❑ **SCIENTIFIC NAME-** Anopheles sp.
Culex sp.
Aedes sp.

❑ HARMFUL EFFECTS OF MOSQUITO

- **Parasites cause this life-threatening disease by infecting and destroying red blood cells. To control and treat malaria, early diagnosis is crucial.**
- **This disease can trigger high fever, rash, muscle soreness, and joint pain. In the most extreme cases, severe bleeding, shock, and death can occur. Dengue fever is mostly active in tropical and sub-tropical regions.**
- **Female mosquitoes tend to target some people over others when it comes to feeding.**
- **Symptoms of a mosquito bite occur shortly after being bitten. A round, red bump with a dot in the middle usually accompanies an itching sensation..**

2. HOUSE FLY

❑ SCIENTIFIC NAME- Musca domestica

❑ HARMFUL EFFECTS OF HOUSEFLY

- If they fly on to your food, they could damage your insides by giving you poison from their filth.
- They can also become a serious nuisance both around the production facility and in nearby communities.
- They frequent those places, they pick up and spread diseases that are harmful to humans.
- You get typhoid fever when you eat or drink Salmonella typhi bacteria in contaminated food.
- At 200,000 cases in the US every year, dysentery is one of the more common diseases you might catch from the bacteria spread by a house .
- Cholera is an intestinal infection, and you get it when you ingest bacteria called Vibrio cholera.



3. COCKROACH

❑ **SCIENTIFIC NAME** –Periplaneta americana

❑ **HARMFUL EFFECTS OF COCKROACH**

- Cockroaches can virtually live by eating anything. Apart from the food we eat, they also feed on dead plant, animals, faecal matter, glue, soap, paper, leather and even strands of fallen hair. While crawling around at nights, they contaminate open food by defecating on it, leaving behind hair and dead skin and depositing empty egg .
- A study found that the bacterium *Pseudomonas aeruginosa* can multiply extensively in gut of cockroaches. It can cause several diseases like urinary tract infections, digestive problems and sepsis.shells in it
- Cockroaches can cause allergies. Their saliva secretion and body parts contain hundreds of allergens that can trigger an undesirable reaction.



❑ **SCIENTIFIC NAME – Rhopalocera sp.**

❑ **SIGNIFICANCE OF BUTTERFLY**

- **Butterflies are important pollinators. Approximately one-third of all plants need pollination to set fruit, and bees and butterflies are major pollinators.**
- **Flower nectar is the food for adult butterflies and by flying from flower to flower sipping nectar, pollination occurs. Butterflies serve as a barometer of how the environment is doing. Through their delicate nature, butterfly numbers can decrease quickly when something is amiss in the ecosystem.**
- **By studying butterfly populations, scientists are alerted early to problems affecting all living things, including humans. Gardening for butterflies means reducing or eliminating the use of pesticides. This in turn will bring more beneficial wildlife to the garden, such as spiders, ladybugs, praying mantids and dragonflies. Butterflies assist with the cycle of life.**
- **Butterflies at all stages are a food source for other animals in the food chain such as birds, lizards, frogs, toads, wasps, and bats, among others.**
- **They provide educational value. Their metamorphosis from egg to caterpillar to chrysalis to butterfly is a great teaching tool.**

4. BUTTERFLY



5. ANT



❑ **SCIENTIFIC NAME – Formicidae sp.**

❑ **HARMFUL EFFECTS OF ANT**

- **One popular ant poison product is Heptachlor which is typically used to control fire ant infestation.**
- **It found that a low density of ants in an area increased the diversity and density of other animals in the local area, particularly the density of herbivores and decomposers. At higher densities ants had no or the opposite effect, showing that predation is counteracting the positive influence.**
- **Carpenter ant damage is the easiest example as a carpenter ant infestation can lead to structural damage not only to your home but to garages, warehouses, sheds,**
- **fences, as well as trees.**
- **Ant sting is certainly one of the most potent harms that an ant can throw at humans.**

CONCLUSION

As a conclusion, fauna and flora constitute our environment. The human being is the main responsible of the destruction of fauna and flora. so, people can do many efforts to respect the law of protection of fauna and flora.

It is important, because we must live in a health environment and to conserve our animal and tree species.

Forest and wildlife can be conserved by bsetting up areas like Bioshere reserve, Wildlife sanctuaries , National park etc.

This project gives us a idea about the uses, benefits , harmful effects of different species of plants , flowers, birds animals and insects and also gives me a oppurtumity to study the Flora and Fauna of my locality and also makes aware of our environment.

A C K N O W L E D G E M E N T

I would like to my gratitude and special thanks to my respectful Proffesors of MICROBIOLOGY DEPARTMENT as well as our Principal and Vice principal who gave opportunity to do this wonderful project on the topic “STUDY OF FLORA AND FAUNA IN OUR LOCALITY”, which also help me to do research on different species of my locality and I got to knoe about many information about plants,flowers,birds,animals and insects of my locality.

Last I would like to thanks my Parents and Friends who helped me a lot in finishing this project.





ENVIRONMENTAL SCIENCE PROJECT

TOPIC :

*“FLORA AND FAUNA AUDITING IN
LAKE TOWN AREA”*

SEMESTER : 2

DEPARTMENT: MICROBIOLOGY

COLLEGE ROLL NUMBER: MCBA20F434

CU ROLL NO: 203223-11-0123

CU REGN. NO: 223-1211-0595-20

YEAR: 2020-2021

SUBJECT: ENV(S(AECC2)

CONTENT

BIRDS

Eagle,kingfisher,sparrow,parrot,pigeon

FLOWERS

Hibiscus,rose,jasmine,lavender,sunflower

ANIMALS

dog,cat,cow,horse,goat

PLANTS

Banyan tree, neem tree, sal tree, coconut tree, gulmohor tree.

INSECTS

Butterfly,grasshopper,ant,honey
bee,mosquito

CONCLUSION

ACKNOWLEDGEMENT

INTRODUCTION

Ecology is the study of the relation and interactions between organisms and their environment. It comprises the floral and faunal communities of an area. With changes in environmental conditions, structure, density and composition of plants, animals also undergo changes.

Study of biological environment is one of the important aspects in Environmental Impact Assessment in view of the need for conservation of Environmental quality

Flora and fauna are very important for human existence. The **flora** liberates oxygen that is consumed by the fauna for respiratory activities. **Fauna**, in turn, liberates carbon dioxide consumed by the **flora** for photosynthesis. Flora and fauna hugely benefit mankind through its medicinal and food offerings.

TOPIC: BIRD

EAGLE

Classification

- Common Name- eagle
- Scientific name- *Accipitridae*
- Kingdom- Animalia
- Phylum- Chordata
- Class- Aves
- Order- Falconiformes
- Family- Accipitridae
- Genus- *Haliaeetus Savigny*
- Species- *Haliaeetus leucocephalus*



Habitat

Eagles like habitats near water of all kinds, especially if there are a lot of fish.

In the wild, eagles are found on the continent of North America, except for Hawaii, from the northern border of Mexico all the way up through the United States, and into the country of Canada.

Many bald eagles live in the state of Alaska, where it's normal to see them flying or hanging around in trees. They make their nests on the top of tall trees found in thick forests around water or on tall cliffs. They like a nest with a view.

Role of Eagle in Food Chain and Ecosystem

The bald eagle is a bird of prey and occupies a position at the top of the food chain which contributes to its lifespan longevity. It feeds by swooping over open water or land and catching prey with its sharp curved talons. It also eats dead animals.

Eagles are meat-eaters (carnivores) and hunt during the day (diurnal) usually from a high perch. They play an important role in the balance and health of an ecosystem. They kill and eat animals while having virtually no predators of their own.

KINGFISHER



Classification

KINGDOM : Animalia

PHYLUM: Chordata

CLASS: Aves

ORDER: Coraciiformis

FAMILY: Alcedinidae

SCIENTIFIC NAME: *Alcedinidae*

HABITAT

Kingfishers live near streams, rivers, ponds etc. They nest in burrows that they dig into soft earthen banks, usually adjacent to or directly over water. Kingfishers spend winters in areas where the water doesn't freeze so that they have continual access to their aquatic foods.

Kingfishers feed on a wide variety of prey. They are most famous for hunting and eating fish, and some species do specialise in catching fish, but other species take crustaceans, frogs and other amphibians, annelid worms, molluscs, insects, spiders, centipedes, reptiles (including snakes), and even birds and mammals.

Ecological niche

Common kingfishers serve as a **good indicator of the health of an ecosystem**. As they feed on small aquatic animals, toxins in the water affect them severely. A strong kingfisher population therefore usually means a healthy habitat. Common kingfishers are also important

predators throughout their range of small fish from freshwater habitats, thus controlling their populations.

SPARROW

Classification

- Common Name- sparrow
- Scientific Name- *Passer domesticus*
- Kingdom- Animalia
- Phylum- Chordata
- Class- Aves
- Order- True Sparrows
- Family- Passeridae
- Genus – Passer
- Species- domesticus



Habitat

Some of the natural habitats that they live in include forests, meadows, grasslands, deserts, desert edges, woodlands, and more. The vast majority of their population lives in urban areas.

They inhabit cities, parks, suburbs, backyards, farms, orchards, and any number of different man-made habitats. Their flexibility is the primary reason why they

are such a successful invasive species.

House **Sparrow**, once an integral part of our immediate environment, all but disappeared almost two decades ago. The common bird that lived in the cavities of our houses and polished off our leftover food, today sits on the red list of the endangered species of [The International Union for Conservation of Nature \(IUCN\)](#)

Role of Sparrows in Food Chain and Ecosystem

Sparrow serves the ecosystem of the earth. Sparrows mostly prefer seeds of millet, and sunflower seed. They also eat fruits and berries. During this process, sparrows spread seeds to places away from the fruit tree. This is important for germination of the seeds, because if the seeds fall close to the parent plant, they would have to compete for nutrition with the mature plant. This would reduce the chance of germination of the seed as well as growth of the plant once the seed germinated. By spreading seeds, sparrows help the survival of many plants that are the producers in an ecosystem. Sparrows are essential to the animal food chain as prey and predators. Some important points are as follows:

- They provide a good source of nutrition to organisms like snakes, owls, hawks, raccoons, dogs, and cats, and thus, promote their survival.
- In their role as predators, sparrows feed on earthworms and different kinds of arthropods with the example of ants and crickets.
- Hence, sparrows help keep the local population of these organisms under check.

PARROT

Classification

- Common Name- parrot
- Scientific name- Psittaciformes
- Kingdom- Animalia
- Phylum- Chordata
- Class- Aves
- Order- Psittaciformes
- Family- Cacatuidae
- Genus- Cacatua
- Species- Goffini



Habitat

Parrots live in a wide variety of habitats, but most of them inhabit tropical or subtropical regions. Inside these requirements, habitat preference varies from species to species.

Some of the different types of habitats that these birds live in include woodlands, rainforests, palm forests, savannas, grasslands, scrubland etc. Though some species live in more urban areas most inhabit undisturbed forests.

Role of Parrots in Food Chain and Ecosystem

Through their feeding activities, parrots provided multiple

services acting as genetic linkers, seed facilitators for secondary dispersers, and plant protectors, and therefore can be considered key mutualists with a pervasive impact on plant assemblages. parrots are relatively near the bottom of the food chain since they're prey and are herbivores. The only thing lower than herbivores on a food chain would be primary producers .

PIGEON

Classification

- Common Name- pigeon
- Scientific name- *Columbidae*
- Kingdom- Animalia
- Phylum- Chordata
- Class- Aves
- Order- Columbiformes
- Family- Columbidae
- Genus- Columba
- Species- C.livia



Habitat

Pigeons live in perfect freedom in ledges, fissures and holes of rocks, forts, old buildings and side walls of wells. It prefers to live in those places of towns and cities which have plenty of coarse grains. Thus, their favourite resorts include big buildings, godowns, grain markets, temples, mosques, churches, tombs, railway stations and office buildings. They never nest on trees.

Role of Pigeons in Food Chain and Ecosystem

Pigeons play a vital role in the environment, they are prey animals and serve as food for peregrine falcons, hawks, foxes and martins. These birds also play a part in seed dispersal by eating seeds and distributing them. In addition, pigeons also control insect populations as well as weed populations.

TOPIC: FLOWERS

HIBISCUS

Classification

- Common name- Hibiscus
- Scientific name – *Hibiscus rosa-sinensis*
- Kingdom- Plantae
- Clade- Tracheophytes
- Order- Malvales
- Family- Malvaceae
- Genus- Hibiscus
- Species- *H. rosa-sinensis*



Hibiscus, also known as rose mallow, is a plant that belongs to the mallow family. There are over 200 species of hibiscus that can be found in the warm and tropical regions all over the world. Hibiscus grows on well-drained soils in the sunny areas. This plant is best known by their beautiful flowers.

Physical Description

The leaves of Hibiscus are often lobed and may be smooth or covered in trichomes (plant hairs). The flowers can be borne singly or in clusters, and the flowers of many species last only a single day.

An epicalyx (whorl of leaflike bracts that surrounds the sepals) is particularly common, and the stamens are typically fused into a tube. The flowers are large, conspicuous, trumpet-shaped, with five or more petals, colour from white to pink, red, blue, orange, peach, yellow or purple.

Importance of Hibiscus

All parts of **hibiscus** plants are used traditionally. Due to their soothing (demulcent) and astringent properties, the flowers and leaves have been traditionally used to treat conditions such as cancer and gallbladder attacks, to lower blood pressure, to relieve dry coughs, and topically to treat skin affliction.

Egyptians used **hibiscus** tea to lower body temperature, treat heart and nerve diseases, and as a diuretic to increase urine production. In Africa, tea was used to treat constipation, cancer, liver disease, and cold symptoms.

ROSE

Classification

- Common name- rose
- Scientific name – *Rosa*
- Kingdom- Plantae
- Clade- Tracheophytes
- Order- Rosales
- Family- Rosaceae
- Genus- Rosa
- Species- Rosa



Physical Description

Roses are erect, climbing, or trailing shrubs, the stems of which are usually copiously armed with prickles of various shapes and sizes, commonly called thorns.

The leaves are alternate and pinnately compound (i.e., feather-formed), usually with oval leaflets that are sharply toothed.

The flowers of wild roses usually have five petals, whereas the flowers of cultivated roses are often double (i.e., with multiple sets of petals). Each petal is divided into two distinct lobes and is usually white or pink, though in a few species yellow or red. Beneath the petals are five sepals (or in the case of some *Rosa sericea*, four). These may be long enough to be visible when viewed from above and appear as green points alternating with the rounded petals. There are multiple superior ovaries that develop into achenes. Rose flowers' size ranges from tiny miniatures to hybrid flowers measuring more than 17.5 cm across. Roses are insect-pollinated in nature.

Importance of Rose

Roses are best known as ornamental plants grown for their flowers in the garden and sometimes indoors. They have been also used for commercial perfumery and commercial cut flower crops. Some are used as landscape plants, for hedging and for other utilitarian purposes such as game cover and slope stabilization.

The rose hip or rosehip, also called rose haw and rose hep, is the accessory fruit of the rose plant. They are occasionally made into jam, jelly, marmalade, and soup or are brewed for tea, primarily for their high vitamin C content. They are also pressed and filtered to make rose hip syrup.

Rose hips are also used to produce rose hip seed oil, which is used in skin products and some makeup products. Rose petals or flower buds are sometimes used to flavour ordinary tea, or combined with other herbs to make herbal teas.

Rose flowers are used as food, also usually as flavouring or to add their scent to food. Rose water is used in sweets for a delightful taste.

JASMINE

Classification

- Common name- jasmine
- Scientific name – *Jasminum*
- Kingdom- Plantae
- Clade- Tracheophytes
- Order- Lamiales
- Family- Oleaceae
- Genus- Jasminum
- Species- *Jasminum officinale*



Physical Description

Most true jasmines have climbing branches without tendrils. The white, yellow, or rarely pink flowers are tubular with a flaring, lobed, pinwheel-like form; some double-flowered varieties have been developed. The leaves can be evergreen or deciduous and usually are composed of two or more leaflets, although some species have simple leaves. Their leaves are borne in opposing or alternating arrangement and can be of **simple, trifoliate, or pinnate formation**. The flowers are borne in cymose clusters with a minimum of three flowers, though they can also be solitary on the ends of branchlets.

Each flower has about four to nine petals, two locules, and one to four ovules. They have two stamens with very short filaments. The bracts are linear or ovate. The **calyx is bell-shaped**. They are usually very fragrant.

Importance of Jasmine

Jasmine is used to make **medicine**. The flower has been used for liver disease (hepatitis), liver pain due to cirrhosis, and abdominal pain due to severe diarrhoea (dysentery). It is also used to cause relaxation (as a sedative), to heighten sexual desire (as an aphrodisiac), and in cancer treatment.

Recently harvested flowers can be used in oils to create unique tasting and smelling oils. Jasmine is cultivated commercially for domestic and industrial uses, such as the perfume industry. They may be found around entrances to temples, on major thoroughfares, and in major business areas.

LAVENDER

Classification

- Common name- lavender
- Scientific name – *Lavandula*
- Kingdom- Plantae
- Clade- Tracheophytes
- Order- Lamiales
- Family- Lamiaceae
- Genus- Lavandula
- Species- Lavandula Spica



Lavandula (common name lavender) is a genus of 47 known species of flowering plants in the mint family, **Lamiaceae**. It is native to the Old World.

Physical Description

Lavenders are small evergreen shrubs with grey-green hoary linear leaves. The purple flowers are sparsely arranged on spikes at the tips of long bare stalks and produce small nutlet fruits. The fragrance of the plant is caused by shining oil glands imbedded among tiny star-shaped trichomes (plant hairs) that cover the flowers, leaves, and stems. The plants in cultivation do not usually produce seed, and propagation is accomplished by cuttings or by dividing the roots.

Flowers are borne in whorls, held on spikes rising above the foliage, the spikes being branched in some species. Some species produce coloured bracts at the tips of the inflorescences. The flowers may be blue, violet or lilac in the wild species, occasionally blackish purple or yellowish. The calyx is tubular. The corolla is also tubular, usually with five lobes (the upper lip often cleft, and the lower lip has two clefts).

Importance of Lavender

Lavender is most commonly used in aromatherapy. The fragrance from the oils of the lavender plant is believed to help promote calmness and wellness.

It's also said to help reduce stress, anxiety, and possibly even mild pain. The flower and the oil of lavender are used to make medicine. The dried flowers, have long been used in sachets to scent chests and closets, and the ancient Lavender is sometimes also used to flavour beverages and sweets and has a number of applications in herbal medicine.

Sunflower

Classification

- Common name- sunflower
- Scientific name – *Asterales*
- Kingdom- Plantae
- Clade- Tracheophytes
- Order- Asterales
- Family- Asteraceae
- Genus- Helianthus
- Species- Helianthus annuus



Sunflower, (genus *Helianthus*), genus of nearly 70 species of herbaceous plants of the aster family (Asteraceae). Sunflowers are native primarily to North and South America, and some species are cultivated as ornamentals for their spectacular size and flower heads and for their edible seeds. Sunflowers bloom as bright rays of sunshine during the summer months in dry, wide-open environments. The sunflower's native environments are prairielands, plains and meadows. The bright yellow plant may also grow as a weed in farming fields and pastures.

Physical Description

The common sunflower (*H. annuus*) is an annual herb with a rough hairy stem which are high and broad, coarsely toothed, with rough leaves arranged in spirals. The attractive heads of flowers are 7.5–15 cm wide in wild specimens and often 30 cm or more in cultivated types. The disk flowers are brown, yellow, or purple, while the petallike ray flowers are yellow. It's round flower heads in combination with the ligules and looks like the sun. The petiolate leaves are dentate and often sticky. The lower leaves are opposite, ovate, or often heart-shaped.

Importance of Sunflower

Sunflowers are used as food plants by the larvae of many lepidopterans. The seeds of *H. annuus* are used as human food. The seed and sprouts of the common sunflower (*Helianthus annuus L.*) have many medicinal uses. The edible seed and the sprout have an abundance of nutrients and biological activities and have many antioxidants such as phenolic acids, flavonoids and vitamins. The common sunflower has many antioxidant effects which serve as a protective function for cellular damage. The sunflower seed and sprout also have high concentrations of vitamins A, B, and C and are high in niacin. They also have many minerals such as calcium, potassium and iron.

Sunflowers are able to absorb radioactive materials and other pollutants from the soil without much harm to the plant. This means that in areas where radiation has been high, plants such as sunflowers may be planted in order to help clean up the environment.

TOPIC: ANIMALS

DOG

Classification

- Common name- dog
- Scientific name – *Canis familiaris*
- Kingdom- Animalia
- Phylum- Chordata
- Class- Mammalia
- Order- Carnivora
- Family- Canidae
- Genus- Canis
- Species- C. familiaris



Dog is a domestic mammal of the family Canidae (order Carnivora). It is a subspecies of the grey wolf (*Canis lupus*) and is related to foxes and jackals. The dog is one of the most ubiquitous and most popular domestic animals in the world. Dogs come in a wide range of shapes and sizes.



Habitat

The lives of dogs in the wild give powerful clues for the ingredients of a healthy, happy, balanced life for your pet. Dogs live in many habitats, including prairies, deserts, grasslands, forests, rain forests, coastal regions and arctic zones. Dogs are highly adaptable, yet some evolved for specific environments, such as breeds that developed heavy coats to withstand freezing climates. Aside from these differences, dogs' needs for food, shelter, exercise and social interaction are universal. Domestic dogs are mostly kept as pets, though many breeds are capable of surviving on their own, whether it's in a forest or on city streets.

Role of Dogs in the Ecosystem and Food Chain

Dogs are carnivores and the primary component of their diet is prey. This could be small animals – mice, voles, rabbits, birds, insects and so forth – or it could be larger prey caught with the help of a pack. Either way, they **eat** everything – the internal organs, the meat, the bones etc. They are Secondary Consumers

and make up the third trophic level. The six basic nutrients are water, proteins, fats, carbohydrates, minerals, and vitamins. These essential nutrients are required as part of the **dog's** regular diet and are involved in all of the basic functions of the body.

CAT

Classification

- Common name- cat
- Scientific name – *Felis Catus*
- Kingdom- Animalia
- Phylum- Chordata
- Class- Mammalia
- Order- Carnivora
- Family- Felidae
- Genus- Felis
- Species- F. Catus



The cat has a strong flexible body, quick reflexes, sharp teeth and retractable claws adapted to killing small prey. Its night vision and sense of smell are well developed . A predator that is most active at dawn and dusk, the cat is a solitary hunter but a social species

Habitat

Domestic cats primarily live in areas of human habitation and are somewhat constrained to developed areas. Most feral populations live in close proximity to current or past human settlements.

Role of Cats in the Ecosystem and Food Chain

They control insects and protect environments from the effects of climate change; they are the glue that binds healthy ecosystems together. Scientific evidence also shows that a cat's purr can calm our nervous system and lower your blood pressure.

Domestic cats are usually fed by humans, but usually still hunt and kill small rodents and birds. Cats may eat grass, a producer, as well because it helps them digest other foods. Cats have a big impact on primary consumers because that is what they mainly eat .

COW



Classification

- Common name- cow
- Scientific name – *Bos Taurus*
- Kingdom- Animalia
- Phylum- Chordata
- Class- Mammalia
- Order- Artiodactyla
- Family- Bovidae
- Genus- Bos
- Species- *B.taurus*

Cattle, or cows (female) and bulls (male), are large domesticated cloven-hooved herbivores. They are a prominent modern member of the family Bovidae, are the most widespread species of the genus *Bos*.

The size and weight of a cow is highly dependent on the breed. Both males and females have horns. Some breeds are genetically polled (hornless), and many other cows may be dehorned (that is, have their horn buds destroyed) at young age to make them easier to transport and safer to work around.

Habitat

Cows are domesticated cattle and they can survive in a variety of habitats including the grasslands and other habitats where they have enough vegetation to eat.

Nowadays, **cattle** live in pastures and ranges of open area. Some of the different types of **habitats** they utilize include savannas, scrub forests, and even desert edges.

Role of Cows in the Ecosystem and Food Chain

Cattle are commonly raised as livestock for meat (beef or veal, see beef cattle), for milk (see dairy cattle), and for hides, which are used to make leather. They are used as riding animals and draft animals (oxen or bullocks, which pull carts, plows and other implements). Another product of cattle is their dung, which can be used to create manure or fuel. In some regions, such as parts of India, cattle have significant religious meaning. Cows eat grass (producers) and thus represent the **primary consumer** or herbivores.

HORSE

Classification

- Common name- horse
- Scientific name – *Equus ferus caballus*
- Kingdom- Animalia
- Phylum- Chordata
- Class- Mammalia
- Order- Perissodactyla



- Family- Equidae
- Genus- Equus
- Species- E.ferus

The horse (*Equus ferus caballus*) is a domesticated one-toed hoofed mammal. It belongs to the taxonomic family Equidae . Horses are adapted to run, allowing them to quickly escape predators, possessing an excellent sense of balance and a strong fight-or-flight response. Related to this need to flee from predators in the wild is an unusual trait: horses are able to sleep both standing up and lying down.

Habitat

Domesticated, or tamed, **horses** can live in almost any **habitat**, but wild **horses** prefer plains, prairies, and steppes for many reasons. **Horses** need wide open spaces for defence purposes, and they need some shelter, like trees or cliffs, to protect them from the elements.

In **domestic** situations, **horses** may be confined to a stall or a yard for part (or even most!) of their day. They may otherwise be found in a small field or paddock, or out in a large grassy area where they can roam many acres of land.

Role of Horses in the Ecosystem and Food Chain

Horses are used for riding and transport. They are also used for carrying things or pulling carts, or to help plow farmer's fields in agriculture. People have used selective breeding to make bigger horses to do heavy work. Some people keep horses as pets. Horses also build an ecosystem's biodiversity. Grazing horses focus on grasses,

which protects the growth of other plants, like flowers. Plants and flowers also receive assistance from horses through the trampling of uneaten and often unwanted vegetation, like weeds. The horse is a prey animal, depends on flight as its primary means of survival. Its natural predators are large animals such as cougars, wolves, or bears, so its ability to outrun these predators is critical. Horses are herbivores and subsist on plants, grasses, fruits, etc.

GOAT

Classification

- Common name-goat
- Scientific name – *Capra aegagrus hircus*
- Kingdom- Animalia
- Phylum- Chordata
- Class- Mammalia
- Order- Artiodactyla
- Family- Bovidae
- Genus- Capra
- Species- C.aegagrus



Habitat

As a domestic animal, people generally choose the habitat in which these creatures live. However, some feral populations do exist. For this reason, you can find these animals in rocky mountainous regions, meadows, taiga, and more. Generally, people keep these Goats in farmland, woodland, scrub, and other similar habitats with plenty of grass and

shrubby to eat.

Role of Goats in the Ecosystem and Food Chain

Goat plays a significant role in providing supplementary income and livelihood to millions of resource poor farmers and landless laborers of rural India. They provide substance in the form of food and clothing. The rising demand for goat meat, milk, and cheese offers

commercial goat production opportunities. A goat is a plant-eating animal and thus is a herbivore.

TOPIC : PLANTS

BANYAN TREE



Classification

- Common name- banyan
- Scientific name – *Ficus benghalensis*
- Kingdom- Plantae

- Clade- Tracheophytes
- Order- Rosales
- Family- Moraceae
- Genus- Ficus
- Species- F. subg. Urostigma

Physical Description

The banyan reaches a height up to 30 metres (100 feet) and spreads laterally indefinitely. Aerial roots 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. The leaves of the banyan tree are large, leathery, glossy, green, and elliptical. Like most figs, the leaf bud is covered by two large scales. As the leaf develops the scales abscise. Young leaves have an attractive reddish tinge.

Importance of Banyan Tree

The Banyan tree has several medicinal properties. Its leaf, bark, seeds and fig are **used for the variety of disorders** like diarrhoea, polyuria, dental, diabetes and urine disorders.

The wood of the Banyan tree is used in making door panels, boxes and the other items. Its bark is used for making paper and ropes. The milky latex that comes from its leaves and stems is used in many **Ayurvedic medicines**.

In India its edible leaves are used as the plates. It is planted for the soil conservation. The wood of the aerial roots is stronger and is used for the tent poles and cart yokes.

NEEM TREE

Classification



- Common name- neem
- Scientific name – *Azadirachta indica*
- Kingdom- Plantae
- Clade- Tracheophytes
- Order- Sapindales
- Family- Meliaceae
- Genus- Azadirachta
- Species- A.Indica

Azadirachta indica, commonly known as neem, or Indian lilac is a tree in the family Meliaceae. It is one of two species in the genus *Azadirachta*, and is native to the Indian subcontinent and most of the countries in Africa. It is typically grown in tropical and semi-tropical regions. Neem trees also grow on islands in southern Iran. Its fruits and seeds are the source of neem oil. It

can tolerate high to very high temperatures and does not tolerate temperature below 5 °C (41 °F). Neem is one of a very few shade-giving trees that thrive in drought-prone areas e.g. the dry coastal, southern districts of India, and Pakistan.

Physical Description

Neem is a fast-growing tree that can reach a height of 15–20 metres , and rarely 35–40 m. It is deciduous, shedding many of its leaves during the dry winter months.

The compound leaves have toothed leaflets and are typically evergreen but do drop during periods of extreme drought. The branches are wide and spreading. The opposite, **pinnate leaves** are long, with 20 to 30 medium to dark green leaflets about 3–8 long.

The terminal leaflet often is missing. The petioles are short. White and fragrant flowers are arranged in more-or-less drooping axillary panicles . The inflorescences, which branch up to the third degree, bear from many flowers. Protandrous, bisexual flowers and male flowers exist on the same individual tree.

The fruit is a smooth, olive-like drupe which varies in shape from elongate oval to nearly roundish.

Importance of Neem Tree

Nearly all parts of the neem tree are useful, and many of its **medicinal and cosmetic uses** are based on its antibacterial and antifungal properties. Neem is commonly used in shampoos for treating dandruff and in soaps or creams for skin conditions such as acne, psoriasis, and athlete's foot.

It is also a component in some toothpastes and mouthwashes, especially in the Indian subcontinent, and

young twigs are used directly as crude toothbrushes in rural areas.

Neem leaves have long been used as a **traditional treatment** for diabetes, and there is some clinical evidence suggesting that it may help control blood sugar levels.

Oil extracted from the seeds can be used directly as an insect and mite repellent, insecticide, and fungicide and is the source of many commercial pesticide products, including dusts, granules, and concentrates.

SAL TREE



Classification

- Common name- sal
- Scientific name – *Shorea Robusta*
- Kingdom- Plantae
- Clade- Tracheophytes
- Order- Malvales
- Family- Dipterocarpaceae
- Genus- Shorea
- Species- S .Robusta

Shorea robusta, the sal tree, also sarai and other names, is a species of tree in the family **Dipterocarpaceae**. This tree is native to the Indian subcontinent, ranging south of the Himalaya, from Myanmar in the east to Nepal, India and Bangladesh.

Physical Description

The sal tree is a hardwood timber tree, up to 30-35 m tall. The crown is spreading and spherical. Leaves are 20 cm long, simple, shiny and glabrous, delicate green, broadly oval at the base. Fruits are large and ovoid.

It is an evergreen tree with a cylindrical bole that can be unbranched for up to 25 m and up to 200 cm in diameter. It is moderate to slow growing, evergreen in wetter areas and dry-season deciduous in drier areas. The bark is rough and reddish brown.

Importance of Sal Tree

Sal is one of the most important sources of hardwood timber in India, with hard, coarse-grained wood that is light in colour when freshly cut, but becomes dark brown with exposure.

The wood is resinous and durable, and is sought-after for construction. The wood is especially suitable for constructing frames for doors and windows.

The dry leaves of sal are a major source for the production of leaf plates and leaf bowls in northern and eastern India. Sal tree resin is known as sal dammar or Indian dammar.

It is used as an astringent in Ayurvedic medicine, burned as incense in Hindu ceremonies, and used to caulk boats and ships.

Sal seeds and fruit are a source of lamp oil and vegetable fat. The seed oil is extracted from the seeds and used as cooking oil after refining.

COCONUT TREE



Classification

- Common name- coconut

- Scientific name – *Cocos nucifera*
- Kingdom- Plantae
- Clade- Tracheophytes
- Order- Arecales
- Family- Arecaceae
- Genus- Cocos
- Species- C. nucifera

The coconut tree (*Cocos nucifera*) is a member of the palm tree family (Arecaceae) and the only living species of the genus *Cocos*. The term "coconut" can refer to the whole coconut palm, the seed, or the fruit, which botanically is a **drupe**, not a nut. Coconuts probably originated somewhere in Indo-Malaya and are one of the most important crops of the tropics. **It is one of the most useful trees in the world and is often referred to as the "tree of life"**.

Physical Description

A single coconut palm may yield 100 coconuts annually, and each fruit requires a year to fully ripen.

Mature coconuts, ovoid or ellipsoid in shape, have a thick fibrous husk surrounding the familiar single-seeded nut of commerce.

A hard shell encloses the insignificant embryo with its abundant endosperm, composed of both meat and liquid. Coconut fruits float readily and have been dispersed widely by ocean currents and by humans throughout the tropics.

The coconut palm thrives on sandy soils and is highly tolerant of salinity. Coconuts need high humidity (at least 70–80%) for

optimum growth, which is why they are rarely seen in areas with low humidity. However, they can be found in humid areas with low annual precipitation such as in Karachi, Pakistan.

Importance of Coconut Tree

Coconut flesh is high in fat and can be dried or eaten fresh or processed into coconut milk or coconut oil. The liquid of the nut, known as coconut water, is used in beverages.

The harvested coconut also yields copra, the dried extracted kernel, or meat, from which coconut oil, a major vegetable oil, is expressed. The twigs, or slender wood part of a coconut tree, are used to make furniture. The dry husk yields coir, a fibre highly resistant to salt water and used in the manufacture of ropes, mats, baskets, brushes, and brooms.

GULMOHAR TREE



Classification

- Common name- gulmohar
- Scientific name – *Delonix regia*
- Kingdom- Plantae
- Clade- Tracheophytes

- Order- Fabales
- Family- Fabaceae
- Genus- Delonix
- Species- D.Regia

Delonix regia is a species of flowering plant in the bean family Fabaceae, subfamily Caesalpinioideae native to Madagascar. It is noted for its fern-like leaves and flamboyant display of orange-red flowers over summer. In many tropical parts of the world it is grown as an ornamental tree and in English it is given the name royal poinciana, flamboyant, flame of the forest, or flame tree.

Physical Description

The flowers of *Delonix regia* are large, with four spreading scarlet or orange-red petals up to 8 cm (3 in) long, and a fifth upright petal called the standard, which is slightly larger and spotted with yellow and white. They appear in corymbs along and at the ends of branches. The pods are green and flaccid when young and turn dark-brown and woody. They can be up to 60 cm long and 5 cm wide. The compound (doubly pinnate) leaves have a feathery appearance and are a characteristic light, bright green. Each leaf is long with 20 to 40 pairs of primary leaflets or pinnae, each divided into 10–20 pairs of secondary leaflets or pinnules. Pollen grains are elongated.

Importance of Gulmohar Tree

Gulmohar is well known for its beautiful flowers. But it also

has some medicinal properties like Anti-diabetic activity, Anti-bacterial activity, Anti-diarrheal property.

The wood is used for fuel , the calorific value being 4600 Kcal per Kg. It's flowers are used for bee forage. Gulmohar tree produces a thick water - soluble gum which is then used as a binding agent in manufacturing tablets and also in textile industries. As its seeds are quite hard and elongated they are used to make beads.

TOPIC: INSECTS

BUTTERFLY



Classification

- Common name- butterfly
- Scientific name – *Rhopalocera*
- Kingdom- Animalia
- Phylum- Arthropoda
- Class- Insecta
- Order- Lepidoptera
- Family- Hedyloidea
- Genus- Danaus

- Species- Danaus plexippus

Butterflies are insects in the macrolepidopteran clade Rhopalocera from the order Lepidoptera, which also includes moths. Adult butterflies have large, often brightly coloured wings, and conspicuous, fluttering flight. Butterflies are nearly worldwide in their distribution.

Physical Description and Habitat

The wings, bodies, and legs of butterflies, are covered with dust like scales that come off when the animal is handled. Butterflies are active during the day and are usually brightly coloured or strikingly patterned. Perhaps the most distinctive physical features of the butterfly are its club-tipped antennae and its habit of holding the wings vertically over the back when at rest.

The lepidopteran life cycle has four stages: egg, larva (caterpillar), pupa (chrysalis), and adult (imago). The larvae and adults of most butterflies feed on plants, often only specific parts of specific types of plants. Butterflies live and breed in diverse habitats, including salt marshes, mangroves, sand dunes, lowland forest, wetlands, grasslands and mountain zones. Rock surfaces and bare ground are critical – they are home to the lichen eaten by the larvae, and offer adults places to bask in the sun.

Role of Butterfly in Ecosystem

Butterflies maintain the ecosystem by acting as pollinator, prey, biological pest control, induce genetic variation in plants, and enhance environmental beauty, reduce the level of carbon dioxide in air.

Butterflies also act as a lower member of the food chain. They are a hearty meal for a number of animals, including birds and mice. As butterfly populations diminish, so will populations of birds and other animals that rely on them as a food source.

GRASSHOPPER

Classification

- Common name- grasshopper
- Scientific name – *Caelifera*
- Kingdom- Animalia
- Phylum- Arthropoda
- Class- Insecta
- Order- Orthoptera
- Family- Acridoidea
- Genus- Schistocerca
- Species- Schistocerca americana

Grasshoppers are a group of insects belonging to the suborder Caelifera. They are among what is probably the most ancient living group of chewing herbivorous insects. Grasshoppers are typically ground-dwelling insects with powerful hind legs which allow them to escape from threats

by leaping vigorously. At high population densities and under

certain environmental conditions, some grasshopper species can change colour and behaviour and form swarms. Under these circumstances, they are known as locusts.

Physical Description and Habitat

Grasshoppers have the typical insect body plan of head, thorax and abdomen. The head is held vertically at an angle to the body, with the mouth at the bottom. The head bears a large pair of compound eyes which give all-round vision, three simple eyes which can detect light and dark, and a pair of thread-like antennae that are sensitive to touch and smell. The downward-directed mouthparts are modified for chewing and there are two sensory palps in front of the jaws. The legs are terminated by claws for gripping. The hind leg is particularly powerful.

Role of Grasshopper in Ecosystem and Food Chain

Grasshoppers are beneficial and play a critical role in the environment by making it a more efficient place for plants and other animals to thrive. They facilitate a natural balance in the decomposing and regrowth process of plants. Like any other insects or animals, their waste is a good source of fertilizer.

The grasshopper could be called the very base of the food chain in its ecosystem due to the wide array of secondary consumers (predators) that use it as a staple food source. Animals like these include birds, mice and other arthropods.

ANT

Classification

- Common name- ant
- Scientific name – *Formica rufa*
- Kingdom- Animalia
- Phylum- Arthropoda
- Class- Insecta
- Order- Hymenoptera
- Family- Formicidae
- Genus- Irydomyrmex
- Species- Purpureus

Ant, (family Formicidae), any of approximately 10,000 species of insects (order Hymenoptera) that are social in habit and live together in organized colonies. There are generally three castes, or classes, within a colony: queens, males, and workers. Some species live in the nests of other species as parasites.

Physical Description and Habitat

An ant has a large head and a slender, oval abdomen joined to the thorax, or midsection, by a small waist. In all ants there are either one or two finlike extensions running across the thin waist region. The antennae are always elbowed. There are two sets of jaws: the outer pair is used for carrying objects such as food and for digging, and the inner pair is used for chewing. Some species have a powerful sting at the tip of the abdomen. Ants occur worldwide but are especially common in hot climates. They range in size from about 2 to 25 mm (about 0.08 to 1 inch). Their colour is usually yellow,

brown, red, or black. Most ants live in nests, which may be located in the ground or under a rock or built above ground and made of twigs, sand, or gravel.

Role of Ant in Ecosystem and Food Chain

Ants play an important **role** in the environment. **Ants** turn and aerate the soil, allowing water and oxygen to reach plant roots. **Ants** eat a wide variety of organic material and provide food for many different organisms. **Ants** make good **ecosystem** indicators because they interact with many other species — for example by eating spiders or making nests that double as homes for microorganisms — and influence important processes like nutrient cycling and seed dispersal. **Ants** act as decomposers by feeding on organic waste, insects or other dead animals. They help keep the environment clean. ... After the **ants** leave, fungi and bacteria grow in the galleries and break down the lignin and cellulose on large surfaces.

HONEY BEE



Classification

- Common name- bee
- Scientific name – *Apis mellifera*
- Kingdom- Animalia
- Phylum- Arthropoda
- Class- Insecta
- Order- Hymenoptera
- Family- Apidae
- Genus- Apis
- Species- A.Mellifera

A honey bee (also spelled honeybee) is a eusocial flying insect within the genus *Apis* of the bee clade, all native to Eurasia. They are known for their construction of perennial colonial nests from wax, the large size of their colonies, and surplus production and storage of honey, distinguishing their hives as a prized foraging target of many animals, including honey badgers, bears and human hunter-gatherers. There are two honeybee sexes, male and female, and two female castes. The two female castes are known as workers, which are females that do not

attain sexual maturity, and queens, females that are larger than the workers. The males, or drones, are larger than the workers and are present only in early summer. The workers and queens have stingers, whereas the drones are stingless.

Physical Description and Habitat

A. mellifera is about 1.2 cm (about 0.5 inch) long, although size varies among the several strains of this species. The head and thorax, or midsection, are somewhat bristly and vary in colour according to the strain.

Two large compound eyes and three simple eyes, or ocelli, are located on top of the head. Keen eyesight is complemented by two sensitive odour-detecting antennae.

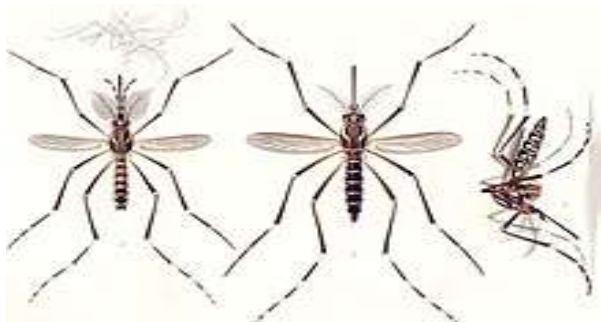
Honey bees can thrive in natural or domesticated environments, though they prefer to live in gardens, woodlands, orchards, meadows and other areas where flowering plants are abundant. Within their natural habitat, honey bees build nests inside tree cavities and under edges of objects to hide themselves from predators.

Role of Honey Bee in Ecosystem and Food Chain

Bees work to pollinate plants that produce many of the seeds, nuts, and fruits that serve as a food source for local wildlife. Additionally, **bees'** pollination efforts allow flowering plants to flourish, creating a more colorful and gorgeous environment for all who live there. These social and hardworking insects produce six hive products – honey, pollen, royal jelly, beeswax, propolis, and venom – all collected and used by people for various nutritional and

medicinal purposes. About one third of what we eat is pollinated by **bees**, directly or indirectly. ... Most fruit and vegetables we grow or buy are made possible by **bee** pollination. And **bees** pollinate clover, which in turn creates good pasture to feed the animals that produce dairy and meat.

MOSQUITO



Classification

- Common name- mosquito
- Scientific name – *Culicidae*
- Kingdom- Animalia
- Phylum- Arthropoda
- Class- Insecta
- Order- Diptera
- Family- Culicidae
- Species- Culex, Anopheles

Mosquitoes are members of a group of about 3,500 species of small flies within the family Culicidae . The mosquito's saliva is transferred to the host during the bite, and can cause an itchy rash. In addition, many species can ingest pathogens while biting, and transmit them to future hosts. In this way, mosquitoes are important vectors of diseases such as malaria, yellow fever, Chikungunya, West Nile, dengue fever, filariasis, Zika and other arboviruses. By transmitting diseases, mosquitoes cause the deaths of more people than any other animal taxon: over 700,000 each year.

Physical Description and Habitat

Mosquitoes have a slender segmented body, one pair of wings, one pair of halteres, three pairs of long hair-like legs, and elongated mouthparts. The feathery antennae of the male are generally bushier than those of the female. The males, and sometimes the females, feed on nectar and other plant juices.

In most species, however, the females require the proteins obtained from a blood meal in order to mature their eggs. Different species of mosquitoes show preferences and, in many cases, narrow restrictions as to host animals.

Mosquitoes are generally attracted to water, especially stagnant water, so swamps, marshes, ponds, stagnant rivulets are paradise for mosquitoes, especially during summer months. Majority of the mosquito species lay their eggs in stagnant water and have adapted themselves to lay their egg in salt water. Their habitat includes ponds , marshes, swamps etc.

CONCLUSION

Flora and fauna constitute our environment. So it is our primary responsibility to protect our flora and fauna and save the ecosystem. A healthy environment can be beneficial for every living organism.

This project gives an idea about the diversity of flora and fauna in my locality and how they are useful in our everyday life.

ACKNOWLEDGEMENT

I would like to express my gratitude to the teachers of the microbiology department for giving me this golden opportunity to explore and study the flora and fauna of my locality.

Secondly I would like to thank my parents and friends for helping me to complete this.



STUDIES OF FLORA AND FAUNA

AUDITING OF RISHRA REGION

ENVS PROJECT

NAME OF THE EXAMINATION :- B. SC

SEMESTER-2(AECC-2)

PROJECT WORK (UNDER CBSC) 2021

UNIVERSITY OF CALCUTTA

CU ROLL NO: 203223-21-0111

CU REGISTRATION NO: 223-1111-0426-20

COLLEGE ROLL NO: MCBA20M435

SUBJECT: ENVIRONMENTAL SCIENCE

PROJECT (AECC 2)

DEPARTMENT:- MICROBIOLOGY

SEMESTER: 2

COLLEGE: SCOTTISH CHURCH COLLEGE

STUDIES OF FLORA AND FAUNA

INDEX

INTRODUCTION

❖ *Studies of flora*

➤ TREE

MANGO, COCONUT, BANYAN, BAMBOO, SUGAR APPLE

➤ FLOWER

ROSE, JASMINE, CHINA ROSE, MADAGASCAR PERIWINKLE, NYCTANTHES

❖ *Studies of fauna*

➤ ANIMAL

DOG, COW, MONGOOSE, MONKEY, SQUIRREL

➤ BIRD

CROW, DOVE, OWL, PARROT, SPARROW

➤ INSECT

BUTTERFLY, BEE, FIREFLY, SPIDER, CRICKET

CONCLUSION

ACKNOWLEDGEMENT

INTRODUCTION

Ecology is the study of the relation and interaction between organisms and their environment. Of all the living organisms on our planet, the most commonly seen are plant life and animal life. Apart from these two, more forms of life abound on the earth but are harder to see with the naked eye. This is why the flora and fauna i.e. plants and wildlife of the earth are fascinating to observe and study.

The term flora in Latin means “Goddess of Flower”.

Flora is a collective term for a group of plant life found in a particular region. The whole plant kingdom is represented by this name.

On the other hand, Fauna represents the animal life indigenous to a region. The animal kingdom comprises a variety of animal- life forms. Hence, the classification of fauna is much more complex than floral division. Therefore, for ease of classification.

Here myself Raj Acharya is presenting a small study of “FLORA AND FAUNA” to distinguish different kinds of trees, flowers, animals, birds, insects in the nearby station, Rishra.

STUDIES OF FLORA

TREE

1. MANGO TREE : *Mangifera indica*



- SIGNIFICANCE :

- i. The mango tree is an evergreen in the family Anacardiaceae has grown for its edible fruit.
- ii. The mango tree is erect and branching with a thick trunk and broad, rounded canopy.
- iii. The leaves of the tree are shiny and dark green, the fruit is a drupe, with an outer flesh surrounding a stone.
- iv. Mangoes are vital fruit for human nutrition. Mango is rich in iron, vitamin C increases the absorption of iron.
- v. Being rich in fiber and polyphenols, consuming mango aids in decreasing constipation and inflammation of the bowels.
- vi. The mango tree is an inseparable part of Indian culture, customs, and folklore.
- vii. Considered sacred, the Hindus believe the mango tree to be the abode of gods. So, they use
- viii. Mango leaves are used to decorate homes on auspicious occasions and while conducting religious rituals.

STUDIES OF FLORA

TREE

2. COCONUT TREE : *Cocos nucifera*



- SIGNIFICANCE :

- i. Coconut, edible fruit of the coconut palm(*Cocos nucifera*), a tree of the palm family (Arecaceae), originated somewhere in Indo-Malaya and is one of the most important crops of the tropics.
- ii. Coconut flesh is high in fat and can be dried or eaten fresh or processed into coconut milk or coconut oil.
- iii. The liquid of the nut, known as coconut water, is used in beverages.
- iv. Besides the edible kernels and the drink obtained from green nuts, the harvested coconut also yields copra, the dried extracted kernel from which coconut oil, a major vegetable oil, is expressed.
- v. The meat may also be grated and mixed with water to make coconut milk, which is used in cooking and as a substitute for cow's milk.
- vi. The dry husk yields coir, a fiber highly resistant to saltwater and used in the manufacture of ropes, mats, baskets, and brooms.

STUDIES OF FLORA

TREE

3. BANYAN TREE : *Ficus benghalensis*



● SIGNIFICANCE :

- i. The Vat, Bardgad, or Banyan tree is one of the most venerated trees in India, canlifere searchingresearchinglifegrow for centuries, and is often compared to the shelter given by God to his devotees in Hindu mythology.
- ii. In Hindu mythology, the tree is called 'Kalpavriksha' the tree that provides fulfillment of wishes and other material gains, symbolizes Trimurti - Lord Vishnu is believed to be the bark, Lord Bramha the roots, Lord Shiva the branches.
- iii. The bark and leaf buds of the tree are useful in arresting secretion or bleeding.
- iv. The fruit exercises a soothing effect on the skin and mucous membranes, alleviates swelling and pain, serves as a mild purgative, also nutritious.
- v. The leaf buds of banyan are beneficial in the treatment of chronic diarrhea and dysentery, the buds should be soaked in water overnight and taken as infusion in the treatment of these diseases.
- vi. The latex is also useful in the treatment of diarrhea and dysentery.

STUDIES OF FLORA

TREE

4. BAMBOO TREE: *Bambusa vulgaris*



- SIGNIFICANCE :

- Bamboo is grown without pesticides or chemical fertilizers, requires no irrigation, grows rapidly, and can be harvested in 3-5 years.
- It produces 35% more oxygen than an equivalent stand of trees, sequesters carbon dioxide, and is carbon neutral, a critical element in the balance of oxygen and carbon dioxide in the atmosphere.
- It is used for making furniture, houses, road reinforcements in India, and also it is used in bridges built-in in china, capable of supporting trucks that weigh as much as 16 tons.
- In China, ingredients from the bamboo shoot help treat kidney diseases, roots and leaves have also been used to treat venereal diseases and cancer. water from the culm(the side branches) is used to treat diseases of the bone effectively.
- It is used as a strong and durable fabric for making clothes making it breathable, thermal regulating wicks moisture, and used for making accessories.
- Young shoots are used as food in various countries and charcoal made from bamboo is used as a fuel for cooking.

STUDIES OF FLORA

TREE

5. SUGAR APPLE TREE: *Annona squamosa*



- **SIGNIFICANCE** :
 - i. Sugar apple is also known as sugar pineapple and sweetshop is the species belonging to the Annonaceae family which is inherent to tropical Americas and grown widely for its juicy, fragrant and favorable fruit.
 - ii. Sugar apple assists in maintaining the health of skin and hair, loaded with vitamin A and antioxidants which assist to rebuild tissues and protects cell structure which makes skin shine and soft as well as hair is luxuriously smooth.
 - iii. Adding sugar apples to the diet for dealing with breathing problems associated with inflamed bronchial tubes, contains vitamin B6 which offers anti-inflammatory benefits.
 - iv. Sugar apples contain potassium which is essential for heart health and also lowers sodium levels and lowers blood pressure.
 - v. Sugar apples are an abundant source of copper and fiber which supports the digestive system.

STUDIES OF FLORA

FLOWER

1. ROSE: *Rosa rubiginosa*



- SIGNIFICANCE :

- Rose comes in different colors, symbolizes love interests, romantic relationships, friendship, purity, and innocence.
- Rose flower is certified to be antiseptic, anti-oxidant, and is a rich source of vitamin A, B3, C, D, and E and also has a soothing effect against depression.
- Rosewater enhances the skin brightness, rose petal tea helps in the secretion of bile juice and helps in proper cleansing of the golf bladder.
- From an auspicious wedding to a funeral ceremony rose can serve all-purpose decoration, the special thing about the flower is that it gets along with any color including black so using it for decorating houses, temples, churches, etc.
- Rose is also used for the preparation of various lotions, creams, beauty soaps, etc, oils made from rose are also used as Aromatherapy.
- Rose is the queen of flowers and has a special place in the floral kingdom as well as in the heart of mankind.

STUDIES OF FLORA

FLOWER

2. JASMINE: *Jusminum officinale*



● SIGNIFICANCE :

- i. Jasmine symbolizes love, beauty, or sensuality, its pure white blossoms can also symbolize purity, flowers bloom at night with such a powerful scent.
- ii. Jasmine has been used for liver disease(hepatitis), liver pain due to cirrhosis, and abdominal pain due to severe diarrhea (dysentery)., it is also used to cause relaxation(as a sedative) and in cancer treatment.
- iii. In foods, jasmine is used to flavor beverages, frozen dairy desserts, candy, baked goods, gelatines, and puddings.
- iv. In manufacturing, jasmine is used to add fragrance to creams, lotions, and perfumes.
- v. Some early research suggests that inhaling the fragrance from a small amount of jasmine absolute ether improves mental alertness.

STUDIES OF FLORA

FLOWER

3. CHINA ROSE : *Hibiscus rosa-sinensis*



• SIGNIFICANCE :

- i. The china rose is famous for the fact that it blooms almost every year, for this reason, it is also known as ‘the eternal spring flower’ and is thus the symbol of longevity.
- ii. It, not just the flower, but also the plant, and its parts are rich in phytonutrients such as pectin, flavonoids, citric acid, etc., that can be used as well as consumed for their remedial benefits.
- iii. The plant which is 1160-280 cm in height, has strong branches and trunk, leaves are dark greenish in color, shiny, smooth, and oval-shaped, it does not bear any fruit, flowers can be seen in various colors such as red, white, yellow and orange.
- iv. China rose enhances hair growth and resists premature hair discoloring by reducing excessive body heat, stimulating blood circulation to the scalp, and increasing the distribution of crucial nutrients to the hair follicles.
- v. Hibiscus tea is a great remedy for blood loss and body heat, it is also a natural coloring agent, natural hormone-balancing agent, the cooling properties of china rose can calm down the overheated stomach, reducing your appetite to normal levels, improving human health.

STUDIES OF FLORA

FLOWER

4. MADAGASCAR PERIWINKLE: *Catharanthus roseus*



- SIGNIFICANCE :

- Madagascar periwinkle is used for diabetes, cancer, and sore throat, it is also used as a cough remedy, for easing lung congestion and to reduce fluid retention by increasing urine production.
- Madagascar periwinkle is an evergreen shrub or herbaceous plant growing 1 meter tall, leaves are oval to oblong, broad, and glossy, the flowers are white to dark pink with a darker red center of five petals.
- Some people apply Madagascar periwinkle directly to the skin to stop bleeding; relieve insect bites, wasp stings, and eye irritation, and treat infections and swelling.
- Vinblastine and vincristine, chemotherapy medications used to treat several types of cancer.
- C. roseus* can be extremely toxic if consumed orally by humans and is cited (under its synonym *Vinca rosea*) in the Louisiana state Act 159

STUDIES OF FLORA

FLOWER

5. NYCTANTHES : *Nyctanthes arbor-tristis*



● SIGNIFICANCE :

- i. It is a shrub or small tree, with grey bark, leaves are opposite, simple, with an entire margin, flowers are fragrant, produced in clusters of two to seven,
- ii. Fruit is flat, brown, heart-shaped to a round capsule, with two sections each containing a single seed.
- iii. Flowers yield an essential oil similar to jasmine, corolla tubes containing a coloring material, nystatin, which is identical with alpha, crocetin from saffron, corolla tubes were formerly used for dyeing silk.
- iv. Seed yield a fixed oil.
- v. Leaves antibilious and expectorant, used in rheumatism and fevers; decoction given in sciatica, juice used as cholagogue, laxative, diaphoretic, diuretic, and antihelmintic.
- vi. The bark is used for tannin, the bark is expectorant, contains two alkaloids, of these the water-soluble one stimulates the ciliary movements of the esophagus.
- vii. Powdered seeds are used for scurfy affections of the scalp.

STUDIES OF FAUNA

ANIMAL

1. DOG : *Canis lupus familiaris*



- SIGNIFICANCE :
 - i. A domesticated carnivorous mammal that typically has a long snout, an acute sense of smell, non-retractable claws, and a barking, howling or whining voice.
 - ii. The dog is the first domesticated animal and is symbolically associated with loyalty and vigilance, often acting as guardian and protector.
 - iii. Dogs provide companionship, they can be a comfort to people who crave unconditional interaction with another living being, dogs can decrease human loneliness and give humans a purpose as they care for their animal companions.
 - iv. Dogs provide a sense of security for humans, trained watchdogs can provide a high degree of security, while even small house dogs can offer a sense of protection by alerting their owners to approaching strangers or unusual circumstances in the home.
 - v. Stray dogs guard the locality at night and keep the area safe.

STUDIES OF FAUNA

ANIMAL

2. COW: *Bos Taurus*



- SIGNIFICANCE:

- i. Cows are commonly raised as livestock for meat (beef or veal), milk, and for hides, which are used to make leather.
- ii. Another product of cows is dung, which can be used to create manure or fuel, dung is also used as fertilizer and urine can protect 10 acres of crops from insects, also the fertilizer is eco-friendly.
- iii. Cows produce milk which is processed and sold for human consumption, and the production of milk which is also processed into cheese, butter, yogurt, are other dairy products.
- iv. Most cattle are not kept solely for hides, which are usually a by-product of beef production, hides are most commonly used for leather, which can be made into a variety of products, including shoes.
- v. Cows are the universal symbol of motherhood, in various parts of the world such as India cows are worshiped, cows can be seen by Hindus as a maternal figure and are often described as 'givers of life'.

STUDIES OF FAUNA

ANIMAL

3. MONGOOSE : *Herpestes edwardsii*



• SIGNIFICANCE :

- I. The Indian grey mongoose is a mongoose species native to the Indian subcontinent and West Asia, it inhabits open forests, scrublands, and cultivated fields, often close to human habitation, lives in burrows, hedgerows, and thickets, among groves of trees, and take shelter, preys on rodents, snakes, bird eggs and lizards.
- II. The species is protected in India, but illegal trade in the hair for making paintbrushes and shaving brushes continues, as this is one of the most significant threats.
- III. Mongooses are noted for their audacious attacks on highly venomous snakes such as king cobra, 33 species belong to 14 genera, mongooses are short-legged animals with pointed noses, small ears, and long furry tails, the claws do not retract, in most species, there are five toes on each foot, the fur is grey to brown and is commonly grizzled or flaked with a lighter grey.
- IV. They can be domesticated and kept as pets for controlling snakes.

STUDIES OF FAUNA

ANIMAL

4. MONKEY: *Macaca mulatta*



• SIGNIFICANCE :

- I. Monkey symbolizes the inner child, joy, and innocence, monkeys develop profound bonds and have great compassion for their fellows.
- II. Monkeys play an important role in their native habitats by pollinating flowers and dispersing seeds as they travel, some monkeys can swim; their webbed toes help them paddle through the water, and they may swim across the stream or river to avoid predators or get to the food.
- III. Monkeys live all over the world and come in various shapes, sizes, and colors, as one of the closest relatives, these mammals are very intelligent and have opposable thumbs, allowing them to use tools and play games.
- IV. Monkeys are omnivorous, they eat meat, plant-based foods, flowers, fruits, lives in trees. they are very sociable creatures.
- V. Monkeys are used for animal testing and for making medicines, they are mainly used in the studies of diseases in the brain, and researching experiments for the development of vaccines or treatments of severe infectious diseases.

STUDIES OF FAUNA

ANIMAL

5. SQUIRREL: *Funambulus palmarum*



- SIGNIFICANCE :
 - i. Squirrels are a symbol of preparedness, they indicate saving up for a rainy day, they are always busy stocking up nuts for the dark, cold winter days ahead.
 - ii. They are natural gardeners and gave an ecological important role as they help in seed distribution.
 - iii. They have a peculiar habit of taking seeds which are their main source of food and burying them underground, the most important role of squirrels in the ecosystem is forest regeneration, they are huge contributors to plant composition due to their eating and food saving habit
 - iv. Another important role of squirrels in the ecosystem is being a food source for other animals, they hold a significant place in the natural food chain and are preyed on by several avian and mammalian predators.
 - v. Scientists are conducting research on a few species of squirrels, and are hoping that it will guide them to develop a drug to help humans survive during a major stroke.

STUDIES OF FAUNA

BIRD

1. CROW: *Corvus brachyrhynchos*



- **SIGNIFICANCE :**
 - i. Despite their reputation, crows play a vital role in waste management, they consume tons of waste every year, preventing the spread of diseases and bad odor.
 - ii. Crows have highly efficient digestive systems like those vultures, and as omnivorous birds, they can feed on meat and plants.
 - iii. Crows are highly adaptive and can be seen throughout the world, intelligent with a loud “caw” sound, they were initially disliked for damaging nuisance.
 - iv. Crows also help by eating pests and insects like caterpillars, armyworms, they also act as pollinators by transporting pollen grains from one plant to other.
 - v. Crows are susceptible to the West Nile virus and used by health authorities as an indicator species, during an outbreak, the birds die in large numbers prompting a health concern response.

STUDIES OF FAUNA

BIRD

2. DOVE: *Spilopelia chinensis*



● SIGNIFICANCE :

- I. Doves come with few color variations, are used in many settings as symbols of love, peace, or as messengers, doves appear in the symbolism of Judaism, Christianity, Islam, and Paganism, and of both military and pacifist groups.
- II. The **spotted dove** (*Spilopelia chinensis*) is a small and somewhat long-tailed pigeon that is a common resident breeding bird across its native range on the Indian subcontinent and in Southeast Asia.
- III. This dove is long-tailed buff-brown with a white-spotted black collar patch on the back and sides of the neck. The tail tips are white and the wing coverts have light buff spots.
- IV. The ground color of this long and slim dove is rosy buff below shading into grey on the head and belly. There is a half collar on the back and sides of the neck made of black feathers that bifurcate and have white spots at the two tips. The median coverts have brown feathers tipped with rufous spots in the Indian and Sri Lankan subspecies which are divided at the tip by a widening grey shaft streak.
- V. Spotted doves move around in pairs or small groups as they forage on the ground for grass seeds, grains, fallen fruits, and seeds of other plants, insects.

STUDIES OF FAUNA

BIRD

3. OWL: *Bubo bengalensis*



- SIGNIFICANCE :

- i. This species is often considered a subspecies of the Eurasian eagle-owl *Bubo bubo* and is very similar in appearance. The facial disk is unmarked and has a black border, The base of the primaries is unbanded and rufous. The tail bands have the tawn bands. A large pale scapular patch is visible on the folded wing. The inner claws are the longest.
- ii. They are seen in scrub and light to medium forests but are especially seen near rocky places. Bush-covered rocky hillocks and ravines, and steep banks of rivers and streams are favorite haunts. It spends the day under the shelter of a bush or rocky projection or in a large mango or similar thickly foliated tree near villages.
- iii. Owls have been portrayed as wise, are also killed and parts of their bodies are being used in rituals. They are considered as a biocontrol agent, keeping the agricultural pests in check, and reducing the farmer's dependence on pesticides. It is time we recognize that they are friends of human beings and find ways to co-exist with them.
- iv. They play a very **important role** in controlling the rodent population. A family of 5 **owls** can consume about 3,000 rodents in one breeding season, thus helping reduce damage to crops. They are phenomenal in pest control and help maintain the food chain.

STUDIES OF FAUNA

BIRD

4. PARROT: *Psittacula eupatria*



- **SIGNIFICANCE :**
 - i. The Indian parakeet is one of the largest parakeets, measuring 56 to 62 cm (22 to 24 in) from the top of the head to the tip of the tail and weighing 200 to 300 g. The tail measures 28 to 35 cm (11 to 14 in), it is predominantly green with a light blue-grey sheen on the cheeks and nape (back of the neck), yellow-green abdomen, red patch on the shoulders, and massive red beak with yellow tips.
 - ii. The Indian parrot lives in forests, woodlands, agricultural lands, and mangrove forests at elevations of up to 900 m (3,000 ft). It eats a variety of wild and cultivated seeds, buds, fruits, and nuts. Flocks can cause extensive damage to ripening fruits and grain crops like maize and jowar. It usually lives in small flocks but forms larger groups in areas where food is abundant or at communal roosts.
 - iii. The parrot plays an important role in its habitat by helping to propagate the forest. Because not all of the seeds consumed are digested, many are passed in the bird's guano over new areas of the forest. Some species eat nectar and are important in the pollination of many species of plants in tropical forests.
 - iv. Parrots are key seed dispersers by multiple and complementary mechanisms, including the wasting and transport of ripe and unripe fruits, their generalist trophic habits, and their extensive daily and seasonal movements make them pervasive dispersers of most of their food plants.

STUDIES OF FAUNA

BIRD

5. SPARROW: *Passer domesticus*



- SIGNIFICANCE :

- The **house sparrow** (*Passer domesticus*) is a bird of the sparrow family Passeridae, found in most parts of the world. It is a small bird that has a typical length of 16 cm and a mass of 24-39.5 g). Females and young birds are colored pale brown and grey, and males have brighter black, white, and brown markings. the house sparrow is native to most of Europe, a large part of Asia, Australia, America.
- The house sparrow is closely associated with human habitation and cultivation. birds of the migratory Central Asian subspecies usually breed away from humans in open country, the only terrestrial habitats that the house sparrow does not inhabit are dense forest and tundra. Well adapted to living around humans, it frequently lives and even breeds indoors, especially in factories, warehouses, and zoos.
- Sparrow** plays an **important role** in environmental balance. **Sparrows** feed their children with insects called alpha and catworm. These insects are extremely dangerous for crops. They kill the leaves of crops and destroy them.
- Sparrows mostly prefer seeds of millet, grass, thistle, weed, and sunflower seed. However, they also eat fruits and berries. During this process, sparrows spread seeds to places away from the fruit tree. This is important for the germination of the seeds, by spreading seeds, sparrows help the survival of many plants that are the producers in an ecosystem.

STUDIES OF FAUNA

INSECT

1. BUTTER FLY(MONARCH) : *Danaus plexippus*



• SIGNIFICANCE :

- I. The monarch butterfly or simply monarch (*Danaus plexippus*) is a milkweed butterfly (subfamily Danainae) in the family Nymphalidae.^[4] Other common names, depending on region, include **milkweed**, **common tiger**, **wanderer**, and **black veined brown**.^[5] It may be the most familiar North American butterfly and is considered an iconic pollinator species.^[6] Its wings feature an easily recognizable black, orange, and white pattern, with a wingspan of 8.9-10.2 cm a Müllerian mimic.
- II. Overwintering, roosting butterflies have been seen on basswoods, elms, sumacs, locusts, oaks, Osage-oranges, mulberries, pecans, willows, cottonwoods, and mesquites.^[46] While breeding, monarch habitats can be found in agricultural fields, pasture land, prairie remnants, urban and suburban residential areas, gardens, trees, and roadsides - anywhere where there is access to larval host plants.
- III. **Butterflies** are central pollinators to many agricultural crops. Additionally, their ecological function is also a food source to predators like birds, spiders, lizards, and other animals. A butterfly's beauty is like a flower, which displays attraction wherever it flies.
- IV. Butterflies are part of our natural heritage and have been studied for over 300 years, they are beautiful, with many being iconic and popular.
- V. butterflies are an important element of the food chain and are prey for birds, bats, and other insectivorous animals (for example, in Britain and Ireland, Blue Tits eat an estimated 50 billion moth caterpillars each year), they have been widely used by ecologists as model organisms to study the impact of habitat loss and fragmentation, and climate change.

STUDIES OF FAUNA

INSECT

2. BEE : *Apis cerana indica*



- SIGNIFICANCE :
 - I. *Apis cerana indica*, the Indian honey bee, is a subspecies of the Asiatic honey bees. It is one of the predominant bees found and domesticated in India, Pakistan, Nepal, Myanmar, Bangladesh, Sri Lanka, Thailand, and mainland Asia. Relatively non-aggressive and rarely exhibiting swarming behavior, it is ideal for beekeeping.
 - II. They usually build multiple combed nests in tree hollows and man-made structures, these bees can adapt to living in purpose-made hives and cavities, colonies contain only a few thousand workers.
 - III. Globally there are more honey bees than other types of bees and pollinating insects, so it is the world's most important pollinator of food crops. It is estimated that one-third of the food that we consume each day relies on pollination mainly by bees.
 - IV. Bees are renowned for their role in providing high-quality food (honey, royal jelly, and pollen) and other products used in healthcare and other sectors (beeswax, propolis, honey bee venom). But the work of bees entails much more.
 - V. Bees play an important role in the scope of agricultural production. Effective pollination increases the amount of agricultural produce, improves their quality, and enhances plants' resistance to pests.

STUDIES OF FAUNA

INSECT

3. FIRE FLY : *Lampyris noctiluca*



- SIGNIFICANCE :
 - i. They are soft-bodied beetles that are commonly called **fireflies**, **glowworms**, or **lightning bugs** for their conspicuous use of bioluminescence during twilight to attract mates or prey. Fireflies produce a "cold light", with no infrared or ultraviolet frequencies, this chemically produced light from the lower abdomen may be yellow, green, or pale red.
 - ii. Fireflies are found in temperate and tropical climates. Many are found in marshes or in wet, wooded areas where their larvae have abundant sources of food. Some species are called "glowworms" in Eurasia and elsewhere.
 - iii. Fireflies contribute to food-web stability, playing important roles as both predators and prey. Firefly larvae are voracious carnivores, feeding on a variety of soft-bodied invertebrates, including snails slugs, and earthworms. Because of their large appetites and preference for snails and slugs, fireflies can be highly beneficial in gardens and agricultural settings.
 - iv. Most fireflies are toxic due to defensive compounds known as lucibufatins (LBGs). LBGs are highly toxic substances that protect them from many predators including birds, toads, and lizards. Yet, despite the bad taste afforded by these chemicals and the warning glows and cautionary colors, fireflies contribute to the diet of many animals.

STUDIES OF FAUNA

INSECT

4. SPIDER: *Poecilotheria regalis*



- SIGNIFICANCE :

- I. *Poecilotheria regalis* is a species of arboreal tarantula and is found in parts of India.^[1] The common name for this spider is an **Indian ornamental tree spider**, or simply **Indian ornamental**. It is one of the most popular arboreal tarantulas for amateur collectors. Their leg span sometimes exceeds 7 inches (18 cm).
- II. In the wild individuals live in holes in tall trees where they make asymmetric funnel webs. Their primary prey consists of various flying insects, which they seize in flight and paralyze. It is not unknown for the spiders of this genus to live communally when territory, i.e. the number of holes per tree, is limited. They tend to be quite defensive spiders
- III. All **spiders** are predators. Because of their abundance, they are the most **important** predators of insects. **Spiders** have been used to control insects in apple orchards in Israel and rice fields in China.
- IV. Most spiders have venom, but only a few types are dangerous for humans. The black widow spider's venom causes nausea, muscle aches, and potentially death, but scientists have been exploring its medical benefits. Black widow eggs and spiderlings contain venom. **Research on venom's effect on cancer cells looks promising.** Another spider, the Fraser Island funnel-web spider, has venom with a molecule that delays the effects of brain strokes.

STUDIES OF FAUNA

INSECT

5. CRICKET: *Acheta domesticus*



- SIGNIFICANCE :

- I. *Acheta domesticus*, commonly called the **house cricket**, is a cricket most likely native to Southwestern Asia, but between 1950 and 2000 it became the standard feeder insect for the pet and research industries and spread worldwide, they can be kept as pets themselves, as this has been the case in China and Japan.
- II. The house cricket is an edible insect. It is farmed in South-East Asia and parts of Europe and North America for human consumption. farmed house crickets are mostly freeze-dried and often processed into a powder known as cricket flour, like all insects, crickets are a complete protein. They contain both omega-3 and omega-6 fatty acids.
- III. The house cricket was essentially eliminated from the cricket-breeding industries of North America and Europe by the appearance of the cricket paralysis virus which spread rapidly in Europe in 2002 and then in the United States in 2010. The virus is extremely lethal to this species of cricket and a few others, It has been replaced by the Jamaican field cricket, which is resistant to cricket paralysis virus and has many of the desirable features of the house cricket.

CONCLUSION

Flora and fauna constitute our environment. The human being is the main responsible for the destruction of flora and fauna. So, people can do many things to respect the law of protection of flora and fauna. It is important because we must live in a healthy environment and conserve our animal and tree species.

This project gives us an idea about the advantages and disadvantages of various flora and fauna. Thus it helps me to a detailed study of my surroundings in my locality.

ACKNOWLEDGEMENT

I would like to express the special thanks of my gratitude to my respectful teachers of the Microbiology Department as well as our Principal and Vice Principal who gave me the opportunity to do this wonderful project on the topic “Study of Flora and Fauna in our locality”, which also helped me in doing a lot of research and I came to know about so many things.

I am really thankful to them. Secondly, I would like to thank my parents and friends who helped me a lot in finishing the project.



FLORA AND FAUNA
AUDITING
OF
RADHANAGAR ROAD,
ASANSOL

AECC - 2

ENVS PROJECT

CU ROLL NUMBER: 203223-11-0023

CU REGISTRATION NUMBER:

223-1211-0287-20

COLLEGE ROLL NUMBER:

MCBA20F422

DEPARTMENT : MICROBIOLOGY

SEMESTER : 2

CONTENTS

TOPIC	PAGE
Introduction	-
Flora	01
Trees	02-06
Flowers	07-11
Fauna	12
Animals	13-17
Birds	18-22
Insects	23-27
Conclusion	28
Acknowledgements	29

INTRODUCTION

Environment refers to the natural world, as a whole or in a particular geographical area, especially as affected by human activity. The following project on Environmental Science is based on the flora and fauna auditing of my locality. The area being audited, in spite of being located in a metropolis, is home to some of the plant and animal species which we usually come across in rural areas. This project will help us learn about the key role that these plants and animals play in our ecosystem. Some species mentioned here, such as the house sparrow, is in potential risk of becoming extinct. It is, hence, extremely crucial that we as a responsible community, take steps to protect our environment. In this project we have learnt about the scientific names, classification and significance of the local flora and fauna. The idea behind this project was to make us aware of our surroundings and the species that continue their lives in the same locality alongside humans.

FLORA



✓ TREES :

- i. NEEM
- ii. MANGO
- iii. BAEL
- iv. BANYAN
- v. COCONUT

✓ FLOWERS :

- i. HIBISCUS
- ii. WHITE FRANGIPANI
- iii. DAMASK ROSE
- iv. MOGRA/ARABIAN JASMINE
- v. IXORA

❖ TREES

➤ NEEM TREE



- **Scientific name :** *Azadirachta indica*
- **Family :** *Meliaceae*
- **Kingdom :** *Plantae*
- **Significance :**
 1. Neem oil extracted from its seeds is used in medicines, pest control and cosmetics etc.
 2. Its leaves are used in the treatment of Chickenpox.
 3. Neem tea is usually taken to reduce the headache and fever. Its flowers are used to cure intestinal problems.
 4. Neem bark acts as an analgesic and can cure high fever as of malaria. Even the skin diseases can be cured from the Neem leaves.
 5. Neem seed pulp is useful for methane gas production. It is also useful as carbohydrate which is rich base for other industrial fermentations.

➤ MANGO TREE



- **Scientific name** : *Mangifera indica*
- **Family** : *Anacardiaceae*
- **Kingdom** : *Plantae*.
- **Significance** :
 1. Mango is rich in iron. Consuming mango in adequate quantities helps in increasing iron levels and prevents anemia.
 2. It improves digestion. Being rich in fiber and polyphenols, consuming mango aids in decreasing constipation and inflammation of the bowels.
 3. Apart from vitamin C, mango also contains foliate, zinc and vitamin B6. All these contribute greatly towards strengthening the immune system and boosting our immunity.
 4. It is due to the presence of an abundance of carotenoids which help in improving eyesight.
 5. Research shows that low selenium levels are linked to an increased risk of heart disease. Mango is a good source of selenium and B6, both of which promote heart health.

➤ BAEI TREE



- **Scientific name** : *Aegle marmelos*
- **Family** : *Rutaceae*
- **Kingdom** : *Plantae*
- **Significance** :
 1. Activated carbon produced from bael fruit shells can be used as an efficient, low-cost adsorbent to remove heavy metals such as chromium from polluted or drinking water.
 2. Bael is mainly consumed as a fresh fruit in which the inner fleshy layer of the pericarp and placenta are edible. These parts are also used to make pudding, juice, jam, and cakes.
 3. Bael fruit is rich in colorants and flavoring agents, which could be used as additives in the food industry.
 4. All parts of the bael plant consist of immense medicinal properties. The herbal medicinal preparations of bael are used to treat chronic diarrhea, dysentery, peptic ulcers, laxative for astringency, and respiratory ailments.
 5. Bael is good for digestion, helps in diabetes management and may reduce cancer risk.

➤ BANYAN TREE



- **Scientific name :** *Ficus benghalensis*
- **Family :** *Moraceae*
- **Kingdom :** *Plantae*
- **Significance :**
 1. A banyan tree is important in the Hindu religion. It is profoundly worshipped and revered in India. In Hindu mythology it is believed that banyan tree fulfils wishes and all material and so it has been given the name 'kalpavriksha'.
 2. Taking the small budding leaves and soaking them in water creates a powerful astringent agent that is very good for healing diarrhea, gas, dysentery and irritation of the GI tract.
 3. Taking the aerial roots and chewing on them prevents gum disease, tooth decay and bleeding gums. The aerial roots act as natural toothpaste and also help with bad breath.
 4. The bark of a banyan tree contains both anti-bacterial and anti-fungal properties. It controls bacterial and fungal infections.
 5. Making an infusion of the roots of the tree is helpful in treating high blood sugar levels.

➤ COCONUT TREE



- **Scientific name :** *Cocos nucifera*
- **Family :** *Areaceae*
- **Kingdom :** *Plantae*
- **Significance :**
 1. Coconuts can be eaten either raw or cooked, and they are rich in vitamins, minerals, and powerful antioxidants.
 2. When you break the hard shell to open the fruit, it has mildly sweet water inside that is known for its extreme health benefits.
 3. The hard shell of the fruit is useful too. It is traditionally used in homes to steam food. The shells are also a popular craft material.
 4. There are a number of uses for the coconut husk. They can be used as natural scrubbers to clean dinner plates, cups, other vessels, and even the floor. They can also be used as craft material.
 5. Coconut husks, shells, leaves, leaf stems, and flower stems are used for fires in traditional kitchens. In places with many coconut trees, finding the wood for fire is an easy and inexpensive task.

❖ FLOWERS

➤ HIBISCUS



- **Scientific name :** *Hibiscus rosa-sinensis*
- **Family :** *Malvaceae*
- **Kingdom :** *Plantae*
- **Significance :**
 1. Due to their soothing and astringent properties, the flowers and leaves have been traditionally used to treat conditions such as cancer and gallbladder attacks, to lower blood pressure, to relieve dry coughs, and topically to treat skin afflictions.
 2. Hibiscus flower is also used to make herbal tea.
 3. It can also be used as a natural dye.
 4. Hibiscus is a rich source of antioxidants.
 5. It is an important herb which promotes hair growth and is used in shampoos and other hair products.

➤ WHITE FRANGIPANI



- **Scientific name :** *Plumeria alba*
- **Family :** *Apocynaceae*
- **Kingdom :** *Plantae*
- **Significance :**
 1. In India, the plant is used as a remedy for diarrhea and to cure itch.
 2. The essential oil of Frangipani acts as astringent. It is used to moisturize skin and in massage therapy.
 3. The Frangipani essential oil possesses anti-inflammatory properties which help to treat extreme headaches, muscle aches and back pain.
 4. It is also an important ornamental plant.
 5. The essential oil has sedative effect that provides sound sleep and helps reduce stress.

➤ DAMASK ROSE



- **Scientific name :** *Rosa damascena*
- **Family :** *Rosaceae*
- **Kingdom :** *Plantae*
- **Significance :**
 1. It is traditionally used to treat abdominal pain, chest pain and excessive menstrual bleeding.
 2. It cures digestive issues, cough, and constipation and is used in wound healing.
 3. Damask rose is also used as an important ornamental plant.
 4. It is used to extract rose water and rose oil.
 5. It is also used in cooking as a flavoring agent.

➤ MOGRA / ARABIAN JASMINE



- **Scientific name :** *Jasminum sambac*
- **Family :** *Oleaceae*
- **Kingdom :** *Plantae*
- **Significance :**
 1. Jasmine has natural antiseptic properties, and hence works as a wonderful disinfectant.
 2. Mogra water is used as a toner. It prevents dryness and skin irritation.
 3. Mogra water also has anti-aging properties.
 4. Mogra is majorly used in making body mists and perfumes.
 5. It has the medicinal properties which include its role as an anti-depressant, antiseptic, aphrodisiac, sedative and more.

➤ IXORA FLOWER



- **Scientific name :** *Ixora coccinea*
- **Family :** *Rubiaceae*
- **Kingdom :** *Plantae*
- **Significance :**
 1. Ixora is a common garden plant and has ornamental uses.
 2. The leaves and bark are used as a remedy for diarrhea.
 3. The roots are said to be analgesic, antiseptic and astringent.
 4. Ixora flowers can be used to boil water and bath as it can reduce skin problems
 5. In traditional Indian medicine, the fusion of juice leaves and the fruit of Ixora are used to care for dysentery, ulcer and gonorrhoea.

FAUNA



✓ **ANIMALS :**

- i. COW
- ii. DOG
- iii. CAT
- iv. GOAT
- v. MONKEY

✓ **BIRDS :**

- i. KINGFISHER
- ii. COMMON MYNA
- iii. SPARROW
- iv. HENS
- v. ORIENTAL-MAGPIE ROBIN

✓ **INSECTS :**

- i. HONEY BEE
- ii. GRASSHOPPERS
- iii. CRICKETS
- iv. COCKROACHES
- v. DARK BLUE TIGER BUTTERFLY

❖ ANIMALS

➤ COWS



- **Scientific name :** *Bos taurus indicus*
- **Family :** *Bovidae*
- **Kingdom :** *Animalia*
- **Significance :**
 1. Hinduism considers cows to be a sacred symbol of life and hence should be protected and revered.
 2. Cows are also used to plough the fields, especially in the villages.
 3. Cow milk is extremely nutritious and has an array of nutrients, which makes it a whole meal in itself. It is the storehouse of quality protein that helps in giving ample strength to the building block of cells.
 4. Cow milk is loaded with numerous essential nutrients and is widely considered as a healing food. It has rich fats, calcium, phosphorus, potassium which helps in regulating and maintaining elevated blood pressure.
 5. Cattle hide is also used to make leather.

➤ DOGS



- **Scientific name :** *Canis lupus familiaris*
- **Family :** *Canidae*
- **Kingdom :** *Animalia*
- **Significance :**
 1. Dogs provide companionship and company. They can be a comfort to people who crave unconditional interaction with another living being.
 2. Dogs can help reduce stress levels in human beings and are often used for therapeutic purposes in hospitals, nursing homes and hospices.
 3. Playing with a dog, exercising, walking or running can help human beings reduce stress levels and increase their health and well-being.
 4. Dogs provide a sense of security for human companions. Trained watchdogs can provide a high degree of security, while even small house dogs can offer a sense of protection by alerting their owners to approaching strangers or unusual circumstances in the home.
 5. Many families use the family dog to help teach responsibility to children.

➤ CATS



- **Scientific name :** *Felis catus*
- **Family :** *Felidae*
- **Kingdom :** *Animalia*
- **Significance :**
 1. Cats are low maintenance and are perfect for apartment/city living.
 2. Cats tend to meow when they're hungry, but you rarely have to worry about being woken up or distracted from a task by a cat begging for attention. This makes them an ideal pet if you're working from home or have youngsters napping during the day, for example.
 3. Cats like to hunt rodents. But they're also natural insect killers, too, offering the kind of household protection that Venus flytraps promise but rarely deliver.
 4. Cats make great companions. They lower stress and anxiety and also helps improve cardiovascular health.
 5. Cat hair is one of the most common allergens. However, if a child is exposed to cats within the first few years of life, they are more likely to develop an immune system that combats not only cat allergies but other kinds of allergens as well.

➤ GOATS



- **Scientific name :** *Capra hircus*
- **Family :** *Bovidae*
- **Kingdom :** *Animalia*
- **Significance :**
 1. In India, the goats are among the main meat producing animals. Most of the people prefer goat meat and has a huge domestic demand.
 2. Goats are also very suitable for milk, fiber and skin production.
 3. They also produce high quality manure which helps to increase the crop production.
 4. Milk from goats is often turned into goat cheese.
 5. Goat has a great and important contribution in the rural economy. There are more than 25% goats among the total livestock in the country.

➤ MONKEYS (Rhesus macaque)



- **Scientific name :** *Macaca mulatta*
- **Family :** *Cercopithecidae*
- **Kingdom :** *Animalia*
- **Significance :**
 1. The monkey is depicted in the Hindu god Hanuman, the god of power and strength. Devout Hindus leave food out for monkeys at temples where they congregate and increase the attraction for tourists who love the photogenic mischief-makers
 2. They are our closest living biological relatives, offering critical insights into human evolution, biology, and behavior and playing important roles in the livelihoods, cultures, and religions of many societies
 3. The animals are used mostly for reproductive biology studies, contraceptive testing, vaccine development, and immunology
 4. Monkeys can carry parasites and zoonotic diseases that are dangerous to humans.
 5. Risks from monkey bites include serious wound infections, herpes B virus, and rabies.

❖ BIRDS

➤ KINGFISHER



- **Scientific name :** *Alcedo atthis*
- **Family :** *Alcedinidae*
- **Class :** *Aves*
- **Kingdom :** *Animalia*
- **Characteristics :**
 1. Common kingfishers are found on shores of lakes, ponds, streams and in wetlands. They have even been known to fish in brackish waters, especially during winter months, when other water bodies are frozen.
 2. They are renowned for their iridescent blue plumage. The males and females are very similar except for their beaks. The male's beak is jet black, while the lower half of a female's beak is chestnut.
 3. They hunt for prey from a perch above the water.
 4. They eat mostly small fish, making up 60-67% of their diet.
 5. **Economic importance:** they are important members of ecosystems and are good indicators of freshwater community health.

➤ COMMON MYNA



- **Scientific name :** *Acridotheres tristis*
- **Family :** *Sturnidae*
- **Class :** *Aves*
- **Kingdom :** *Animalia*
- **Characteristics :**
 1. Common mynas occupy a wide range of habitats in warm areas with access to water. In their native range, common mynas inhabit open agricultural areas such as farmlands as well as cities.
 2. During the breeding season, they can be aggressive and violent while competing with other pairs over nesting sites.
 3. They communicate vocally with other mynas and other bird species. They have a wide variety of alarm calls that can warn other bird species as well.
 4. They are omnivorous and feed on almost anything. Their primary diet consists of fruit, grain, grubs, and insects.
 5. **Economic importance:** Common mynas are important pollination or seed-dispersal agents for many plants and trees. They are also helpful in reducing insect populations in agricultural areas.

➤ SPARROW



- **Scientific name :** *Passer domesticus*
- **Family :** *Passeridae*
- **Class :** *Aves*
- **Kingdom :** *Animalia*
- **Characteristics :**
 1. House sparrows usually inhabit areas that have been modified by humans, including farms, residential and urban areas.
 2. They tend to forage for food on the ground, using a hopping movement when not in flight.
 3. They use a set of postures and behaviors to communicate with others of their species.
 4. They eat various kinds of seed supplemented by some insects.
 5. **Economic importance:** House sparrows are abundant near human habitations. In these areas, they serve as an important prey base for birds of prey and they may have an impact on plant communities because they consume large quantities of seeds.

➤ HENS



- **Scientific name :** *Gallus gallus domesticus*
- **Family :** *Phasianidae*
- **Class :** *Aves*
- **Kingdom :** *Animalia*
- **Characteristics :**
 1. It is native to Southern Asia, particularly the rural regions of India.
 2. Chickens are gregarious birds and live together as a flock. Chickens have a communal approach to the incubation of eggs and raising the young.
 3. Hens mostly feed on grains, insects and grass.
 4. They are used mainly for eggs and meat production. Sometimes, they are also used for chicken fighting games.
 5. Economic importance: they are also grown in poultry farms. It is one of the fastest growing and most profitable agri-business in the current Indian market scenario.

➤ ORIENTAL-MAGPIE ROBIN



- **Scientific name :** *Copsychus saularis*
- **Family :** *Muscicapidae*
- **Class :** *Aves*
- **Kingdom :** *Animalia*
- **Characteristics :**
 1. Males sport black-and-white plumage while the females are grayish brown and white. Juveniles resemble females, but have a scaly head and upperparts.
 2. They have a good repertoire of melodious calls and are known to imitate other bird calls. The most commonly heard call is a whistle given at dawn. Most often seen singing from a high exposed perch.
 3. These birds are often seen in cultivated areas, open woodlands, and gardens.
 4. The Oriental Magpie-Robin's breeding season lasts from the end of March to the end of July and the nest is neatly placed in holes in tree trunks, in gaps in walls and sometimes in the roofs of houses.
 5. These birds were once kept in cages because of their singing, and were also for fighting matches. Both are now illegal in India.

❖ INSECTS

➤ HONEY BEE



- **Scientific name :** *Apis indica*
- **Family :** *Apidae*
- **Class :** *Insecta*
- **Kingdom :** *Animalia*
- **Characteristics :**
 1. They constitute the main honey bee species that are cultivated for commercial production of honey and other substances.
 2. They are the domesticated species that build multiple combs.
 3. They are more prone to swarming and absconding.
 4. The average yield of honey is 6-8kg/year.
 5. They are used in apiculture, mostly in wooden boxes with fixed frames. These bees can be adapted to living in cavities in some human structures and in purpose-made hives, and their nesting habit means that they can potentially colonize temperate or mountain areas with prolonged winters or cold temperatures.

➤ GRASSHOPPER



- **Scientific name :** *Poekilocerus pictus*
- **Family :** *Pyrgomorphidae*
- **Class :** *Insecta*
- **Kingdom :** *Animalia*
- **Characteristics :**
 1. *Poekilocerus pictus* is a large brightly colored grasshopper found in the Indian subcontinent. Nymphs of the species are notorious for squirting a jet of liquid up to several inches away when grasped.
 2. The half-grown immature form is greenish-yellow with fine black markings and small crimson spots. The mature grasshopper has canary yellow and turquoise stripes on its body, green tegmina with yellow spots, and pale red hind wings.
 3. It changes its outward appearance by molting.
 4. The grasshopper feeds on the poisonous plant of *Calotropis*.
 5. Grasshoppers live in fields, meadows and just about anywhere they can find generous amounts of food to eat.

➤ CRICKETS



- **Scientific name :** *Acheta domestica*
- **Family :** *Gryllidae*
- **Class :** *Insecta*
- **Kingdom :** *Animalia*
- **Characteristics :**
 1. Crickets vary in length from 3 to 50 mm (0.12 to 2 inches). They have thin antennae, hind legs modified for jumping, three-jointed tarsal segments, and two slender abdominal sensory appendages.
 2. Male crickets produce musical chirping sounds by rubbing a scraper located on one forewing along a row of about 50 to 250 teeth on the opposite forewing.
 3. Both sexes have highly sensitive organs on the forelegs for sound reception.
 4. There is a direct relationship between the rate of cricket chirps and temperature, with the rate increasing with increasing temperature.
 5. Crickets play a large role in myth and superstition. Their presence is equated with good fortune and intelligence; harming a cricket supposedly causes misfortune.

➤ COCKROACH



- **Scientific name :** *Periplaneta americana*
- **Family :** *Blattidae*
- **Class :** *Insecta*
- **Kingdom :** *Animalia*
- **Characteristics :**
 1. They are found in many different habitats. Although they generally live in moist areas, they can survive in dry areas if they have access to water.
 2. They spend 75% of their time squeezed into narrow cracks and crevices for safety. The most preferred harborages are those of the proper size that are located near food and water sources, and which are warm and have a high relative humidity.
 3. Cockroaches eat almost anything, including one another. They mostly feed on organic material.
 4. This species is harmful to humans, and its impact on human health and economies is substantial.
 5. The greatest potential harm is that cockroaches are important agents for disease transmission. They mostly contaminate food.

➤ DARK BLUE TIGER BUTTERFLY



- **Scientific name :** *Tirumala septentrionis*
- **Family :** *Nymphalidae*
- **Class :** *Insecta*
- **Kingdom :** *Animalia*
- **Significance :**
 1. *Tirumala septentrionis*, the dark blue tiger, is a danaid butterfly found in the Indian subcontinent and Southeast Asia.
 2. Closely resembles *Tirumala limniace*, but is always sufficiently distinct to be easily recognized, even on the wing.
 3. From *T. limniace* it differs on the upper side in the ground color being darker and the semihyaline markings narrower, more distinct, and of a bluer tint.
 4. This species is one of the predominant species (78%) during the migratory season in southern India during which many species migrate. Both males and females appear to migrate in equal numbers.
 5. They are often found in gardens and fields.

CONCLUSION

Environment plays an important role in healthy living and the existence of life on planet earth. Earth is a home for different living species and we all are dependent on the environment for food, air, water, and other needs. Therefore, it is important for every individual to save and protect our environment. This project on Environmental Science has helped me gather knowledge about the flora and fauna about my own locality. It also enabled me to spend time with nature, which is indeed a necessity we ignore. What we conclude from this project is that it's high time we take steps to save the planet and make people be aware of our surroundings. We also learnt about the economic importance and harmful effects of some of the species around us. It was a relief from the mundane activities and a great source of gaining practical knowledge.

ACKNOWLEDGEMENTS

I would begin by heartily thanking our professors who had taken the initiative to provide us with this wonderful opportunity to get to know our environment. This project served as an aspect of research about my locality, getting to know about the different trees, flowers, animals, birds and insects that live alongside us. I would also like to thank our Principal and Vice Principal who had played an active role in organizing Environmental Science seminars and classes. I want to thank my parents for furnishing me with tad-bits of information that became really useful while making the project. Altogether, it was a golden experience and I thoroughly enjoyed making this project.

FLORA and
FAUNA
AUDITING of
Behala region



CU ROLL NO: 203223-11-0025

CU REGISTRATION

NO: 223-1211-0289-20

COLLEGE ROLL NO: MCBA20F423

SUBJECT: Environmental Science
Project (AECC 2)

SEMESTER: 2

COLLEGE: Scottish Church College

INDEX

1.INTRODUCTION

2.FAUNA

ANIMALS

- DOG
- CAT
- MONKEY
- MONGOOSE
- SQUIRREL

INSECTS

- BUTTERFLY
- MOTH
- CATERPILLAR
- BEE
- LADYBIRD BEETLE
-

BIRDS

- PARROT
- CUCKOO
- KINGFISHER
- WOODPECKER
- SPARROW

3.FLORA

PLANTS

- COCONUT
- BANANA
- MANGO
- NEEM
- JACKFRUIT

FLOWERS

- MARIGOLD
- JUNGLE GERANIUM
- JASMINE
- BOUGAINVILLEA
- CHINAROSE

4. CONCLUSION

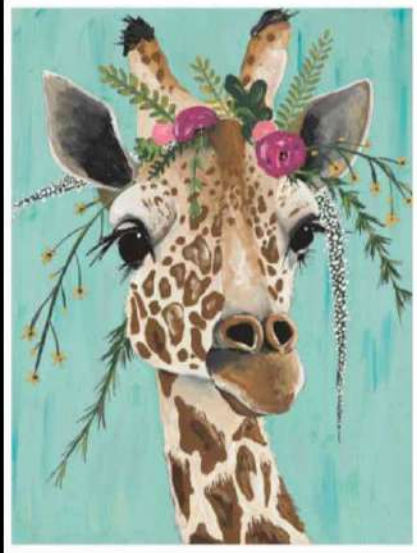
5. ACKNOWLEDGEMENT

INTRODUCTION TO THE PROJECT:

Each and every place on this Earth has its own unique biodiversity, be it snow-clad mountains, lush plains and valleys, barren deserts or dense magnificent forests. By the term "Flora and Fauna Auditing" we basically mean the identification, listing and study of various types of organisms present in that particular region. The organisms are noted down along with their scientific names, uses, economic importance, medicinal values, ecological significance and even hazardous properties too.

As for my project "*THE FLORA AND FAUNA AUDITING OF BEHALA REGION*" I've chosen five plants, five flowers, five animals, five birds and five insects for the audit and have tried to provide their particular scientific names, uses and significance along with their harmful aspects (if any).

FAUNA



If having a soul means being able to feel love and loyalty and gratitude, then animals are better off than a lot of humans." ~ James Herriot



1. Animals



DOG

Scientific name: *Canis lupus familiaris*

Importance of Dogs:

1. Dogs are the first animals to be domesticated by prehistoric men.
2. They provide a sense of security for human companions. Trained watch-dogs can provide a high degree of security.
3. Dogs raised as service, assistance or therapy animals can open up the world for disabled individuals.
4. They provide companionship and company, and are referred to as "man's best friend".



CAT

Scientific name: *Felis catus*

Importance of Cats:

1. They keep rodents under control.
2. Having cats around can have a dramatic impact on our mindsets. They help tackle stress and improve mood.



MONKEY

Scientific name: *Macaca mulatta*

Importance of Monkey:

1. They play a crucial role in dispersing the seeds of fruit trees in tropical forests.
2. They are also used in animal experiments when other methods or animal species cannot be used.
3. They are used in safety testing of new medicines and vaccines.



MONGOOSE (Small Asian mongoose)

Scientific name: *Herpestes javanicus*

Importance of Mongoose:

1. They mostly feed on insects , crabs, earthworms, lizards, birds, rodents, etc and keep their populations under control.
2. They can be semi-domesticated and are kept as pets to control snakes.



SQUIRREL

Scientific name: *Funambulus
palmarum*

Importance of Squirrel:

1. They are "Nature's Gardeners" and have an important ecological role, especially in forest ecosystems.
2. Their biggest contribution to the forest is shaping plant composition.
3. They have a peculiar habit of taking seeds which are their main source of food and burying them underground.



3. INSECTS



BUTTERFLY (Common Jay)

Scientific name: *Graphium doson*

Importance of Butterflies:

1. They are the agents of pollination.
2. They are an important source of food for small animals like birds.
3. Some species of butterfly provide a natural form of pest control.

Eg: the harvester butterfly eats aphids while it is in it's caterpillar stage.

4. Their presence and absence can tell us a lot about the local environment.



MOTH

Scientific name: *Gynnidomorpha
alimana*

Importance of Moths:

1. Important nocturnal pollinator of a wide range of plants.
2. Act as a food source for many insectivores like bats, lizards, birds, etc.
3. Silk moths are of great economic significance as the costly fabric silk is extracted from their pupa.

Harmful features of Moths:

1. Some moths, particularly their caterpillars, can be major agricultural pests.
2. Some are even considered as domestic pests since their larvae tend to eat fabrics like cloth, wool, silk etc and thus damaging them.



CATERPILLAR (Of Monarch Butterfly)

Scientific name: *Danaus plexippus*

Importance of Caterpillars:

1. Important source of food for birds and other invertebrates.
2. Many species help dead plants and animals to decompose.
3. They are of huge importance since they later develop into butterflies which are important pollinators of the ecosystem.

Harmful effects of Caterpillars:

1. Some species are pests of growing plants.
2. Cause damage to carpets, woolens, organic fabrics and stored food products.



Bee (Indian bee)

Scientific name: *Apis cerana indica*

Importance of Bees:

Bees are the agents of pollination. They are responsible for pollinating nearly 85% of all food crops for human as well as numerous crops that are food to the **cattle**

Economic importance of Bees:

Honey bees produce honey (which is rich in vitamins and minerals), beeswax, propolis, royal jelly and bee pollen (used for making health supplements).



LADYBIRD BEETLE

Scientific name: *Coccinella septempunctata*

Importance of Ladybird beetles:

1. Ladybird beetles are considered as beneficial bugs which consume a large number of damaging aphids, mealybugs, and other insect pests.

The adult ladybird beetle feeds on these insects and lays their eggs among the aphids or other prey so the emerging larva can feed on the insects too.

2. Act as a food source of several birds and small animals.



2. BIRDS



PARROT (Rose-ringed Parakeet)

Scientific name: *Psittacula krameri*

Importance of Parrots:

1. Help the environment mostly by transporting seeds around since they eat a large variety of different seeds and thus promote the growth of a large variety of plants.
2. They are best known for their ability to precisely mimic sounds including human speech.
3. They are often caged and kept as pet birds.



KOEL (Asian Koel)

Scientific name: *Eudynamys scolopaceus*

Importance of Koels:

1. Some species of Koels are brood-parasites laying their eggs in the nests of other species.
2. They have an extremely melodious cooing tone which is pleasant to hear.



KINGFISHER (Common Kingfisher)

Scientific name: *Alcedo atthis*

Importance of Kingfishers:

They are most famous for hunting and eating fishes and some species so specialise in catching fish, but some other species may eat crustaceans, frogs and other amphibians, annelids, molluscs, insects.



WOODPECKER (Pileated Woodpecker)

Scientific name: *Dryocopus pileatus*

Importance of Woodpeckers:

They are very beneficial to our environment as they eat thousands of wood-boring insects and other garden pests.



HOUSE SPARROW

Scientific name: *Passer domesticus*

Importance of Sparrows:

1. They are primarily seed-eaters, but they also feed on small insects, worms like caterpillars, beetles and aphids which destroy certain plants.
2. Sparrows keep the population of insects in check otherwise the insects would have eaten certain plant species to extinction.



FLORA



"A barrel of
laughs should be enough, but it's not.
A good review is official and
enduring. A bad one is like a tub of
Flora. It spreads easily and lasts

for the whole festival" ~Dominic

Holland.

1. Plants



COCONUT

Scientific name: *Cocos nucifera*

Uses of Coconuts:

1. Coconut flesh is used as food, the water is a healthy refreshing drink, the oil is used for cooking and as a skin and hair oil.
2. The husks are used in making ropes and scrubbers and the wood can be used as fuel, leaves used for thatching and sticks as brooms.
3. Coconut fruit is rich in vitamins, minerals and powerful antioxidants which are good for health.



BANANA

Scientific name: *Musa acuminata*

Uses of Bananas:

1. Bananas are enriched with Potassium which is effective for cholesterol and high blood pressure. Also relieves stomach ulcers and constipation.
2. The banana stem is edible and is also used for making craft materials.
3. Leaves are used as natural platters.
4. Banana flowers are edible and are used in many delicacies of Bengal.



MANGO

Scientific name: *Mangifera indica*

Uses of Mangoes:

1. Rich in iron and vitamin C which increase iron level in the body after consumption.
2. Rich in fibers and polyphenols which decrease constipation and inflammation of bowels.
3. Rich in folate, zinc and vitamin B5.
4. Contains a high amount of vitamin A which improves eyesight and also has anti-cancer properties.



NEEM

Scientific name: *Azadirachta indica*

Uses of Neem:

1. Neem leaves have medicinal properties and are used for leprosy, eye disorders, intestinal worms, stomach upset, loss of appetite, skin ulcers, cardiovascular diseases, fever, diabetes, Gingivitis (gum disease) and liver problems.
2. Leaves and wood have antiseptic properties and are used as natural insecticides and pesticides.



JACKFRUIT

Scientific name: *Artocarpus heterophyllus*

Uses of Jackfruits:

1. Jackfruit is a good source of fiber and keeps bowel movements regular; also used in ulcers, diabetes, high blood pressure and skin problems.
2. Jackfruit seeds are edible and are used to make delicacies.
3. The wood is used to make furniture and musical instruments.



2.FLOWERS



MARIGOLD

Scientific name: *Tagetes erecta*

Uses of Marigold:

1. Heals skin wounds, burns and rashes.
2. Has antiseptic, anti-inflammatory and antioxidant, anti-edematous properties.
3. It can be used as natural pesticide and can also be used to repel bugs and prevent insect bites.
4. Also used as common gardening plants as the flowers are brightly coloured and quite attractive. Also used to make garlands.



JUNGLE GERANIUM

Scientific name: *Ixora coccinea*

Uses of Jungle Geranium:

1. Several species are used in traditional medicine, eg- as an astringent and to treat dysentery and tuberculosis.
2. It is also used as a common decorative plant since it is noted for its bright coloured flowers which are composed of many small blooms masses together.



JASMINE

Scientific name: *Jasminum sambac*

Uses of Jasmine:

1. It's been used for liver disease, liver pain due to cirrhosis and abdominal pain due to severe diarrhoea.
2. Used to cause relaxation (sedative).
3. Used to heighten sexual desire (aphrodisiac).
4. Jasmine essential oil is used in perfumery.



BOUGAINVILLEA

Scientific name: *Bougainvillea spectabilis*

Uses of Bougainvillea:

1. Beneficial for diabetes, helps to treat cough, used as an effective body detoxifier, helps ease joint pain and relieves fever.
2. Used as a common decorative plant because of its small brightly coloured attractive flowers.



CHINAROSE

Scientific name: *Hibiscus*

rosa-sinensis

Uses of Chinarose:

Has immense medicinal uses like:

1. Cools digestive glands and reduces the temperature of the blood by purging hot bile fluid from the gallbladder.
2. Leaves, fruits and roots are used in the treatment of dysmenorrhoea, poor circulation, stomach pains and swellings, constipation and liver problems.



CONCLUSION:

From this project, I've come to know a lot about my surrounding environment. There are so many plants, flowers, animals, birds and insects around us who affect the ecosystem and humans in various ways. There are a lot of organisms around us which may seem quite ordinary to us, but are of immense ecological and economical roles. Various products that we use in daily life like the food and medicines we consume, the clothes we wear, the furniture we use as well as fuel, and a lot more are obtained from the rich flora and fauna surrounding us.

But since Kolkata is a very populated city, naturally it's very polluted as well. For this reason, many species of birds, insects and plants are endangered and are facing the risk of extinction. so, to maintain the biodiversity around us, we the citizens must take certain actions to reduce this pollution as much as possible. Also, the Government should also take necessary steps and introduce laws regarding the safety of the environment and to cut off the pollution rate. If these small steps are taken, then I hope we can save our environment to some extent and can create a beautiful and serene environment around us.

ACKNOWLEDGEMENT

I would like to express my special thanks to the teachers of the Dept. Of Environmental Science, Scottish Church College, as well as to our beloved Headmistress who gave me the golden opportunity to do this wonderful project on the topic "Flora and Fauna Auditing of our locality", which also helped me in doing a lot of research work and I came to know about so many things about the biodiversity of our locality.

Secondly, I would also like to thank my parents and my friends who helped and supported me a lot in finishing this project within the limited time period.



ENVIRONMENTAL SCIENCE PROJECT

**UNIVERSITY OF
CALCUTTA**
(under CBCS)

SUBJECT : ENVS

PAPER : AECC - 2

SEMESTER : 2

CU ROLL NO. : 203223-11-0029

CU REG. NO. : 223-1211-0300-20

COLLEGE ROLL NO. :

MCBA20F426

**DEPARTMENT :
MICROBIOLOGY**

YEAR : 2021

**SEM - 2 FINAL
EXAMINATION**

INDEX

- INTRODUCTION

- FLORA :-

- Plants (Tulsi, Aloe vera, Curry plant, Palm tree, Lemon tree)
 - Flowers (Rose, Euphorbia, Oleander, Jasmine, Allamanda)

- FAUNA :-

- Birds (Cuckoo, Crow, Dove, Sparrow, Pigeon)
 - Insects (Mosquito, Honey bee, Cockroach, Butterfly, Spider)
 - Animals (Rat, Dog, Cat, Lizard, Frog)

- CONCLUSION

- ACKNOWLEDGEMENT

INTRODUCTION

Ecology is the study of the relation and interaction between organisms and their environment. Of all the living organisms on this planet, the most commonly seen by us are the plants and animals. Apart from these two more life forms are present but are hard to see with our naked eyes. This is why the flora and fauna i.e. plants and animals are fascinating to observe and study.

The term flora in Latin represents "Goddess of Flower". Flora is the collective term for a group of plant life found in a particular area.

Whereas, Fauna represents the animal life indigenous to a region. Animal kingdom comprises of a variety of life forms. Hence, the classification of fauna is more complex than floral division.

Here I am presenting a small study of "Flora and Fauna" to distinguish different kinds of trees, flowers, birds, insects, animals, etc. in Ramrajatala, Howrah.



*Ocimum
tenuiflorum*

Common name: Tulsi plant

DESCRIPTION: Holy basil or tulsi is an aromatic perennial plant in the family Lamiaceae.

It is native to the Indian subcontinent. It is an erect, many-branched subshrub with hairy stems. Leaves are green or purple.

SIGNIFICANCE: *Tulsi* is a sacred plant for Hindus and is worshipped as the avatar of Lakshmi.

Tulsi (Sanskrit:-*Surasa*) has been used in Ayurveda and Siddha practices for its supposed treatment of diseases. For centuries, the dried leaves have been mixed with stored grains to repel insects.



Aloe vera

Common name: Aloe Vera

DESCRIPTION: *Aloe vera* is a stemless or very short-stemmed plant growing to 60-100 centimetres tall, spreading by offsets.

The leaves are thick and fleshy, green to grey-green, with some varieties showing white flecks on their upper and lower stem surfaces.

SIGNIFICANCE: Two substances from *Aloe vera* - a clear gel and its yellow latex - are used to manufacture commercial products.

Aloe gel typically is used to make topical medications for skin conditions, such as burns, wounds, frostbite, rashes, psoriasis, cold sores, or dry skin. Aloe latex is used individually or manufactured as a product with other ingredients to be ingested for relief of constipation.



Murraya koenigii
Common name: Curry plant

DESCRIPTION: The curry tree is a tropical to sub-tropical tree in the family Rutaceae.

The plant is also sometimes called sweet neem.

The aromatic leaves are pinnate. The berry pulp is edible, with a sweet flavor.

SIGNIFICANCE: The fresh leaves are an indispensable part of Indian cuisine and Indian traditional medicines.

They are most widely used in southern and west coast Indian cooking.



Areca sp.

Common name: Palm tree

DESCRIPTION: Palms are among the best known and most extensively cultivated plant families.

They are distinguished by their large, compound, evergreen leaves, known as fronds, arranged at the top of an unbranched stem.

SIGNIFICANCE: Human use of palms is at least as old as human civilization itself.

They have economic importance, including coconut products, oils, dates, palm syrup, ivory nuts, carnauba wax, rattan cane, raffia, and palm wood.



Citrus limon

**Common name: Lemon
tree**

DESCRIPTION: The lemon is a species of small evergreen tree in the flowering plant family Rutaceae.

The tree's ellipsoidal yellow fruit is used for culinary and non-culinary purposes throughout the world, primarily for its juice, which has both culinary and cleaning uses.

The pulp and rind are also used in cooking and baking.

SIGNIFICANCE: Lemon juice, rind, and peel are used in a wide variety of foods and drinks.

Lemon is a rich in vitamin C.

Lemon oil may be used in aromatherapy.



Rosa sp.
Common name: Rose

DESCRIPTION: A rose is a woody perennial flowering plant of the family Rosaceae. They form a group of plants that can be erect shrubs, climbing, or trailing, with stems that are often armed with sharp prickles. Flowers vary in size and shape and are usually large and showy, in colours ranging from white through yellows and reds.

SIGNIFICANCE: Roses are best known as ornamental plants grown for their flowers in the garden and sometimes indoors.

They have been also used for commercial perfumery and commercial cut flower crops. Some are used as landscape plants, for hedging and for other utilitarian purposes.



Euphorbia milii
Common name: Mili
Flower

DESCRIPTION: It is a woody succulent subshrub or shrub growing to 1.8 m tall, with densely spiny stems.

The straight, slender spines, up to 3 cm long, help it scramble over other plants. The fleshy, green leaves are found.

The flowers are small, subtended by a pair of conspicuous petal-like bracts, variably red, pink or white.

SIGNIFICANCE: This plant itself has proven to be an effective molluscicide and a natural alternative to pest control.

These plants are very important to humans when it comes to developing drugs for ailments.



Nerium oleander
Common name: Karabi
flower

DESCRIPTION: It is a shrub or small tree cultivated worldwide in temperate and subtropical areas as an ornamental plant.

White, pink or red five-lobed flowers grow in clusters year-round, peaking during the summer.

SIGNIFICANCE: Oleander is a vigorous grower in warm subtropical regions, where it is extensively used as an ornamental plant in parks, along roadsides and in private gardens.

Oleander has historically been considered a poisonous plant because some of its compounds may exhibit toxicity, especially to animals, when consumed in large amounts.



Jasminum sambac
Common name: Jasmine

DESCRIPTION: It is

an evergreen vine or shrub.

The flowers bloom all throughout the year and are produced in clusters of 3 to 12 together at the ends of branches.

They are strongly scented.

SIGNIFICANCE: It is one of the most commonly grown ornamentals in India, Bangladesh and Pakistan.

The LD50 of jasmine extract is greater than 5 mg/kg by weight. *Jasminum sambac* has been shown to have antifungal activity.



Allamanda blanchetii
Common name: Red Bell

DESCRIPTION: It is a species of perennial flowering plant in the family Apocynaceae. It cultivated as an ornamental plant.

This plant's flowers are purple, bell-shaped.

They contain a white latex.

SIGNIFICANCE: *Allamanda* species have been used in systems of traditional medicine for various purposes.

In lab analyses *Allamanda* species have yielded several chemical compounds, including iridoid lactones such as allamandin, plumericin, and plumierides.



Cuculus canorus
Common name: Cuckoo

DESCRIPTION: The cuckoos are generally medium-sized slender birds.

Most species live in trees, though a sizeable minority are ground-dwelling.

The family has a cosmopolitan distribution.

The majority of species are tropical. Some species are migratory.

The cuckoos feed on insects, insect larvae and a variety of other animals, as well as fruit.

Some species are brood parasites, laying their eggs in the nests of other species, but the majority of species raise their own young.

Cuckoos are often highly secretive and in many cases best known for their wide repertoire of calls.

Calls are usually relatively simple, resembling whistles, flutes, or hiccups.

The calls are used in order to demonstrate ownership of a territory and to attract a mate.



Corvus leuiscantii
Common name: Crow

DESCRIPTION: Crows are generally smaller and not as thick-billed as ravens, which belong to the same genus.

Crows feed chiefly on the ground, where they walk about purposefully.

They are omnivores that enjoy meat and may even attack and kill young, weak animals.

Highly intelligent, crows can be masterful mimics.

They also exhibit great curiosity, fueling a reputation as inventive pranksters and calculating thieves.



*Columba livia
domestica*
Common name: Dove

DESCRIPTION: A release dove is also called a white pigeon. It is a domestic rock dove bred for small size and white coloration that is released during events, such as public ceremonies, weddings and funerals.

They can be used a symbols at these places.

The pigeons bred for dove release services are bred for their color and small size, not for their homing abilities or flight speed.



Passer domesticus
Common name: Sparrow

DESCRIPTION: It is a small bird.

Females and young birds are coloured pale brown and grey. Males have brighter black, white, and brown markings.

The house sparrow is strongly associated with human habitation, and can live in urban or rural settings.

Though found in widely varied habitats and climates, it typically avoids extensive woodlands, grasslands and deserts away from human development.

It feeds mostly on the seeds of grains and weeds, but it is an opportunistic eater and commonly eats insects and many other foods.

Its predators include domestic cats, hawks, and many other predatory birds and mammals.



Columba livia

Common name: Pigeon

DESCRIPTION: Pigeons are gentle, plump, small-billed birds with a skin saddle (cere) between the bill and forehead.

All pigeons strut about with a characteristic bobbing of the head.

Because of their long wings and powerful flight muscles, they are strong, swift fliers.

Pigeons are monogamous; i.e., they mate for life, and the survivor accepts a new mate only slowly.

The female lays two glossy white eggs in a flimsy nest that barely holds them.

The sensitivity of the pigeons to these physical properties allows them to determine their directional heading and altitude by using Earth's magnetic field.



Culiseta longiareolata
**Common name: Culex
mosquito**

DESCRIPTION: Mosquitoes have a slender segmented body, one pair of wings, one pair of halteres, three pairs of long hair-like legs, and elongated mouthparts.

The mosquito life cycle consists of egg, larva, pupa, and adult stages. Eggs are laid on the water surface; they hatch into motile larvae that feed on aquatic algae and organic material.

The adult females of most species have tube-like mouthparts (called a proboscis) that can pierce the skin of a host and feed on blood, which contains protein and iron needed to produce eggs.

Mosquitoes are important vectors of diseases such as malaria, yellow fever, Chikungunya, West Nile, dengue fever, filariasis, Zika and other arboviruses.



Apis mellifera
Common name: Honey
bee

DESCRIPTION: Honey bees are known for their construction of perennial colonial nests from wax, the large size of their colonies, and surplus production and storage of honey, distinguishing their hives as a prized foraging target of many animals, including honey badgers, bears and human hunter-gatherers.

The best known honey bee is the western honey bee (*Apis mellifera*), which has been domesticated for honey production and crop pollination.

Modern humans also value the wax for use in making candles, soap, lip balms, and various cosmetics.



Periplaneta americana
Common name: Cockroach

DESCRIPTION: The American cockroach (*Periplaneta americana*) is the largest species of common cockroach, and often considered a pest.

The cockroach is divided into three sections; the body is flattened and broadly oval, with a shield-like pronotum covering its head.

It has a pair of large compound eyes, which provide a kind of vision known as the mosaic vision with more sensitivity but less resolution, being common during night.

The American cockroach has been used as an ingredient in traditional Chinese medicine.



Rhopalocera sp.
Common name: Butterfly

DESCRIPTION: Butterflies are active during the day and are usually brightly coloured or strikingly patterned.

The most distinctive physical features of the butterfly are its club-tipped antennae and its habit of holding the wings vertically over the back when at rest.

Butterflies are often polymorphic, and many species make use of camouflage, mimicry and aposematism to evade their predators.

Butterflies feed primarily on nectar from flowers.

They use their antennae to sense the air for wind and scents.



*Parasteatoda
tepidariorum*

**Common name: House
Spider**

DESCRIPTION: Common house spiders are variable in color from tan to nearly black, frequently with patterns of differing shades on their body. Their prey mechanism is similar to that of the other cobweb spiders: the spider follows disturbances transmitted along the web to entangle and then paralyze its prey, which usually consists of household insects and other invertebrates.

Common house spiders have neurotoxic venom. However, their bites are less severe than that of other theridiids and are "not known to be dangerous to humans".



Mus musculus
Common name: Mouse or
Rodent

DESCRIPTION: The house mouse is a small mammal of the order Rodentia, characteristically having a pointed snout, large rounded ears, and a long and hairy tail.

The house mouse has been domesticated as the pet or fancy mouse, and as the laboratory mouse which is one of the most important model organisms in biology and medicine.

House mice usually run, walk, or stand on all fours, but when eating, fighting, or orienting themselves, they rear up on their hind legs with additional support from the tail - a behavior known as "tripoding".

Mice are good jumpers, climbers, and swimmers, and are generally considered to be thigmotactic, i.e. usually attempt to maintain contact with vertical surfaces.



Canis familiaris
Common name: Dog

DESCRIPTION: Dogs are known to be a highly adaptive and intelligent species.

The dog's skeleton is well adapted for running; the vertebrae on the neck and back have extensions for powerful back muscles to connect to, the long ribs provide plenty of room for the heart and lungs, and the shoulders are unattached to the skeleton allowing great flexibility.

A dog's senses include vision, hearing, smell, taste, touch, and sensitivity to Earth's magnetic field.

They perform many roles for humans, such as hunting, herding, pulling loads, protection, assisting police and the military, companionship, therapy, and aiding disabled people. This influence on human society has given them the sobriquet of "man's best friend."



Felis catus
Common name: Cat

DESCRIPTION: The cat is a domestic species of small carnivorous mammal.

They have a strong flexible body, quick reflexes, sharp teeth and retractable claws adapted to killing small prey.

Their night vision and sense of smell are well developed.

Cat

communication includes vocalizations like meowing, purring, trilling, hissing, growling and grunting as well as cat-specific body language.

Female domestic cats can have kittens from spring to late autumn, with litter sizes often ranging from two to five kittens.



Hemidactylus frenatus
Common name: House Lizard or
gecko

DESCRIPTION: Most geckos are nocturnal, hiding during the day and foraging for insects at night. They can be seen climbing walls of houses and other buildings in search of insects attracted to porch lights, and are immediately recognisable by their characteristic chirping. They are very adaptable and may prey on insects and spiders. Primary invertebrate food sources include cockroaches, termites, some bees and wasps, butterflies, moths, flies, spiders, and several beetle groupings.



Rana temporaria
Common name: Frog

DESCRIPTION: It is a semi-aquatic amphibian of the family Ranidae.

They metamorphose through three distinct developmental life stages — aquatic larva, terrestrial juvenile, and adult.

They have corpulent bodies with a rounded snout, webbed feet and long hind legs adapted for swimming in water and hopping on land.

Common frogs eat insects, their larvae, wood lice, spiders, snails and worms.

During the spring the frog's pituitary gland is stimulated by changes in external factors, such as rainfall, day length and temperature, to produce hormones which, in turn, stimulate the production of sex cells - eggs in the females and sperm in the male.

CONCLUSION

As a conclusion, flora and fauna constitute our environment. Humans are mainly responsible for the destruction of flora and fauna. So, people can give efforts to respect the law of protection of flora and fauna.

It is important because we should live in a healthy environment and must conserve our biodiversity.

This project "THE STUDY OF FLORA AND FAUNA" gives us all the details about the living world in our surroundings. It also makes us aware of the virtues and vices of the biodiversity. Thus this project helped me to do a detailed study of my locality and gain the knowledge about it.

ACKNOWLEDGEMENT

Many people have helped me to complete this project within the stipulated time. I am overwhelmed with gratitude to acknowledge my debt to all of them. I would like to thank all of them.

I would like to thank our respected Principal and Vice Principal and our Professors to provide me this golden opportunity of doing this wonderful project on our environment.

Any attempts at my level could not have been satisfactory without the support and help of my Friends. The guidance and faith of my Parents have also motivated me. Thus, I thank my friends and my family for helping me complete this project successfully.



PROJECT

Subject: ENVS (AECC2)

Paper: 2

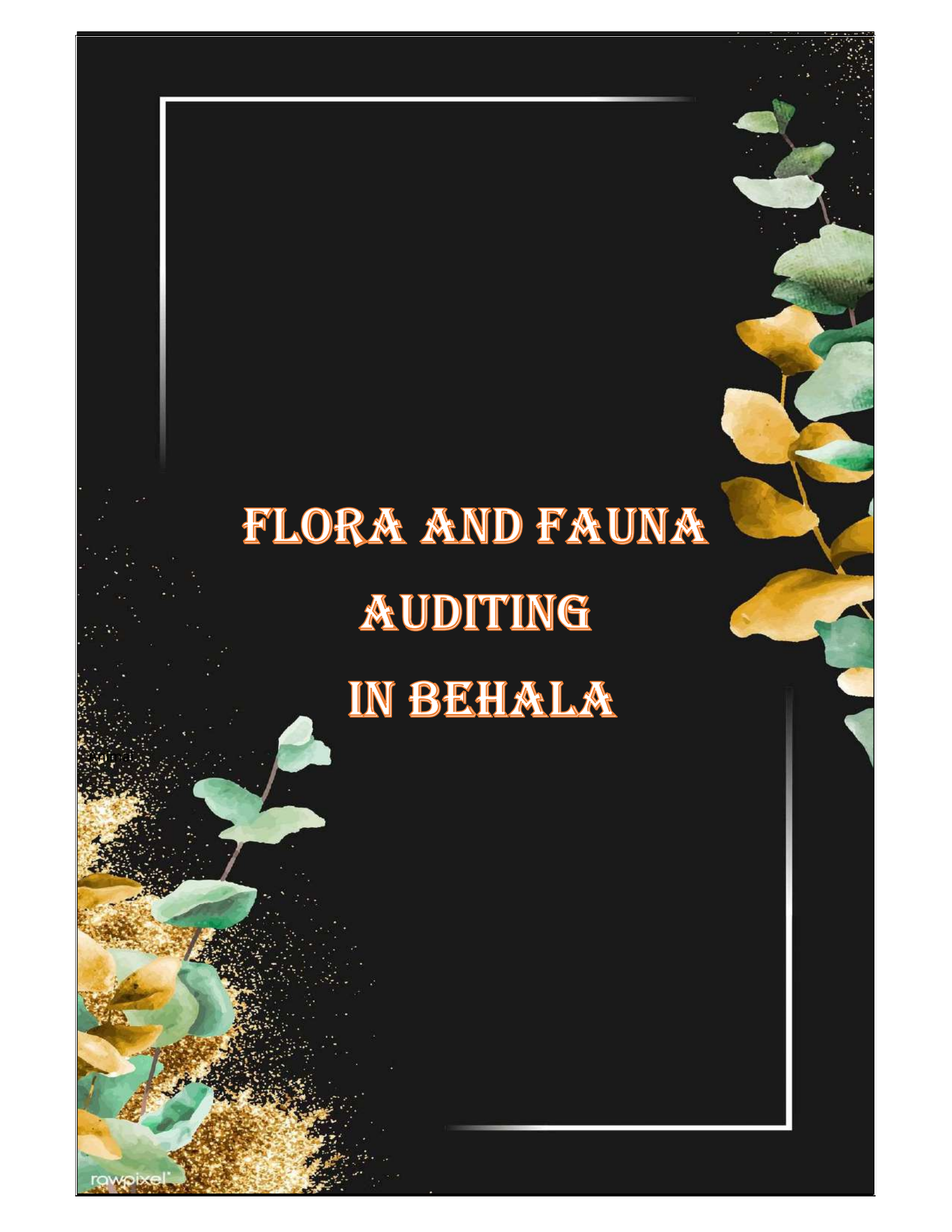
Semester: 2

**Department: Department of
Microbiology**

College Roll No.: MCBA20F427

CU Roll No.: 203223-11-0033

CU Reg. No.: 223-1211-0307-20



**FLORA AND FAUNA
AUDITING
IN BEHALA**



Introduction

Environment can be defined as a sum total of all the living and non-living elements and their effects that influence human life.

The project “Flora and Fauna Auditing in Behala” mainly focuses on the environment of my locality ‘Behala’. Being a part of the metropolitan city ‘Kolkata’, Behala has stretches of urbanization. So, a vast variety of flora and fauna cannot be observed here. Even though there is a pretty number of species of plants and animals that are common to a plain urbanized land.



Content

Species under Flora:

- Trees: Mango, Neem, Banana, Papaya, Guava
- Flowers: Marigold, Hibiscus, Bluebell Vine,
Rose, Four o'clock Flower

Species under Fauna:

- Birds: Sparrow, Parrot, Pigeon, Kingfisher,
Crow
- Insects: Honey Bee, Black Garden Ant,
Grasshopper, Mosquito. Butterfly
- Animals: Frog, House Lizard, Mouse, Dog,
Checkered keelback Snake

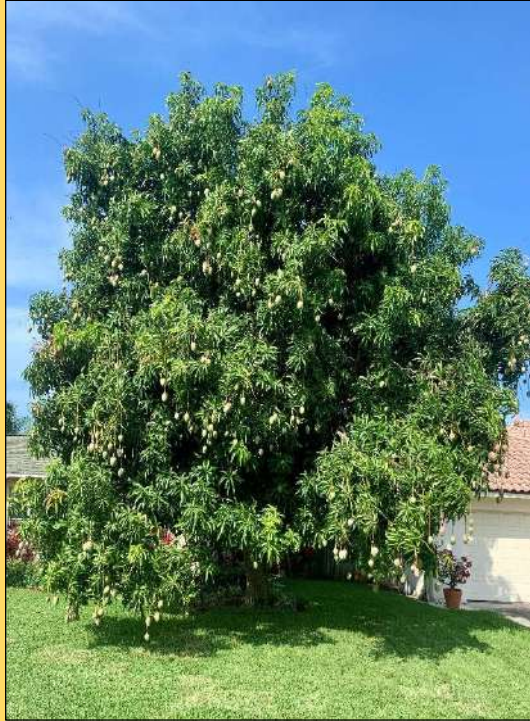


A close-up photograph of a purple lotus flower in full bloom. The petals are numerous and layered, showing a vibrant purple hue. The center of the flower is filled with yellow stamens. The background is a soft-focus green, suggesting a pond with lily pads. The word "FLORA" is written in a gold, serif font with a thin white outline, centered over the flower's center.

FLORA

MANGO TREE

Scientific Name: *Mangifera indica*



Description:

- They grow to 30–40 m (98–131 ft) tall
- the taproot descends to a depth of 6 m (20 ft), with profuse, wide-spreading feeder roots and anchor roots penetrating deeply into the soil.
- The leaves are evergreen, alternate, simple
- Numerous phytochemicals are present in mango peel and pulp
- Mango peel pigments under study include carotenoids,

Benefits:

- Prevents anemia: Mango is rich in iron. Consuming mango in adequate quantities helps in increasing iron levels. Also, the vitamin C present in mango increases the absorption of iron.
- Improves digestion: Disorders of the digestive system are a major cause of poor health. Being rich in fiber and polyphenols, consuming mango aids in decreasing constipation and inflammation of the bowels.
- Improves eyesight: It is due to the presence of an abundance of carotenoids which help in improving eyesight.

NEEM TREE

Scientific Name: *Azadirachta indica*



Description:

- is a tree in the mahogany family *Meliaceae*
- Neem is a fast-growing tree that can reach a height of 15–20 metres
- It is deciduous, shedding many of its leaves during the dry winter months.
- The opposite, pinnate leaves are 20–40 cm long, with 20 to 30 medium to dark green leaflets
- White and fragrant flowers are arranged in more-or-less drooping axillary panicles

Benefits:

- Neem leaf is used for leprosy, eye disorders, bloody nose, intestinal worms, stomach upset.
- The bark is used for malaria, stomach and intestinal ulcers, skin diseases, pain, and fever.
- The flower is used for reducing bile, controlling phlegm, and treating intestinal worms.
- The fruit is used for hemorrhoids, intestinal worms, urinary tract disorders, bloody nose, phlegm, eye disorders, diabetes, wounds, and leprosy.
- Neem is also used as an insecticide.

BANANA TREE

Scientific Name: *Musa acuminata*



Description:

- The banana plant is a gigantic herb that springs from an underground stem, or rhizome, to form a false trunk.
- A large flower spike, carrying numerous yellowish flowers protected by large purple-red bracts.
- The individual fruits, or bananas, are grouped in clusters, or hands, of 10 to 20.

Benefits:

- The fruit is a source of vital nutrients. It is also a great digestive, which aids bowel movement and contains good fibre for your gut. Rich in vitamin B6 as well as vitamin C, it helps your body absorb iron better, increasing the haemoglobin count and overall blood and cardiovascular health.
- The flower is good for people looking to prevent and control type 2 diabetes because it balances out blood sugar levels in the body
- Consumed with fibre, banana stem slows down the release of sugar and fats stored in the body's cells.
- Raw bananas are an excellent way to get all the benefits of the banana, with lesser natural sugars.

PAPAYA TREE

Scientific Name: *Carica papaya*



Description:

- The plant is crowned by deeply lobed leaves, borne on hollow petioles (leaf stalks).
- the species is dioecious, male and female flowers being produced on separate plants.
- the flowers are funnel-shaped and whitish, with 10 stamens.
- The very juicy flesh is deep yellow or orange to salmon-coloured with wrinkled black seeds.

Benefits:

- One of the most prominent medicinal benefits of papaya leaf is its potential to treat certain symptoms associated with dengue fever.
- Papaya leaf is often used as a natural therapy for treating diabetes and improving blood sugar control.
- Papaya leaf teas and extracts are often used as an alternative therapy to alleviate uncomfortable digestive symptoms, such as gas, bloating, and heartburn.
- Papaya is rich in Vitamin A which helps protect your vision from degenerating
- Papaya is a rich source of antioxidants, phytonutrients and flavonoids that prevent your cells from undergoing free radical damage.

GUAVA TREE

Scientific Name: *Psidium guajava*



Description:

- Guava, small tropical tree or shrub of the family Myrtaceae, cultivated for its edible fruits
-
- It produces four-petaled white flowers
-
- The fruit has a yellow skin and white, yellow, or pink flesh.
- The fruits are round to pear-shaped and their pulp contains many small hard seeds.

Benefits:

- Fresh guavas are rich in vitamins A, B, and C.
- Guava is called the super fruit because it is said to contain four times more vitamin C than orange and three times more proteins and four times more fibre than pineapple. It is also said to have more potassium than a banana.
- Vitamin C, lycopene and other types of polyphenols act as antioxidants that help in neutralising infections in the body that prevent the growth of cancerous cells
- Guava contains high amounts of sodium and potassium that helps the body to balance and regulate high blood pressure in patients suffering from hypertension.

MARIGOLD

Scientific name: *Tithonia diversifolia*



Description:

- *Tithonia diversifolia* is 2–3 m in height with upright and sometimes ligneous stalks in the form of woody shrubs.
- The large, showy flowers are yellow to orange colored.
- Leaves are sub-ovate, serrate, acute, 10 to 40 cm long.

• Uses:

Ointment can be used to soothe sunburns, warts, bites, acne and ulcerations, in addition to healing wounds, dry skin and blisters.

• Benefits:

- (1) Lowers Inflammation and Free Radical Damage
- (2) Reduces Eye Inflammation and Conjunctivitis
- (3) Has Natural Antiseptic Properties
- (4) Helps Reduce Haemorrhoid Pain
- (5) Eases Cramps and Spasms
- (6) Heals Skin Wounds, Burns and Rashes

• Economic importance:

Marigold is one of the most important commercially grown loose flower crops in India. It is used as loose flower or to make garlands, which are extensively used in the religious and social functions.

• Side effects:

Symptoms of an allergic reaction include: rash, itching, swelling, dizziness, trouble breathing

HIBISCUS

Scientific Name: *Hibiscus rosa-sinensis*



Description:

- Hibiscus rosa-sinensis is a bushy, evergreen shrub or small tree.
- The flowers are large, conspicuous, trumpet-shaped, with five petals and their colors can be white to pink, red and yellow.
- It is a complete flower with all the four whorls i.e., calyx, corolla, androecium and gynoecium.
- The root is a branched tap root.

- **Uses:**

- (a) The flower is additionally used in hair care as a preparation
- (b) It is also used to shine shoes in certain parts of India.
- (c) It can also be used as a pH indicator.

- **Benefits:**

- (a) It is also beneficial for the liver and helps to cure constipation.
- (b) With the increasing antioxidant levels, hibiscus reduces low-grade systemic inflammation when the lymphatic system is not in a good health.
- (c) Drinking hibiscus tea can help to reduce menopausal problems

- **Economic importance:**

Rose cultivation provides employment to workers in the farming, transportation, marketing, delivery industries as well as wholesale and retail sales outlets

- **Side effects:**

Side effects of hibiscus are uncommon but might include temporary stomach upset or pain, gas, constipation, nausea, painful urination,

BLUEBELL VINE

Scientific Name: *Clitoria ternatea*



Description:

- It is a perennial herbaceous plant, with elliptic, obtuse leaves.
- It grows as a vine or creeper, doing well in moist, neutral soil.
- the color of its flowers, a vivid deep blue; solitary, with light yellow markings.
- The fruits are 5–7 cm long, flat pods with six to ten seeds in each pod.

• **Uses:**

- (a) the flower is used as a natural food colouring to colour glutinous rice and desserts like the Eurasian putugal.
- (b) The flowers have more recently been used in a colour-changing gin.

• **Benefits:**

In traditional Ayurvedic medicine, it is ascribed various qualities including memory enhancing, nootropic, antistress, anxiolytic, antidepressant, anticonvulsant, tranquilizing, and sedative properties

• **Importance:**

In India, it is revered as a holy flower, used in daily puja rituals.

ROSE

Scientific Name: *Rosa damascena*



Description:

- A rose is a woody perennial flowering plant of the genus *Rosa*
- They form a group of plants that can be erect shrubs, climbing, or trailing, with stems that are often armed with sharp prickles.
- Flowers vary in size and shape and are usually large and showy, in colours ranging from white through yellows and reds

• Uses:

- a) The majority of ornamental roses are hybrids that were bred for their flowers.
- b) Roses are a popular crop for both domestic and commercial cut flowers
- c) Rose perfumes are made from rose oil (also called attar of roses), which is a mixture of volatile essential oils obtained by steam distilling the crushed petals of roses.
- d) An associated product is rose water which is used for cooking, cosmetics, medicine and religious practices.
- e) Rose hips are occasionally made into jam, jelly, marmalade, and soup or are brewed for tea, primarily for their high vitamin C content
- f) Many roses have been used in herbal and folk medicines.
- g) Wild roses are host plants for a number of pests and diseases

FOUR O'CLOCK FLOWER

Scientific Name: *Mirabilis jalapa*



Description:

- The flowers usually open from late afternoon or at dusk
- Flowers then produce a strong, sweet-smelling fragrance throughout the night
- It is a perennial, herbaceous, bushy plant that reaches stature heights
- The single-seeded fruits are spherical, wrinkled and black upon maturity, having started out greenish-yellow.

• **Uses:**

- a) it is common in many tropical regions and is also valued in Europe as a (not hardy) ornamental plant.
- b) The flowers are used in food colouring
- c) .
- d) An edible crimson dye is obtained from the flowers to color cakes and jellies.
- e) Powdered, the seed of some varieties is used as a cosmetic and a dye.

• **Benefits:**

- a) In herbal medicine, parts of the plant may be used as a diuretic, purgative, and for vulnerary (wound healing) purposes.
- b) the powder of dried flowers to cure headaches and use the root decoction to wash wounds and treat skin conditions such as leprosy.

• **Side effects:**

The seeds are considered poisonous

A close-up photograph of a blue and yellow macaw parrot. The parrot is shown from the chest up, facing slightly to the right. Its feathers are vibrant blue on the head and wings, and bright yellow on the neck and chest. The background is a soft, out-of-focus green, suggesting a natural habitat. The word "FAUNA" is overlaid in the center of the image in a white, stylized, serif font with a blue outline. The text is contained within a white rectangular border.

FAUNA

SPARROW

Scientific Name: *Passer domesticus*



Description:

- , sparrows are small, plump, brown-grey birds with short tails and stubby, powerful beaks.
- Females and young birds are coloured pale brown and grey, and males have brighter black, white, and brown markings.
- One peculiar behavior of House Sparrow is dust bathing.

Ecological importance:

- Sparrow serves the ecosystem of the earth. Sparrows mostly prefer seeds of millet, thistle, weed and sunflower seed. However, they also eat fruits and berries.
- During this process, sparrows spread seeds to places away from the fruit tree.
- By spreading seeds, sparrows help the survival of many plants that are the producers in an ecosystem.

Reasons for their population decline:

- Loss of habitat
- Modern lifestyle
- Loss of tree canopy
- Cell phone towers

RING-NECKED PARAKEET

Scientific Name: *Psittacula krameri*



Description:

- The most obvious physical characteristic is the strong, curved, broad bill.
- Parrots have strong zygodactyl feet with sharp, elongated claws, which are used for climbing and swinging
- Many parrots are vividly coloured, and some are multi-coloured.

Behavior:

- The most important components of most parrots' diets are seeds, fruits like nuts, buds and other plant material.
- Parrots are among the most intelligent birds and the ability of some species to make sounds like human voices enhances their popularity as pets.

Ecological importance:

- The parrot plays an important role in its habitat by helping to propagate the forest. Because not all of the seeds consumed are digested, many are passed in the bird's guano over new areas of the forest.
- Some species eat nectar and are important in the pollination of many species of plants in the tropical forests.

Reasons for their population decline:

The capture of wild parrots for the pet trade, as well as hunting, habitat loss and competition from invasive species, has diminished wild populations

PIGEON

Scientific Name: *Columba livia domestica*



Description:

- The rock pigeon is the world's oldest domesticated bird.
- These are stout-bodied birds with short necks, and short slender bills that in some species feature fleshy ceres
- The wings are large, and have eleven primary feathers;

Importance:

- Pigeons have made contributions of considerable importance to humanity, especially in times of war.
- In war the homing ability of pigeons has been put to use by making them messengers. So-called war pigeons have carried many vital messages and some have been decorated for their services.
- Pigeons are also kept by enthusiasts for the enjoyment of Flying/Sporting competitions.

Reasons for their population decline:

- People ate passenger pigeons in huge amounts, but they were also killed because they were perceived as a threat to agriculture.
- The deforestation of land destroyed its habitat, and infectious diseases spread through the colonies

KINGFISHER

Scientific Name: *Alcedo atthis*



Description:

- Kingfishers are a family of small to medium-sized, brightly colored birds
- The plumage of most kingfishers is bright, with green and blue being the most common colours.
- The kingfishers have long, dagger-like bills.
- The kingfishers have excellent vision; they are capable of binocular vision

Behaviour:

- Kingfishers feed on a wide variety of prey. They are most famous for hunting and eating fish, and some species do specialize in catching fish
- they are capable of compensating for the refraction of water and reflection when hunting prey underwater, and are able to judge depth under water accurately.
- Kingfishers are generally shy birds, but in spite of this, they feature heavily in human culture

Reasons for their population decline:

- A number of species are considered threatened by human activities and are in danger of extinction.
- They are threatened by habitat loss caused by forest clearance or degradation and in some cases by introduced species

CROW

Scientific name: *Corvus splendens*



Description:

- The forehead, crown, throat and upper breast are a richly glossed black, whilst the neck and breast are a lighter grey-brown in colour .
- The wings, tail and legs are black.
- the legs are strong and the tail is short and wedge-shaped .

Behaviour:

- Crows gather in large communal roosts These gatherings tend to happen near large food sources such as garbage dumps and shopping centers.
- House crows feed largely on refuse around human habitations, small reptiles and mammals, they are omnivorous animal
- At least some trees in the local environment seem to be necessary for successful breeding although house crows occasionally nest on telephone towers.
- The voice is a harsh kaaw-kaaw

Ecological importance:

- crows play a vital role in waste management.
- They consume tons of waste every year, preventing the spread of diseases and bad odor.
- They consume tons of waste every year, preventing the spread of diseases and bad odor.

HONEY BEE

Scientific Name: *Apis cerana*



Description:

- Honey bees are usually oval-shaped creatures with golden-yellow colors and brown bands.
- The body of the honey bee is segmented: stinger, legs, antenna, three segments of thorax and six visible segments of abdomen.
- The eyes include the compound eye and the simple eye

Behaviour:

- In the wild, honey bee hives are often located in the holes of trees and on rock crevices.
- The hive is made from wax from the special abdominal glands of worker honey bees
- Honey bees are social creatures and live-in colonies.
- drones are ejected from their nests during cold weather.

Ecological importance:

- 1. Biodiversity: As pollinators, bees play a part in every aspect of the ecosystem.
- 2. Wildlife Habitats: Bees are known for their elaborate hives, but they also help build homes for millions of other insects and animals.
- 3. Pollination: As bees move from flower to flower in search of nectar, they leave behind grains of pollen on the sticky surface, allowing plants to grow and produce food.

BLACK GARDEN ANT

Scientific name: *Lasius niger*



Description:

- The queen has glossy black color but appears to have slight brown stripes on her abdomen
- ants have an exoskeleton
- their respiratory organ consists of spiracles
- they have an open circulatory system

Behaviour:

- in the early stages of founding can have two to three other queens in the nest. then it is most likely they will fight until one queen remains.
- Ants communicate with each other using pheromones, sounds, and touch
- Ants attack and defend themselves by biting and, in many species, by stinging, often injecting or spraying chemicals, such as formic acid

Ecological importance:

- Ants turn and aerate the soil, allowing water and oxygen to reach plant roots.
- Ants take seeds down into their tunnel to eat the nutritious elaiosomes that are part of the seed.
- Ants eat a wide variety of organic material and provide food for many different organisms.

GRASSHOPPER

Scientific Name: *Tettigonia viridissima*



Description:

- probably the most ancient living group of chewing herbivorous insects,
- Grasshoppers have powerful hind legs which allow them to escape from threats by leaping vigorously.
- Grasshoppers are plant-eaters,

Behaviour:

- Grasshoppers have had a long relationship with humans
- Most grasshoppers are polyphagous, eating vegetation from multiple plant sources but some are omnivorous
- Grasshoppers have a typical insect nervous system, and have an extensive set of external sense organs

Ecological importance

- They lie at the middle of a functioning ecosystem that is involved in cultivation like grassland ecosystem and hence cause economic benefits.
- They cause nutrient cycling by breaking down plants, fertilizing soils with their excreta and in turn facilitating plant growth.
- Preys upon smaller insect pests of plants.

MOSQUITO

Scientific name: *Culex pipiens*



Description:

- The adult morphology is typical of flies with the head, thorax, and abdomen clearly defined
- The two forewings held horizontally over the abdomen when at rest.
- The second pair of wings is reduced and modified into tiny, inconspicuous halteres.

Disease Caused:

- Culex, a large group of mosquitoes also known as common house mosquitoes, are the principal vectors that spread the viruses that cause West Nile fever,
- It also causes St. Louis encephalitis, and Japanese encephalitis, as well as viral diseases of birds and horses.
- The major vector of elephantiasis is Culex mosquito

Ecological importance

- Larval mosquitoes contribute to aquatic food chains
- Only the females of some mosquito species need a meal of blood to get the proteins necessary to lay eggs.
- As adults, mosquitoes serve as equally nutritious meals for birds, bats, and spiders.

BUTTERFLY

Scientific Name: *Delias eucharis*



Description:

- A butterfly is a flying insect with a small body and large, often colorful wings.
- After hatching, they start as caterpillars, and eventually build a chrysalis, inside of which they transform into and emerge as a butterfly.
- Like all insects, they have six jointed legs, 3 body parts, a pair of antennae, compound eyes, and an exoskeleton.

Behaviour

- Butterflies are ectotherms, which means they rely on external sources for body heat.
- Butterflies have four wings, two on each side of their body. These are connected in such a way that the wings can move independently, allowing a wide variety of flight patterns.

Ecological importance:

- Butterflies also provide assistance for genetic variation in the plant species that they collect nectar from.
- Butterflies also act as a lower member of the food chain.

Reasons for their population decline

Habit change and loss as well as climate change are the biggest threats to butterflies today. Monarch butterflies, in particular, are suffering from these threats.

FROG

Scientific Name: *Rana tigerina*



Description:

- Head immediately follows broad trunk due to absent of neck.
- Shorter 4 limbs with 4 digits and longer hind limbs with 5 webbed digits.
- Body skin is moist due to secretion of mucin or mucus.
- Skin may or may not possess pigments and poison glands.

Behaviour:

- *Rana tigrina* is mostly solitary and nocturnal in nature
- They inhabit holes and bushes near permanent water sources
- The frog does not stay in water for a long time; it spends most of its time hiding and feeding in surrounding vegetation.

Ecological Importance:

- Frogs possess an economic importance for having a well appreciated meat by man,
- Amphibians, especially anurans, are economically useful in reducing the number of insects that destroy crops or transmit diseases.
- frogs have an important place in the food chain as both predators and prey.

HOUSE LIZARD

Scientific Name: *Hemidactylus turcicus*



Description:

- Most geckos are nocturnal, hiding during the day and foraging for insects at night.
- These small geckos are non-venomous and not harmful to humans
- may prey on insects and spiders, displacing other gecko species

Behaviour:

- . Captive-born ones are tamer and more docile, and tolerate handling and sometimes relax when being lightly stroked.
- They stand sideways to the threat, swallow air to increase their size, stand high off the ground to look bigger and lash at the threat with their tails.

Ecological importance

- Lizards are important prey for many birds, snakes, and other animals, and they are important predators of insects
- Many lizards help in controlling insects that can destroy crops and can be quite annoying to humans such as mosquitos
- Most lizards eat insects, so they can help rid your home and garden of harmful critters.

HOUSE MOUSE

Scientific Name: *Mus musculus*



Description:

- They have a pointed snout, large rounded ears, and a long and hairy tail.
- In the wild they vary in color from grey and light brown to black
- The voice is a high-pitched squeak

Behaviour:

- House mice usually run, walk, or stand on all fours, but when eating, fighting, or orienting themselves,
- Mice are mostly crepuscular or nocturnal; they are averse to bright lights.
- House mice primarily feed on plant matter, but are omnivorous.

Ecological importance

- Spread fungi: Plants soil fungi while the fungi help plants to germinate and grow.
- Aerate the soil: Some rodents including mice dig burrows and tunnels under the ground for hiding when they are not hunting.
- Spread seeds: According to biologists, mice that live in tropical forests play a significant role in the dispersion of wild seeds.

DOG

Scientific Name: *Canis lupus familiaris*



Description;

- The dog was the first species to be domesticated
- A dog's senses include vision, hearing, smell, taste, touch, and sensitivity to Earth's magnetic field.
- There are many different shapes for dog tails: straight, straight up, sickle, curled, or corkscrew.

Behaviour:

- As the oldest domesticated species, dogs' minds inevitably have been shaped by millennia of contact with humans.
- Communication behaviors of dogs include eye gaze, facial expression, vocalization, body posture, and gustatory communication.
- Dogs have been described as omnivores.

Ecological importance

- If trained properly and treated well, dogs are loyal and protective animals.
- Domestic dogs have been bred to many purposes throughout the millenia, including as draft animals, guards, hunting, herding, and fishing aids, and as lap animals.
- Dogs can help reduce stress levels in human beings and are often used for therapeutic purposes in hospitals, nursing homes and

CHECKERED KEELBACK SNAKE

Scientific Name: *Fowlea piscator*



Description:

- Coloration is very variable, consisting of dark spots arranged quincuncially and often separated by a whitish network
- Two oblique black streaks, one below and the other behind the eye, are nearly constant.
- The lower parts are white, with or without black margins to the shields

Behaviour:

- Most of the time this snake tries to raise its head as much as possible and expand its neck skin mimicking a cobra hood and intimidate the threat.
- The preferred habitat of snake is in or near freshwater lakes or rivers.
- They may lose its tail as an escape mechanism

Ecological importance

- As carnivores, snakes keep the numbers of their prey down.
- These rodents carry disease and destroy crops

Conclusion

The project has helped me to gather much more knowledge about my surrounding which were unknown to me. It also made me aware of, how much the different environmental elements are important to maintain an ecological balance.

Another fact that I became aware of is the need for the conservation of our environmental elements. Many of my local species are on the verge of extinction due to several factors. So, it is our duty to conserve our environment and to establish a harmony among human and its surrounding.



Acknowledgement

I would like to express my gratitude to our Honourable Principal Ma'am and Vice Principal for providing me the golden opportunity to do this informative project "Flora and Fauna Auditing in Behala" which also helped me in doing a lot of research.

Secondly, I would like to express my special thanks of gratitude to our HOD and my other professor for their guidance and support in completing my project.

Thirdly, I would like to thank my parents and my friends who helped me a lot in finishing this project within the limited time frame.



THE STUDY OF
FLORA
AND
FAUNA
IN DUMDUM, KOLKATA



UNIVERSITY OF CALCUTTA

B.S.C Semester-2(H) Project Work (AECC-2)

(Under CBCS)

Year: 2021

Subject: Environmental Science

Department: Microbiology

Paper: AECC-2

CU Roll No: 203223-11-0052

CU Registration No: 223-1211-0365-20

College Roll No: MCBA20F431

CONTENT

(THE STUDY OF FLORA AND FAUNA IN DUM DUM , KOLKATA)

- **Introduction**
- **Trees (Five Common Trees)**
 - **Mango Neem Banyan Banana Coconut**
- **Flowers (Five Common Flowers)**
 - **Rose Marigold China-Rose Jasmine
Chrysanthemum**
- **Insects (Five Common Insects)**
 - **Butterfly Mosquito House fly Cockroach
Grasshopper**
- **Birds (Five Common Birds)**
 - **Crow Sparrow Woodpecker Owl Hen**
- **Animals (Five Common Animals)**
 - **Squirrel Cow Cat Dog Rabbit**
- **Conclusion**
- **Acknowledgement**

INTRODUCTION

Ecology is the study of the relation and interaction between organisms and their environment. Of all the living organisms on the planet, the most commonly seen by us are the plant life and the animal life. Apart from these two, more forms of life around in the earth, but are harder to see with the naked eye. This is why the flora and fauna i.e. plant and wildlife of the earth are fascinating to observe and study.

The term flora in Latin means “Goddess of the Flower.” Flora is a collective term for a group of plant life found in a particular region. The whole plant kingdom is represented by this name.

On the otherhand Fauna represents the animal life indigenous to a region. Animal kingdom comprises a variety of animal life forms. Hence, the classification of fauna is much more complex than the floral division.

Therefore, for ease of classification.

Here myself Ankita Dey is presenting a small study of “FLORA AND FAUNA ” to distinguish different kinds of trees ,flowers,animals,birds,insects in DumDum,Kolkata.

TREES

(FIVE COMMON TREES)

1. MANGO TREE :

- **SCIENTIFIC NAME** :- Mangifera indica

- **SCIENTIFIC CLASSIFICATION** :-

- **KINGDOM**- Plantae
- **DIVISION**- Angiospermae
- **CLASS**-Dicotyledonae
- **ORDER**- Sapindales
- **FAMILY**- Anacardiaceae
- **GENUS**-Mangifera
- **SPECIES**- indica



- **IMPORTANCE** :-

- Mango Trees have an average life of 40 years, and for that period they bear some very delicious fruits.
- The leaves of Mango Tree are effective in curing low blood pressure, diabetes, and kidney stones.
- Branches of mango trees serve as the home for many birds.
- Mangoes coming from Mango Tree help reduce the higher cholesterol levels.
- Mango contains vitamin A,D,C, folate, zinc and vitamin B6. All these contribute greatly towards strengthening the immune system and boosting our immunity.

2. NEEM TREE :

- **SCIENTIFIC NAME :-** Azadirachta indica

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Plantae
- **DIVISION -**Magnoliophyta
- **CLASS -** Magnoliopsida
- **ORDER -** Sapindales
- **FAMILY -** Meliaceae
- **GENUS -** Azadirachta
- **SPECIES -** indica



- **IMPORTANCE :-**

- Neem leaves are used for leprosy, intestinal worms, skin ulcer, heart diseases, cardiovascular diseases, diabetes, liver problems and also used for birth control and to cause abortions.
- The bark is used for malaria, stomach and intestinal ulcers, skin diseases, pain, and fever.
- The flower is used for reducing bile, controlling phlegm, and treating intestinal worms.
- The fruit is used for hemorrhoids, intestinal worms, urinary tract disorders, bloody nose, phlegm, eye disorders, diabetes, wounds, and leprosy.

3. BANYAN TREE :

- **SCIENTIFIC NAME :-** Ficus benghalensis

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-**Plantae
- **DIVISION-** Magnoliophyta
- **CLASS-** Magnoliopsida
- **ORDER-** Urticales
- **FAMILY-** Moraceae
- **GENUS-** Ficus
- **SPECIES-** benghalensis



- **IMPORTANCE :-**

- Each and every part of this tree has its own unique medical uses.
- The bark and seeds can be used as a tonic to maintain body temperature and treat diabetes.
- The roots can be used to strengthen your teeth and gums by brushing with them.
- The sap treats external skin bruising and inflammation.
- Skin disease treatment is also possible with some properties of Banyan tree.
- Shellac has a large number of roles in making adhesive and surface finishes.
- Using the bark of the tree, paper can be created.
- Fiber can also be made from the bark of the tree in order to create ropes.

4.BANANA TREE :

- **SCIENTIFIC NAME :-** *Musa acuminata*

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Plantae
- **DIVISION-** Magnoliophyta
- **CLASS-** Liliopsida
- **ORDER-** Zingiberales
- **FAMILY-** Musaceae
- **GENUS-** Musa
- **SPECIES-** acuminata



- **IMPORTANCE:-**

- High content of iron in bananas increases the production of hemoglobin in the blood, therefore, it is very good for anemia.
- Exceedingly good for students as the rich source of potassium will make a person very alert. In fact, this fruit is otherwise known as a brain tonic
- Bananas work well as a snack for people those who have high blood pressure as they are wholesome with low salt levels.
- It can eaten frequently to treat ulcers as they neutralize acidity in the stomach. This smooth and soft fruit cannot irritate the stomach walls.

5.COCONUT TREE :

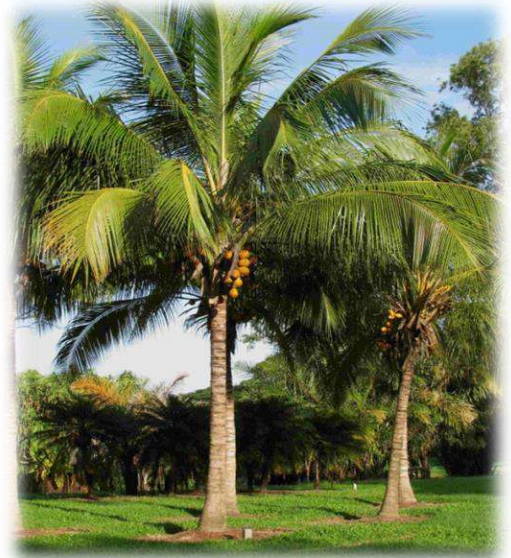
- **SCIENTIFIC NAME :-** Cocos nucifera

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Plantae
- **DIVISION-** Magnoliophyta
- **CLASS-** Liliopsida
- **ORDER-** Arecales
- **FAMILY-** Arecaceae
- **GENUS-** Cocos
- **SPECIES-** nucifera

- **IMPORTANCE:-**

- The Roots – were used to make dyes, used as a toothbrush, mouthwash, and has medicinal value.
- Coconut Leaves – were used in The Maldives as a roofing material for houses, and are used to wrap rice, for cooking, and for storage in The Philippines.
- They have been used to make toys in India, and they are used to make brooms and burnt to ash to make lime.
- Toothpicks and satay skewers have also been made out of the ribs on the leaves.
- Coconut Tree Trunk – used as timber to make houses and boats, in bridge building, furniture, drums, and canoes.



FLOWERS

(FIVE COMMON FLOWERS)

1.ROSE :

- **SCIENTIFIC NAME :-** *Rosa indica*

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Plantae
- **DIVISION-** Magnoliophyta
- **CLASS-** Magnoliopsida
- **ORDER-** Rosales
- **FAMILY-** Rosaceae
- **GENUS-** Rosa
- **SPECIES-** indica



- **IMPORTANCE :-**

- Rose hips are occasionally made into jam, jelly, marmalade, and soup or are brewed for tea, primarily for their high vitamin C content.
- Rose perfumes are made from rose oil (also called attar of roses), which is a mixture of volatile essential oils obtained by steam distilling the crushed petals of roses.
- Some kind of roses are artificially coloured using dyed water, like rainbow roses.
- The main constituents of attar of roses are the fragrant alcohols geraniol and L-citronellol and rose camphor, an odorless solid composed of alkanes, which separates from rose oil.

2.MARIGOLD :

- **SCIENTIFIC NAME :-** *Calendula officinalis*

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Plantae
- **DIVISION-** Tracheophyta
- **CLASS-** Magnoliopsida
- **ORDER-** Asterales
- **FAMILY-** Asteraceae
- **GENUS-** Calendula
- **SPECIES-** officinalis



- **IMPORTANCE :-**

- The roots and stems of marigolds emit a chemical that may suppress the population of root-knot nematodes, tiny soilborne worms that feed on the roots of ornamental plants and vegetables.
- Marigolds attract ladybugs, parasitic wasps, hoverflies, and other beneficial insects that protect your plants from aphids and other harmful pests.
- Marigold is also a good companion when planted near bush beans, squash, cucumbers, and eggplant.
- Marigold flowers hold a special cultural significance in India since they form a staple in the 'puja' rituals of many temples.

3.CHINA ROSE :

- **SCIENTIFIC NAME:-** Hibiscus rosa-sinensis

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Plantae
- **DIVISION-** Tracheophyta
- **CLASS-** Magnoliopsida
- **ORDER-** Malvales
- **FAMILY-** Malvaceae
- **GENUS-** Hibisceae
- **SPECIES-** rosa-sinensis



- **IMPORTANCE:-**

- The flowers and leaves of this plant can be made into teas and liquid extracts that can help treat a variety of conditions.
- Hibiscus can help with weight loss and cancer, upset stomach, bacterial infections fever.
- Hibiscus is popular for its potential to reduce high blood pressure.
- Hibiscus tea and extract can be purchased at health food stores as dietary supplements.
- Hibiscus tea is very tart and might be more so to sensitive tissues.

4.JASMINE :

- **SCIENTIFIC NAME :-** Jasminum sambac

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Plantae
- **DIVISION-** Tracheophyta
- **CLASS-** Magnoliopsida
- **ORDER-** Lamiales
- **FAMILY-** Oleaceae
- **GENUS-** Jasminum
- **SPECIES-** sambac



- **IMPORTANCE :-**

- Jasmine has been used for liver disease (hepatitis), pain due to liver scarring (cirrhosis), and abdominal pain due to severe diarrhea (dysentery).
- Jasmine is used on the skin to reduce the amount of breast milk, for skin diseases, and to speed up wound healing.
- It is also used to prevent stroke, to cause relaxation (as a sedative), to heighten sexual desire (as an aphrodisiac), and in cancer treatment.
- Jasmine is inhaled to improve mood, reduce stress, and reduce food cravings.
- In foods, jasmine is used to flavor beverages, frozen dairy desserts, candy, baked goods, gelatins, and puddings.

5. CHRYSANTHEMUM :

- **SCIENTIFIC NAME :-** Chrysanthemum indica

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Plantae
- **DIVISION-** Tracheophyta
- **CLASS-** Mgnoliopsida
- **ORDER-** Asterales
- **FAMILY-** Asteraceae
- **GENUS-** Chrysanthemum
- **SPECIES-** indica



- **IMPORTANCE :-**

- Chrysanthemum is used to treat chest pain (angina), high blood pressure, type 2 diabetes, fever, cold, headache, dizziness, and swelling.
- In combination with other herbs, chrysanthemum is also used to treat prostate cancer.
- As a beverage, chrysanthemum is very popular as a summertime tea in southern China.
- Early research suggests that taking a combination of chrysanthemum, licorice, and Panax pseudoginseng (Hua-sheng-ping) might reverse the development of precancerous stomach sores in some people.

INSECTS

(FIVE COMMON INSECTS)

1.BUTTERFLY :

- SCIENTIFIC NAME :- Danaus genutia

- SCIENTIFIC CLASSIFICATION :-

- **KINGDOM-** Animalia
- **PHYLUM-** Arthropoda
- **CLASS-** Insecta
- **ORDER-** Lepidoptera
- **FAMILY-** Nymphalidae
- **GENUS-** Danaus
- **SPECIES-** genutia



- IMPORTANCE :-

- Butterflies are central pollinators to many agricultural crops.
- Their ecological function is also a food source to predators like birds, spiders, lizards and other animals.
- They have been widely used by ecologists as model organisms to study the impact of the loss of habitat and climate change.
- The bright colours dissuade some potential predators by suggesting bad taste.
- Some species also provide a natural form of pest control. For example, the harvester butterfly eats aphids while it is in its caterpillar form.

2.MOSQUITO :

- **SCIENTIFIC NAME :-** *Aedes aegypti*
- **SCIENTIFIC CLASSIFICATION :-**
 - **KINGDOM-** Animalia
 - **PHYLUM-** Arthropoda
 - **CLASS-** Insecta
 - **ORDER-** Diptera
 - **FAMILY-** Culicidae
 - **GENUS-** Aedes
 - **SPECIES-** aegypti
- **HARMFUL EFFECT :-**
 - Mosquito bites can cause skin irritation through an allergic reaction to the mosquito's saliva - this is what causes the red bump and itching.
 - Not only can mosquitoes carry diseases that afflict humans, but they also can transmit several diseases and parasites that dogs and horses are very susceptible to.
 - Some mosquito bites may be transmission of serious diseases and viruses such as malaria, dengue virus, Zika and West Nile virus, which can lead to disabling and potentially deadly effects (such as encephalitis, meningitis and microcephaly).
 - Zika - the mosquito-borne disease that impacts fetal brain development -has been shown to be sexually transmitted .



3.HOUSE FLY :

- **SCIENTIFIC NAME :-** Musca domestica

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Animalia
- **PHYLUM-** Arthropoda
- **CLASS-** Insecta
- **ORDER-** Diptera
- **FAMILY-** Muscidae
- **GENUS-** Musca
- **SPECIES-** domestica



- **HARMFUL EFFECT :-**

- According to the World Health Organization (WHO), houseflies are known to carry serious and life-threatening diseases, including : Cholera ,Conjunctivitis ,Dysentery ,Gastroenteritis ,Salmonellosis , Shigellosis,Tuberculosis, Typhoid fever.
- A study also proved that house flies can transmit foodborne pathogens and their associated toxin and resistance. House flies can spread diseases such as food poisoning and dysentery.
- Flies can inflict painful bites while feeding on the blood of humans and other animals, and some species transmit disease.

4.COCKROACH :

- **SCIENTIFIC NAME :-** Periplaneta americana

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Animalia
- **DIVISION-** Arthropoda
- **CLASS-** Insecta
- **ORDER-** Blattodea
- **FAMILY-** Blattidae
- **GENUS-** Periplaneta
- **SPECIES-** americana



- **HARMFUL EFFECT :-**

- Cockroach contaminate open food by defecating on it, leaving behind hair and dead skin and depositing empty egg shells in it.
- Some species of cockroaches have been found to bite humans. These cases are rare but if your home is heavily infested with these insects then you should be careful because they can nibble on fingernails, toes and soft parts of the skin causing wounds.
- There are several cases of cockroaches entering the ear and nose while sleeping.
- Cockroaches can cause allergies. Their saliva secretion and body parts contain hundreds of allergens that can trigger an undesirable reaction.
- Cockroaches can be the worst enemies of asthmatic people. Cockroach allergens can cause severe complications and can even be life-threatening.

5.GRASSHOPPER :

- **SCIENTIFIC NAME :-** Poekilocerus pictus

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Animalia
- **DIVISION-** Arthropoda
- **CLASS-** Insecta
- **ORDER-** Orthoptera
- **FAMILY-** Pyrgomorphidae
- **GENUS-** Poekilocerus
- **SPECIES-** pictus



- **IMPORTANCE :-**

- They play a critical role in the environment, making it a safer and more efficient place for plants and other animals to thrive.
- The grasshopper benefits humans and the ecosystem in general by facilitating plant decomposition and regrowth, creating a balance between the types of plants that thrive.
- Sometimes, when a grasshopper dies, microbes in the soil easily break down his nitrogen-rich body, enriching the soil and helping carbohydrate-rich plants to grow.
- he plays in the ecosystem, he is a vital source of food for predators in the wild.
- Grasshopper benefits the environment by feeding creatures like spiders, birds, lizards and more, allowing them to survive and fulfill their own roles in maintaining a healthy, vibrant ecosystem.

BIRD

(FIVE COMMON BIRDS)

1.CROW :

- **SCIENTIFIC NAME :-** Corvus splendens

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Animalia
- **PHYLUM-** Chordata
- **CLASS-** Aves
- **ORDER-** Passeriformes
- **FAMILY-** Corvidae
- **GENUS-** Corvus
- **SPECIES-** splendens



- **COMMON FEATURES :-**

- Crows are large birds that have shiny black feathers. The tail and primary feathers are stiff.
- Crows flock together in large families.
- These birds are recognized by their loud voices and also, they are marked by their intelligence.
- Crows are very clever and curious birds who have a reputation as thieves and even pranksters.
- Like other common urban wild neighbors, they thrive in the habitat we create.

2.SPARROW :

- **SCIENTIFIC NAME :-** Passer domesticus

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Animalia
- **PHYLUM-** Chordata
- **CLASS-** Aves
- **ORDER-** Passeriformes
- **FAMILY-** Passeridae
- **GENUS-** Passer
- **SPECIES-** domesticus



- **COMMON FEATURES :-**

- Sparrows have beautiful voices and their chirping and singing can be heard all over.
- Other unique characteristics are their smooth, round heads, and rounded wings.
- Females and young birds are coloured pale brown and grey, and males have brighter black, white, and brown markings.
- Although sparrows do not belong to the group of water birds, they can swim very fast to escape from predators.
- Sparrow feeds mostly on the seeds of grains and weeds, but it is an opportunistic eater and commonly eats insects and many other foods.

3.WOODPECKER :

- **SCIENTIFIC NAME :-** Dinopium benghalense

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Animalia
- **PHYLUM-** Chordata
- **CLASS-** Aves
- **ORDER-** Piciformes
- **FAMILY-** Picidae
- **GENUS-** Dinopium
- **SPECIES-** benghalense



- **COMMON FEATURES :-**

- Woodpeckers are often characterized as “chisel-billed” because they peck into living or dead wood to find grubs or build a nest.
- Woodpeckers have a unique form of communication , called drumming. They rapidly peck on a resonant object to create a pattern of sound.
- They have a translucent third eyelid (called a nictitating membrane), which can be drawn across the eye for protection, while maintaining visibility.
- Woodpeckers are all about their protein, whether from larvae, nuts or seeds. Suet — common in backyard feeders — can also be an important source of energy for woodpeckers.

4.OWL :

- **SCIENTIFIC NAME :-** Bubo bengalensis

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Animalia
- **PHYLUM-** Chordata
- **CLASS-** Aves
- **ORDER-** Strigiformes
- **FAMILY-** Strigidae
- **GENUS-** Bubo
- **SPECIES-** bengalensis



- **COMMON FEATURES :-**

- Owls have a flat face and a feathered facial disc around their eyes with Large forward-facing eyes, ear-holes, strong talons, sharp clutching claws.
- They feed mostly on small live mammals (i.e. rodents), fish, oscines (song birds) and insects.
- They're mainly night hunters or appear at dawn and dusk (crepuscular hunters).
- They have very good hearing, communicate by call and a binocular vision.
- Owls generally nest in tree cavities but may also be found nesting in burrows, under rocky overhangs.

5.HEN :

- **SCIENTIFIC NAME :-** Gallus gallus domesticus

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Animalia
- **PHYLUM-** Chordata
- **CLASS-** Aves
- **ORDER-** Galliformes
- **FAMILY-** Phasianidae
- **GENUS-** Gallus
- **SPECIES-** gallus



- **COMMON FEATURES :-**

- Chickens are social, inquisitive, intelligent birds, and many find their behaviour entertaining.
- The chicken (*Gallus gallus domesticus*), a subspecies of the red junglefowl, is a type of domesticated fowl, originally from Southeastern Asia.
- Rooster or cock is a term for an adult male bird, and younger male may be called a cockerel. A male that has been castrated is a capon. The adult female bird is called a hen and a sexually immature female is called a pullet.
- Chickens farmed for meat are called broilers.
- Chickens farmed primarily for eggs are called layer hens.

ANIMALS

(FIVE COMMON ANIMALS)

1.SQUIRREL :

- **SCIENTIFIC NAME :-** Funambulus palmarum

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Animalia
- **PHYLUM-** Chordata
- **CLASS-** Mammalia
- **ORDER-** Rodentia
- **FAMILY-** Sciuridae
- **GENUS-** Funambulus
- **SPECIES-** palmarum



- **COMMON FEATURES :-**

- Squirrels are members of the family Sciuridae, a family that includes small or medium-size rodents.
- The squirrel family includes tree squirrels, ground squirrels, chipmunks, marmots (including groundhogs), flying squirrels, and prairie dogs amongst other rodents.
- Squirrels mate either once or twice a year and, following a gestation period of three to six weeks.
- The teeth of sciurids follow the typical rodent pattern, with large incisors (for gnawing) that grow throughout life, and cheek teeth (for grinding) that are set back behind a wide gap, or diastema.
- As their large eyes indicate, squirrels have an excellent sense of vision.

2.COW :

- **SCIENTIFIC NAME:-** Bos taurus

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM-**Animalia

- **PHYLUM-**Chordata

- **CLASS-**Mammalia

- **ORDER-**Artiodactyla

- **FAMILY-**Bovinae

- **GENUS-**Bos

- **SPECIES-**taurus



- **COMMON FEATURES:-**

- Cows or cattle are the most useful domestic animals. They benefit the humans and the environment in many ways that we fail to recognize or appreciate.
- They are raised as dairy animals for milk and other dairy products and as draft animals.
- Cow dung is also used as fuel all over the country.
- From an environmental standpoint, cattle play an irreplaceable role in maintaining top soil, promoting biodiversity, protecting wildlife habitat, reducing the spread of wildfires, providing natural fertilizer and so much more.
- Cattle also provide us with many other by-products – parts of the cow that are used to make products for home, health, food and industry. Byproducts are value-added products other than beef that come from cattle .

3.CAT :

- **SCIENTIFIC NAME :- Felis catus**

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Animalia
- **PHYLUM-** Chordata
- **CLASS-**Mammalia
- **ORDER-** Carnivora
- **FAMILY-** Felinae
- **GENUS-** Felis
- **SPECIES-**catus



- **COMMON FEATURES :-**

- Cats are among the most highly specialized of the flesh-eating mammals.
- Their brains are large and well developed.
- the cat is a relatively small animal, it can frighten enemies by arching its back, bristling, and hissing.
- The cat's body has great elasticity. Because the vertebrae of the spinal column are held together by muscles rather than by ligaments, as in humans, the cat can elongate or contract its back, curve it upward, or oscillate it along the vertebral line.
- Cats have no flat-crowned crushing teeth and therefore cannot chew their food; instead, they cut it up.
- Claws of cats are retracted or extended by pivoting the end bone of the toe, which bears the claw, over the tip of the next bone.

4.DOG :

- **SCIENTIFIC NAME :-** Canis familiaris

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Animalia
- **PHYLUM-** Chordata
- **CLASS-** Mammalia
- **ORDER-** Carnivora
- **FAMILY-** Canidae
- **GENUS-** Canis
- **SPECIES-** familiaris



- **COMMON FEATURES :-**

- Dogs come in many shapes and sizes. sizes vary within breeds, with males usually being larger than females. Mixed-breed dogs include all size ranges.
- Dogs have a higher metabolism than people. They breathe faster, pump blood faster, mature faster, and have a higher normal body temperature.
- Dogs are generally much better at conserving heat than at cooling themselves.
- Dogs can see movement and light much better than people. In the retina of the eye, dogs have more of a specific type of cell called a rod, which is good at collecting dim light, so they have better night vision.
- The ear canal of the dog is much deeper than that of people and an extraordinarily acute sense of smell.

5.RABBIT :

- **SCIENTIFIC NAME :-** Oryctolagus cuniculus

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Animalia
- **PHYLUM-** Chordata
- **CLASS-**Mammalia
- **ORDER-**Lagomorpha
- **FAMILY-** Leporidae
- **GENUS-** Oryctolagus
- **SPECIES-** cuniculus



- **COMMON FEATURES :-**

- Rabbits are small mammals in the family Leporidae (along with the hare) of the order Lagomorpha (along with the pika).
- Rabbits are small mammals with fluffy, short tails, whiskers and distinctive long ears.
- Rabbits are prey animals and are therefore constantly aware of their surroundings.
- Rabbit habitats include meadows, woods, forests, grasslands, deserts and wetlands.
- Rabbits have been a source of environmental problems when introduced into the wild by humans. As a result of their appetites, and the rate at which they breed, feral rabbit depredation can be problematic for agriculture.
- The lifespan of wild rabbits is much shorter.

CONCLUSION

As a conclusion, fauna and flora constitute our environment. The human being is the main responsible of the destruction of fauna and flora. So, people can do many efforts to respect the law of protection of fauna and flora.

It is important, because we must live in a health environment and to conserve our animal and tree species.

This project “THE STUDY OF FLAURA AND FAUNA ” gives us all the details about the vegetation , animals and other surroundings present in my local area .It also gives us the information about the advantages and disadvantages of various flora and fauna .Thus, this project helped me to do a detailed study of my surroundings in my area .

AKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my all teachers of Microbiology department, as well as our principal ma'am and vice principal sir , who gave me the golden opportunity to do this wonderful project on "THE STUDY OF FLORA AND FAUNA IN DUMDUM ", which also helped me in doing a lot of research and i came to know a lot of details about my local flora and fauna .

I would also like to thank my parents and friends who helped me a lot in finishing this project within stipulated time .

Flora and Fauna

Auditing



IN CHINSURAH

ENVIRONMENTAL SCIENCE
PROJECT

PAPER : AECC II

SEMESTER: 2

DEPARTMENT : MICROBIOLOGY

CU REGISTRATION NO: 223-1211-0439-20

CU ROLL NO.: 203223-11-0072

COLLEGE ROLL NO.: MCBA20F436

SUBJECT: ENVIRONMENTAL SCIENCE

INDEX

<u>TOPIC</u>	<u>PAGE NO.</u>
Introduction	4
Study of flora	
▪ Mango	5
▪ Neem	6
▪ Banana	7
▪ Coconut	8
▪ Banyan	9
▪ Hibiscus	10
▪ Rose	11
▪ Madagascar periwinkle	12
▪ Jasmine	13
▪ Chrysanthemum	14
Study of Fauna	
▪ Mosquito	15
▪ Cockroach	16
▪ Ants	17
▪ House fly	18
▪ Bees	19
▪ Crow	20
▪ Alexandrine parakeet	21
▪ Pigeon	22
▪ Sparrow	23
▪ Woodpecker	24
▪ Cow	25
▪ Goat	26
▪ Dog	27
▪ Cat	28
▪ Grey langur	29
Conclusion	30
Acknowledgement	31

Introduction

The planet Earth is a beautiful place to live in. No matter where we go on the planet, there are stunning plants, animals, insects and flowers that carry our attention. We can see plants and animals around us every day. This is why, flora and fauna i.e., plants and wildlife of earth are fascinating to observe and study.

The topic of project is **“FLORA AND FAUNA AUDITING IN MY LOCALITY (CHINSURAH)”**. This includes a brief discussion about the flora and fauna found in my locality.

FLORA refers to all plant life and FAUNA refers to all animal life.

Flora is a collective term for a group of plant found in a particular region, under which it includes flowers and trees. Whereas, Fauna represents the animal life (insects, birds, animals) indigenous to region.

FLORA : TREES

1. MANGO

Scientific Name: Mangifera indica



Importance :

- Mango is rich in iron and vitamin C which helps to boost immunity and prevents anemia.
- Mangiferin , a natural polyphenol present in Mango, has been shown to exert an anti-cancer properties.
- Extract of mango leaves helps to decrease blood pressure and treats oral problems.
- Mango bark have been used in traditional medicine to treat diarrhea.
- Mango fruit is one of the delicious fruit of India exported to many countries. The green unripe fruits are used in sharbats and pickels.

2.NEEM

Scientific name : Azadirachta indica



Importance:

- Neem leaves treats fungal infections and nourishes, repair damaged skin cells as it is rich source of Vitamin E.
- As it has strong antibacterial properties, neem is used in the treatment of chicken pox, small pox, herpes, and hepatitis B.
- Neem oil reduces joint pain. Hence, widely used in treating arthritis.
- Neem twigs are used for cough, urinary disorders, diabetes, and people in tropic sometimes uses neem twigs as toothbrush.
- Neem flower is used for reducing bile and treating intestinal worms.



3.BANANA

Scientific Name : Musa acuminata



Importance :

- Banana is a great source of calories and low content of water.
- Bananas are rich in iron and potassium which helps to fight against anaemia.
- Banana is rich in VitB6, helps to balance blood sugar and rich in Vit C that assists to strengthen immune system.
- Banana shoot had high content of fibers helps to aid constipation.
- Banana flowers are used in the treatment of fever, cough, allergic infections and cooked flowers for diabetic patients.

4.COCONUT

Scientific Name : Cocos nucifera



Importance:

- Coconut water is used as natural drink for hydration.
- Coconut is rich in copper and iron which helps in formation of RBC and also high in manganese which improves bone health.
- Coconut forms an essential element in rituals, ceremonies and festivities among Hindus.
- Coconut oil is a good source of antioxidants which provide essential nutrients to strengthen hair growth.
- Coconut leaves are used to make roofs of huts and also thatching.

5. BANYAN

Scientific Name : Ficus benghalensis



Importance:

- Banyan tree is used in the treatment of diarrhea, polyuria, dental problems and diabetes.

- Wood of Banyan trees are used to make doors, panels, boxes.
- Banyan tree is respected and considered as sacred by the Hindus.
- The bark of the banyan tree is a good immune boosting agent.
- The fruit of the banyan tree exercises a soothing effect on skin and mucous membranes and serves as a mild purgative .



FLORA: FLOWERS

1. HIBISCUS

Scientific Name: Hibiscus rosa-sinesis



Importance:

- Hibiscus leaves has an inflammatory properties and anti-ageing properties.
- Hibiscus tea or hibiscus extracts can help to bring relief from cough and cold and also lowers cholesterol levels.
- Hibiscus leaves are rich in anti-oxidants, which can your body from harmful and unwanted toxins.
- Hibiscus is a traditional remedy for diabetes.
- Hibiscus flower stimulates hair growth and helps in treating dandruff and other hair problems.

2. ROSE

Scientific Name: Rosa indica



Importance:

- *Rosa indica* is used in the treatment of diarrhea, asthma and inflammation of mouth.
- The rose extract oil is used extensively in the cosmetic industry as an ingredients of soap, body - wash, perfumes etc.
- Herbal tea prepared by using rose petals is consumed to treat acidity, burning sensation in the body and effective against infection in intestine.
- Rose can be used in culinary purposes such as rose syrup, rose petal jams and flavouring agents.
- Roses have a cogent taste and flavour very similar to that of strawberries.

3. MADAGASCAR PERIWINKLE/ROSE PERIWINKLE

(*Common Name: NAYANTARA*)

Scientific Name : Catharanthus roseus



Importance:

- Nayantara is used for diabetes, cancer and sore throat, cough.
- Some people apply it directly to the skin to stop bleeding, relieve insect bites.
- It enhances memory and increase blood circulation in brain as vincamine is present in the leaves of Madagascar periwinkle.
- This could be used effectively as a cure for anxiety and stress.

SIDE EFFECTS:

- It can cause vomiting, hair-loss, nausea if taken it in a wrong way.

4. JASMINE

Scientific Name: Jasminum sambac



Importance:

- Jasmine has been used for liver disease, abdominal pain due to severe diarrhea.
- It has many medicinal properties like anti-depressant, anti-septic, anti-spasmodic etc.
- Jasmine oil is used for making perfumes, soaps, creams, incense etc. .It is also cause relaxation (as a sedative).
- In food, Jasmine is used to flavour beverages, frozen dairy desserts, candy etc.

5. CHRYSANTHEMUM

Scientific Name: Chrysanthemum morifolium



- Chrysanthemum is commonly grown as ornamental plants for their attractive, decorative and variety coloured flowers.

IMPORTANCE:

- It is used as a natural medicine against eye inflammation and impure skin.
- Chrysanthemum tea has an antiviral properties and anti-inflammatory effects.
- It is used to treat chest pain, high blood pressure.
- Apart from their ornamental flower, Chrysanthemum is a good source of nutrients, vitamins and minerals.

FAUNA: INSECTS

1.MOSQUITO

Scientific Name: Aedes aegypti



Harmful Effects:

- Mosquito bites transmit serious diseases and viruses such as malaria, dengue, Zika etc.
- Female mosquitoes bite humans to consume blood, resulting in swelling and irritation.

Beneficial Effects:

- Though mosquitoes have more harmful effects, they also play an important role in the aquatic food chain.
- Male mosquitoes eat nectar and provide the process of pollination.
- Mosquitoes are found in damp places, irrigated fields, marshes, dumps, and meadows etc.

2.COCKROACH

Scientific name: Periplaneta americana



Harmful Effects:

- Cockroaches causes food poisoning.
- Cockroaches can cause allergies. Their saliva secretion and body parts contains hundreds of allergens.
- Cockroaches can feed on dead plant, animals, faecal matter, soap, paper etc.
- It can contaminate open food by defecating on it.
- Cockroaches can cause serious diseases like typhoid, gastroenteritis etc.

3.ANTS

Scientific Name: Lasius niger



Harmful Effects:

- Ants carry and spread bacteria including *Salmonella*.
- Ants spread diseases like small pox, and dysentery.
- They damage wooden belongings like door panels etc.



Beneficial Effects:

- Ants colonies aerate and enrich the soil creating a stable ecosystem by recycling dead animals, insects and decaying matters placing nutrients back into the soil.
- Ants are viable food source for other pests.

4. HOUSE FLY

Scientific Name: Musca domestica



Harmful Effects:

- House fly act as a disease vector for typhoid, cholera, bacillary dysentery.
- House fly contaminate food by defecating on them.

- House fly has a role in waste management by decaying organic matter.
- House fly are active during the warmer part of the year.

- The most important damage related to house fly is annoyance.

5. BEES (HONEY BEE)

Scientific Name: Apis indica



Beneficial Effects:

- *Pollination:* Bees carry pollens from plant to plant and flower to flower resulting pollination.
- Honey bees produced food (honey) consumed by humans.
- Honey is a natural and has antibacterial properties and also used in medical treatments.
- Bee's wax is found as an ingredient in beauty products, lip balm, chewing gum, furniture wax etc.
- Bees are known for their hives, but they also help to build homes for millions of other insects and animals.



FAUNA : BIRDS

1. HOUSE CROW/ COLOMBO CROW

Scientific Name: Corvus splendens



BENEFICIAL ROLE:

- House Crow is a major part for agriculture, raiding crops such as wheat, maize and sunflower.
- Crows a vital role in Waste Management by consume waste, preventing the spread of disease and bad odor.

HARMFUL ROLE:

- Crows cause severe damage to vegetables, and fruit crops.
- Attack and can kill poultry new born calves and kid goats.
- House crow cause considerable nuisance to people, it scatters rubbish, damages electrical wiring.

2.ALEXANDRINE PARAKEET

(*COMMON NAME – PARROT*)

Scientific Name: Psittacula eupatria



BENEFICIAL ROLE:

- Parrots are intelligent and sensitive creatures that make excellent pets.
- Parrot is useful as “WATCH BIRDS”.
- Parrots has the ability to precisely mimic sounds, including human speech.
- Parrots are also help in pollution.
- Seeds dispersed by parrots are able to produce seedlings even in some cases after being partially consumed.

3. PIGEON/ROCK DOVE

Scientific Name: Columba livia



BENEFICIAL ROLE:

- Pigeons are man's oldest domesticated bird and are fascinating to watch.
- In ancient periods, pigeons act as "messengers".
- Pigeons clean up wastes.
- They maintain and regulate insect species in an environment as well as weeds.
- Pigeons also play a part in seed dispersal. They eat both plants and animals, thus pigeons wind up the seeds of the plants.

4.SPARROW

Scientific Name: Passer domesticus



BENEFICIAL ROLE:

- Sparrows spread seeds to places away from fruit tree. This is important for germination of seeds and also help in the survival of many plants that are producers in an ecosystem.
- Sparrow eats insects that appear in the monsoon season.
- House Sparrow feed their children with insects which are harmful for crops. Thus play an important role in environmental balance.

HARMFUL ROLE:

- House sparrow is considered a nuisance species.
- Large aggregation around buildings produce annoying noise and quantities of feces.

5.FULVOUS-BREASTED WOODPECKER

Scientific Name: Dendrocopos macei



BENEFICIAL ROLE:

- Woodpeckers has strong bills that they use for drilling and drumming on trees and long sticky tongue for extracting foods (insects and larvae)
- They has a role in pest control.
- They provide shelter for small insects and owl.
- They excavate nesting cavities from scratch known as 'primary' cavity nesters.

HARMFUL ROLE:

- Woodpeckers are known to excavate holes in buildings, fencing, creating health/safety issues foe affected building.

FAUNA : ANIMALS

1.COW

Scientific Name: Bos indicus



IMPORTANCE:

- Cow milk is a rich source in Vitamin B2, B3, A which helps in enhancing immunity and manufacturing products like butter, cheese etc.
- Cow dung is used as an efficient source of fuel and biogas.
- Cow hides used to make leather shoes, couches, clothing etc.
- Cows are used as riding animals and draft animals.
- Cows are considered to be a sacred animal in Hindu religion and often honored with the status "MOTHER" in Hinduism.
- Cow is also used as a source of meat. Although, in India, cow-slaughter is a controversial topic as Cow is regarded as a sacred animal.

2. GOAT

Scientific Name: Capra hircus



IMPORTANCE:

- Goat milk is highly nutritious, contains essential vitamins and minerals.
- Goat meat is known as “mutton” in India, is lower in fat and cholesterol and higher in iron than chicken, pork.
- Goat dung act as a great manure for fertilizing fields.
- Gats have been used by humans to clear unwanted vegetation. Thus, known as “EATING MACHINES”.
- Goat skin is durable and often used to make gloves, belts etc.

3.DOG

Scientific Name: Canis lupus familiaris



IMPORTANCE:

- Dogs provide companionship and company.
- Dogs provide a sense of security.
- Dogs are also bred for herding livestock, draught animals to pull small carts, rodent control, hunting.
- Nowadays, dogs are employed as guides for the blind and disabled or for police work.
- Playing with dog, exercising, walking or running can keep human beings reduce stress level.



4.CAT

Scientific Name: Felis catus



IMPORTANCE:

- Studies have found that owning a cat can lower stress levels, which in turn will have a knock-on effect on your risk of cardiovascular disease.
- Cats keep unwanted pests out of the house.
- They pollinate plants, spread seeds and protect environment from the effects of climate change.

HARMFUL EFFECTS:

- High population of outdoor cats, lead to decrease the no. of birds and small mammals.
- Cat shed hairs which are allergic to many people.

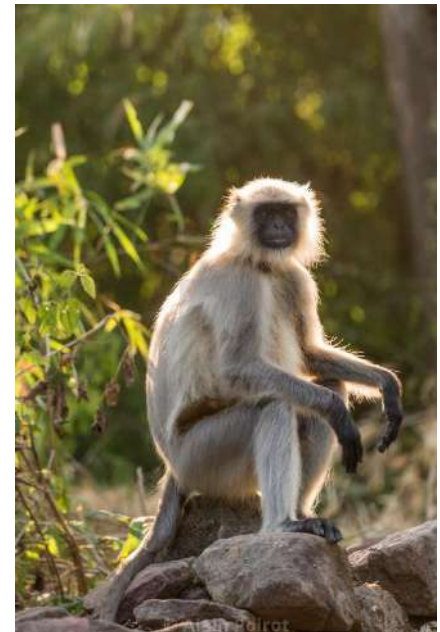
5. GREY LANGUR

Scientific Name: Semnopithecus entellus



IMPORTANCE:

- Hanuman langurs can be kept as pets and are susceptible to animal trafficking.
- It can also be used in experiments.
- Hanuman langurs are sacred animals in many parts of India.
- Soapberry bug nymphs (*Leptocoris augur*) rely on langurs to remove fruit casings, enabling to eat.
- They help in seed dispersal.



HARMFUL EFFECTS:

- They eat and raid crops and sometimes also steal food from people's home.

CONCLUSION

Flora and Fauna constitute our environment. The human being is the main responsible for the destruction of flora and fauna. So, people can do many efforts to respect the law of protection of Flora and fauna.

The reason for conservation of flora and fauna is utterly important because they maintain ecological balance and biodiversity. Flora and fauna spread across the earth contribute to the aesthetic value the Earth.

For the future generation, we also need to be supported by flora and fauna that supports life today. Hence, it is crucial that they are preserved so as to protect the future generation.

Through the project, I got to learn so much about the flora and fauna around me. I collected all the required data after through analysis of my topic.

This project helped me to become more conscious for our environment.

ACKNOWLEDGEMENT

I take this opportunity to express my profound gratitude and deep regards to my Professor's for their exemplary guidance, monitoring and constant encouragement throughout the whole project. The blessing help and guidance given by them time to time shall carry me a long way in the journey of life on which I am about to embark.

I would also take a moment to express my gratitude to our Principal and Vice-principal who gave me the golden opportunity to do this wonderful project on the topic **"FLORA AND FAUNA AUDITING IN MY LOCALITY"**, which also helped me in doing a lot of Research and I came to know so many new things I am really thankful to them.

Lastly, I thank Almighty, my family and friends for their constant support and encouragement without which this project would not be possible.



FLORA AND FAUNA

AUDITING OF

DUM DUM



College roll: MCBA20F420

CU ROLL NO:

203-223-11-0076

CU REGISTRATION:

223-1211-0456-20

CONTENTS

1. INTRODUCTION

2. FLORA

a) PLANTS

b) FLOWERS

3. FAUNA

a) BIRDS

b) ANIMALS

c) INSECTS

4. CONCLUSION

5. ACKNOWLEDGEMENT

INTRODUCTION

Ecology is the study of inter-relationship of organisms with physical as well as biotic environments. This project “The study of flora and fauna” gives us details about the vegetation, habitat, uses and harmful effects of the plants and animals’ present in my area “Dum Dum”. This project also aims to highlight the need for conservation of the flora and fauna as they help to maintain the ecological balance.

PLANTS: BANYAN

SCIENTIFIC

NAME: *Ficus*

benghalensis

Banyan is known as the National tree of India. The banyan tree is also considered a sacred plant, and therefore it is worshipped by many people in India



USES:

- The banyan tree is used for treating various diseases and infections. It has several health benefits.
- Treats diarrhoea dysentery and irritation of the GI tract.
- Aqueous extract of banyan tree leaves has pain relieving properties similar to morphine.

COCONUT

TREE



SCIENTIFIC NAME: *Cocos nucifera*

Coconut trees are some of the most exotic and healthy plants in the world. Every part of a coconut tree can be useful and nutritious.

USES:

- Every part of this tree has a use, including the fruits, wood, and leaves.
- We can eat the coconut and this is the plant's most common use and they are rich in vitamins, minerals, and antioxidants
- Coconut water is a wonderful natural drink which is very popular in the summer season.

MANGO TREE

SCIENTIFIC NAME:

Mangifera indica

There are hundreds of types of mango, each with a unique taste, shape, size and colour.

This fruit is not only delicious but also boasts an impressive nutritional profile.



USES:

- Mango stem bark and leaves have been used in traditional medicine to treat anemia, and cutaneous infections
- It is a good source of immune-boosting nutrients Mango also contains folate, vitamin K, vitamin E and several B vitamins, which aid immunity as well.
- It contains a unique antioxidant called mangiferin which protect against inflammation, oxidative stress and apoptosis.

NEEM TREE



SCIENTIFIC NAME:

Azadirachta indica

Fast-growing tree of the mahogany family, valued as a medicinal plant, source of organic pesticides, and for its timber. The plant has long been used in Ayurvedic and folk medicine and is used in cosmetics and in organic farming applications.

USES:

- Neem is commonly used in shampoos for treating dandruff and in soaps or creams for skin conditions such as acne.
- Neem leaves have long been used as a traditional treatment for diabetes
- As a fungicide neem oil is used to control rust, scab mildew black spot, anthracnose, and blight.

HARMFUL EFFECTS: When neem is taken in large doses or for long periods of time, it might harm the kidneys and liver. Neem oil and neem bark and leaves are unsafe for pregnant women and can lead to miscarriage

HOLY BASIL

(TULSI)



SCIENTIFIC NAME:

Ocimum tenuiflorum

Tulsi or

Holy basil is a widely known herb in the family Lamiaceae. It is native to India and vastly cultivated throughout Southeast Asia.

USES:

- Tulsi has anti-bacterial and anti-viral properties which help to fight infections, thus reducing fever.
- Phytochemicals present in Tulsi have strong antioxidant properties. Thus, they help in protecting us from skin, liver, oral, and lung cancers.

HARMFUL EFFECTS: Tulsi may affect the reproductive capacity of women who are trying to conceive. Some people experience nausea when they first add tulsi to their diet. Lowers blood sugar level.

FLOWER

ROSE



SCIENTIFIC NAME: *Rosa*

FAMILY: *ROSACEAE*

KINGDOM: *PLANTAE*

USES:

- **Roses** are best known as ornamental plants grown for their **flowers** in the garden and sometimes indoors
- They have been also used for commercial perfumery and commercial cut flower crops
- In its liquid form rose water can be used as part of an eye drop and has been shown to have excellent benefits for people with eye problems

MARIGOLD

SCIENTIFIC NAME:

Tagetes

FAMILY: *Asteraceae*

KINGDOM:

PLANTAE



USES:

- Marigold since ages have been used to treat irritated skin problems like burns, wounds and rashes.
- Flavonoids present in marigold flowers have been found to exhibit cytotoxic, anti-inflammatory & inhibitory activities against colon cancer, leukaemia & melanoma cells.
- These flowers help in relieving menstrual pain and cramps.

ARABIAN



JASMINE (MOGRA)

SCIENTIFIC NAME: *Jasminum sambac*

FAMILY: *Oleaceae*

KINGDOM: *Plantae*

USES:

- The *Jasminum sambac* flower is used for removing intestinal worms and is also used for jaundice and venereal diseases.
- The flower buds are useful in treating ulcers, vesicles, boils, skin diseases.
- Its flowers are used to flavour Jasmine tea and other herbal or black tea.
- Drinking Jasmine tea regularly helps in curing cancer.

SUNFLOWER



SCIENTIFIC NAME:

Helianthus

FAMILY: ASTERACEAE

KINGDOM: *PLANTAE*

USES:

- The leaves are used as fodder, the flowers yield a yellow dye, and the seeds contain oil and are used for food.
- The oil is also used in soap and paints and as a lubricant.
- The seeds may be eaten dried, roasted, or ground into nut butter.
- Sunflowers are used to make vegetable oil.
- Apart from cooking with, this oil can also be used as a massage oil. It is good for your homemade and DIY beauty preparations such as facial scrubs because it is a light and non-greasy oil and it is great for the skin.

CHINA ROSE

SCIENTIFIC NAME:

Hibiscus rosa-sinensis

FAMILY: MALVACEAE

KINGDOM: PLANTAE



USES:

- Hibiscus enhances hair growth and resists premature hair discolouring by reducing excessive body heat, stimulating blood circulation to the scalp,
- It is also beneficial for the liver and helps to cure constipation.
- For balancing the hormones naturally, hibiscus helps overcome mood mental weakness also.
- Hibiscus is used to treat alopecia.
- It helps control hypertension.

ANIMLAS

DOGS

SCIENTIFIC NAME:

Canis lupus familiaris

FAMILY: CANIDAE

KINGDOM: ANIMALIA

USES:

- They offer unconditional love and emotional support.
- . One study found that pet therapy improves the cognitive function of residents with mental illness in long-term care.
- Police dogs, are trained specifically to assist police and other law-enforcement personnel in the line of duty.
- They provide sense of security.



COWS



SCIENTIFIC

NAME: *Bos taurus*

FAMILY: *Bovidae*

KINGDOM: *ANIMALIA*

USES:

- They give us milk and meat which is necessary for growth in our body.
- Cow dung is used in planting and makes our plants grow with more nutrients.
- They also serve as pets.
- Provides us with the entire requirement for our farming activities in Agriculture.
- It helps us in transportation of our goods, works in our agricultural land.



CATS

SCIENTIFIC

NAME: *Felis catus*

FAMILY: *FELIDAE*

KINGDOM: *Animalia*

USES:

- Domestic cats are valued by humans for companionship and their ability to hunt rodents.
- They're also natural insect killers offering household protection
- Cat owners have been reported to carry a lower risk for heart disease and stroke.
- Prevent allergies.

GOAT



SCIENTIFIC

NAME: *Capra*

aegagrus hircus

FAMILY: *Bovidae*

KINGDOM: *ANIMALIA*

USES:

- Goats are mainly grown to produce milk, meat, or fiber.
- They produce cashmere and mohair, some of the softest and most luxurious materials in the world
- Goats are used in fire prevention, managing invasive weeds on public land.
- Enterprising goat owners can use any of the previous benefits to make money. There is a viable market for goat milk and other products, such as cheese, soap, and yarn.

PIGS



SCIENTIFIC NAME:

Sus

FAMILY: *Suidae*

KINGDOM: *Animalia*

USES:

- Pigs are found and raised all over the world, and provide valuable products to humans, including pork and leather.
- It is a great option for medicine, and to increase the survival of humans.
- Pig thyroids are used to obtain medicines that will be consumed by people with inactive thyroid glands.
- Insulin is obtained from pigs and is similar to human insulin. It replaces the insulin that your body would normally make.

BIRDS

KINGFISHER



SCIENTIFIC NAME:

Alcedinidae

FAMILY: *Rafinesque*

KINGDOM: *Animalia*

HABITAT: These birds inhabit a wide range of ecosystems. While they are often associated with rivers and lakes, over half the world's species are found in forests and forested streams. The only habitats that these birds do not live in are extreme desert conditions and polar ecosystems.

USES: Common kingfishers serve as a good indicator of the health of an ecosystem. As they feed on small aquatic animals, toxins in the water affect them severely. ... Common kingfishers are also important predators throughout their range of small fish from freshwater habitats, thus controlling their populations.

CROW:

SCIENTIFIC

NAME: *Corvus*

FAMILY: *Corvidae*

KINGDOM: *Animalia*



HABITAT:

These extremely adaptable birds can be found in urban environments as well, utilizing every habitat possible. They can be found in forests, grasslands, agricultural areas and farmland, mountains, deserts, arctic tundra, and rocky cliffs.

USES: Crows are scavengers that play an important role in the food web. They keep an ecosystem free of the bodies of dead animals, or carrion. They break down organic material and recycle it into the ecosystem as nutrients.

HOUSE

SPARROW



SCIENTIFIC NAME: *Passer domesticus*

FAMILY: *Passeridae*

KINGDOM: *ANIMALIA*

HABITAT:

This species lives in a vast array of different habitats. Some of the natural habitats that they live in include forests, meadows, grasslands, deserts, woodlands, and more. The vast majority of their population lives in urban areas.

USES: Sparrows feed on small insects and worms such as caterpillars, beetles and aphids. Some of these creatures destroy certain plants. Sparrows keep their population in check; otherwise, the insects would have eaten certain plant species to extinction

INDIAN

CUCKOO

SCIENTIFIC NAME:

Cuculus micropterus

FAMILY: *Cuculidae*

KINGDOM: *ANIMALIA*

HABITAT: The Indian

Cuckoo lives in forests and open woodland in zones as high as 3,600 metres. Their preferred habitat is deciduous and evergreen forests but they also occur in garden lands and thick scrubs.



PIGEONS

SCIENTIFIC

NAME: *Columba livia domestica*

FAMILY: *Columbidae*

KINGDOM: *ANIMALIA*

HABITAT:

It prefers to live in those places of towns and cities which have plenty of coarse grains.

Thus, their favourite resorts include big buildings, grain markets, temples, mosques, churches, tombs, railway stations and office buildings. They never nest on trees.



INSECTS

SPIDERS

SCIENTIFIC

NAME: *Araneae*

FAMILY: *Arachnid*

KINGDOM: *Animalia*



HABITAT:

Different species in this group live in a wide variety of different habitats. Some of the many types of ecosystems you can find these creatures in include woodlands, forests, wetlands, grasslands, deserts, rainforests, and more. A wide variety of species also utilize regions where humans live, such as houses, farms, barns, gardens, attics, basements, foundations, and more.

HARMFUL EFFECTS:

- Certain wild spider species have venom that are poisonous and fatal to human beings.
- Saliva is very dangerous and causes infections.
- Venomous spider bites may cause vomiting and nausea.

COCKROACH

SCIENTIFIC NAME:

Blattodea

FAMILY: *Blattidae*

KINGDOM: *ANIMALIA*



HABITAT:

Cockroach prefers to live in damp but warm places and generally found in kitchens, hotels, bakeries, restaurants, warehouses, grocer's shops, sewage, ships and public latrines, etc., where plenty of food is available.

HARMFUL EFFECTS:

- It can cause several diseases like urinary tract infections, digestive problems and sepsis.
- Some species of cockroaches have been found to bite humans.
- Cockroaches can be the worst enemies of asthmatic people. The incidence of asthma attack may increase if your house is infested with cockroaches

CULEX

MOSQUITO



SCIENTIFIC NAME: *Culex pipiens*

FAMILY: *Culicidae*

KINGDOM: *ANIMALIA*

HABITAT:

Mosquitoes are generally attracted to water, especially stagnant water, so swamps, marshes, ponds, stagnant rivulets are paradise for mosquitoes, especially during summer months. Majority of the mosquito species lay their eggs in stagnant water and have adapted themselves to lay their egg in salt water.

HARMFUL EFFECTS:

- There are several harmful infections that mosquitoes can carry and transmit, including: Malaria:
- They are the primary vectors for major human diseases such as yellow fever, malaria, and dengue fever.
- Mosquito bites can cause allergic reaction accompanied by fever, body aches and nausea.

HOUSE

CRICKET



SCIENTIFIC NAME:

Acheta domestica

FAMILY: *Gryllidae*

KINGDOM: *Animalia*

HABITAT: Some common sites for house crickets are woodlands, caves and pastures, fields, below logs and rocks and on the sides of roads. House crickets also enjoy settling inside of heaps of wood, brick and stones. The insects are also often found in damp and soggy areas that are full of weeds, high grasses and mulch.

HARMFUL EFFECTS:

- cause damage to property, specifically clothing, carpets and areas covered in fabric
- In the case of a heavy infestation, large areas of fabric may be eaten out. This is why it's important to get rid of crickets as soon as possible

HOUSE

CENTIPEDE

SCIENTIFIC NAME:

Scutigera coleoptrata

FAMILY: *Scutigeridae*

KINGDOM: *ANIMALIA*



HABITAT: House centipede prefers a cool, damp location, which often includes basements, bathrooms, kitchens, inside cement block walls and crawlspaces.

HARMFUL EFFECTS:

- Biting centipedes use venom inject their prey with toxins.
- The worst side effects from centipede bites are usually mild pain and swelling.

CONCLUSION

Projects are like bridges between theoretical and practical working. This project “The study of flora and fauna” has helped me gain insight into the harmful effects of the different plants, animals, birds and insects found in my area. This project helped me to delve deeper into the uses of these animals and plants in our daily lives and how some of them pose serious health issues in humans.

ACKNOWLEDGEMENT

Nothing in this world can be done singlehandedly. So I would like to thank all the people who helped me make this project. Firstly, I would like to thank the Principal of my college, and the teachers who provided me with the opportunity to work on this project. Next I want to thank my parents who helped me gather information about this project. Without help from these people, this project would not have been a successful one.

THANK YOU!





The study of

**FLORA
AND
FAUNA**

Of Kestopur area

SEMESTER - 2

DEPARTMENT - MICROBIOLOGY

COLLEGE ROLL NO. - MCBA20F438

CU ROLL NO. - 203223-11-0086

CU REG. NO. - 223-1211-0480-20

SUBJECT - ENVS (AECC 2)

CONTENTS

SERIAL NO.	TOPIC NAME	PAGE NO.
1.	INTRODUCTION	4
	FLORA	5
2.	5 DIFFERENT TYPES OF TREES	6 - 11
3.	5 DIFFERENT TYPES OF FLOWERS	12 - 17
	FAUNA	18
4.	5 DIFFERENT TYPES OF ANIMALS	19 - 24
5.	5 DIFFERENT TYPES OF BIRDS	25 - 30
6.	5 DIFFERENT TYPES OF INSECTS	31 - 36
7.	CONCLUSION	37
8.	ACKNOWLEDGEMENT	38

INTRODUCTION



The ecosystem is a complex interconnected network comprising biotic and abiotic elements. The biotic elements include all living organisms such as plants, animals and microorganisms. Abiotic includes – soil, water and climate. Among all biotic elements Flora and Fauna are the most fascinating ones.

This study of flora and fauna in Kestopur area is a nutshell of all the beautiful natural things that are still present in this particular area.



FLORA

FIVE DIFFERENT TYPES OF TREES

COCONUT TREE



- * It is one of the most useful trees in the world and it is referred to as 'tree of life'.
- * The coconut flesh serves as food, milk and flour.
- * Its oil is used for cooking and as a hair and skin oil.
- * The coconut water serves as a healthy refreshing drink.
- * The shells used to steam food and the husks as a natural scrubber and as ropes.
- * Tree leaves are used for thatching and the sticks as brooms.
- * The wood is used for fire in traditional

Scientific name – *Cocos nucifera*

Kingdom – Plantae

(Unranked) – Angiosperms

(Unranked) – Monocots

(Unranked) – Commelinids

Order – Arecales

Family – Arecaceae

Subfamily – Arecoideae

Tribe – Cocoeae

Genus – *Cocos*



FIGURE – COCONUT TREE

MANGO TREE



Scientific name – *Magnifera indica*

Kingdom – Plantae

Subkingdom – Tracheobionta

Division – Magnoliophyta

Class – Magnoliopsida

Subclass – Rosidae

Order – Sapnidales

Family – Anacardiaceae

Genus – *Magnifera*

Species – *M. indica*

FIG – MANGO TREE

- * The vitamins, minerals and antioxidants in mangos can provide important health benefits. For example – vitamin K in mango helps prevent anemia.
- * Mangoes lower the risk of cancer as they are rich in β -carotene which is an antioxidant.
- * They are a great source of magnesium and potassium both of which are connected to lower blood pressure and a regular pulse. They offer both amylase and dietary fiber which helps to avoid constipation. Mangoes are rich in folate which is used for healthy cell division and DNA duplication.

NEEM TREE

Scientific name – *Azadirachta indica*

Kingdom – Plantae

Division – Magnoliophyta

Class – Magnoliopsida

Order – Sapnidales

Family – Meliaceae

Genus – *Azadirachta*

Species – *A. indica*



FIGURE – NEEM TREE

- * Neem contains antibacterial properties.
- * It helps to cure asthma.
- * It helps in controlling diabetes.
- * It also helps to cure leprosy.
- * It soothes malaria symptoms.
- * It may also work as a contraceptive in some cases.
- * It helps to treat ulcers.
- * It maintains oral hygiene and health.
- * Helps in increasing blood circulation.
- * Eliminates bad breath.

BANANA TREE

- * We can eat sweet bananas, the stem and the fruit peels as well.
- * We can use banana plant fibers to make garments.
- * Banana leaves can be used as natural leaf platters.
- * Steamed banana leaves can be used for packing our lunch and to make wrapped desserts.
- * Banana flowers are also edible.
- * Banana plant rhizomes have many medicinal uses too.
- * Bananas are rich in potassium thus helps to control blood pressure naturally.
- * Banana peels can also be used as a natural fertilizer in gardens.

Scientific name – *Musa acuminata*

Kingdom – Plantae

(Unranked) – Angiosperms

(Unranked) – Monocots

(Unranked) – Commelinids

Order – Zingiberales

Family – Musaceae

Genus – *Musa*

Species – *M. acuminata*



FIGURE – BANANA TREE

ARECA PALM TREE

Scientific name – *Areca catechu*

Kingdom – Plantae

(Unranked) – Tracheophytes

(Unranked) – Angiosperms

(Unranked) – Monocots

(Unranked) – Commelinids

Order – Arecales

Family – Arecaceae

Genus – *Areca*

Species – *A. catechu*



FIGURE – ARECA PALM TREE

- * The areca nut is popular for chewing in various Asian countries including India.
- * The areca palm is also used as an interior landscaping species.
- * It is often used in large indoor areas such as malls and hotels.
- * In India the dry, fallen leaves are collected and hot – pressed into disposable palm leaf plates and brooms.

FIVE DIFFERENT TYPES OF FLOWERS

ROSE



FIGURE – YELLOW AND PINK ROSE IN HOME GARDEN

- Scientific name – *Rosa canina*
- Kingdom – Plantae
- Phylum - Tracheophyta
- Order – Rosales
- Family – Rosaceae
- Genus – *Rosa*
- Species – *R. canina*
- * Roses are one of the oldest flowers.
 - * Their fragrance is used for making perfumes.
 - * Each rose color has a different meaning, for example, red roses define love, yellow rose define friendship, pink rose define grace and elegance, etc.
 - * It helps to soothe skin irritation, sore throats.
 - * It reduces skin redness, Heals cuts, scars and burns, Relieves headaches.

CHINA ROSE

- * Ecologically, the large hibiscus flowers provide nectar to pollinators.
- * The health benefits of hibiscus tea include its ability to treat high blood pressure and high cholesterol, hypertension.
- * Dried hibiscus is edible and can also be candied and used as a garnish, usually for deserts.
- * A hibiscus flower can be used to determine the pH of a liquid.

Scientific name – *Hibiscus rosa sinencis*

Kingdom – Plantae

Division – Magnoliophyt

Class - Magoliopsida

Order – Malvales

Family – Malvaceae

Genus – *Hibiscus*

Species – *Rosa*



FIG – A CHINA ROSE IN A HOMEGARDEN

CHRYSANTHEMUM

Scientific name – *Chrysanthemum indica*

Kingdom – Plantae

Division - Spermathophyta

Order – Asterales

Family – Asteraceae

Genus – Chrysanthemum

Species – *C. indicum*, *C. daisy*, etc.



FIG - CHRYSANTHEMUM

- * Chrysanthemum are also known as “mum” and is believed to have been originated from China.
- * They are used for decorations.
- * These flowers are used to flavor the wine known as “Chrysanthemum wine”.
- * Chrysanthemum tea is considered to cure some serious cardiac and vascular disorders.

MADAGASCAR PERIWINKLE



FIG – MADAGASCAR PERIWINKLE FLOWER

Scientific name – *Catharanthus roseus*

Kingdom – Plantae

Order – Gentinales

Family – Apocynaceae

Genus – *Catharanthus*

- * It is beneficial for diabetes and enhances memory.
- * It's a common ornamental plant grown in the gardens of residential and official compounds.
- * It is also known as “Vinca” or “Cape Periwinkle” or “Rosy Periwinkle” or “Old – maid”.
- * They used to grow as wild plant species in rainforest.

PETUNIA

- * They are popularly grown in home gardens.
- * It has a very diabolic symbolization.
- * According to New Age Folklore, petunias thrive only where there is “positive energy” and will not grow in places where there is “negative energy”.
- * They can tolerate relatively harsh conditions and hot climates but not frost.
- * They need at least 5 hours of sunlight everyday.

Scientific name – *Petunia axillaries*

Kingdom – Plantae

(unranked) – Tracheophytes

(unranked) – Angiosperms

(unranked) - Asterids

Order – Solanales

Family – Solanaceae

Genus – Petunia

Species – *P. axillaries*, *P. exserta*, etc.

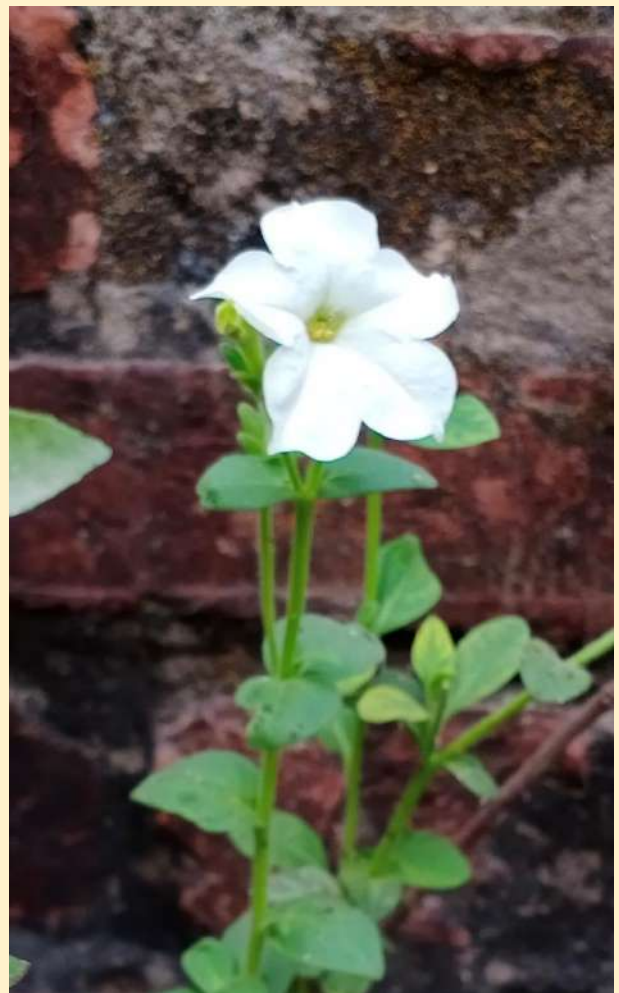
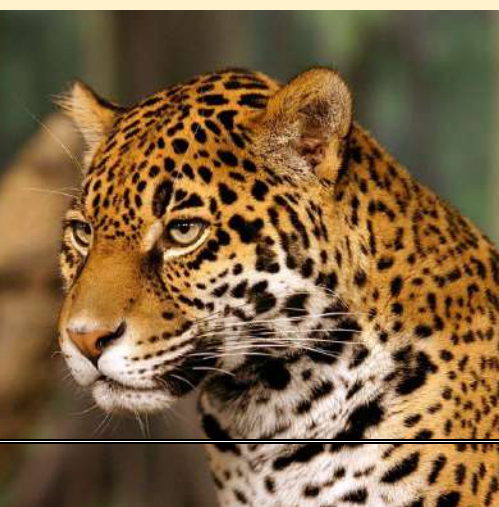
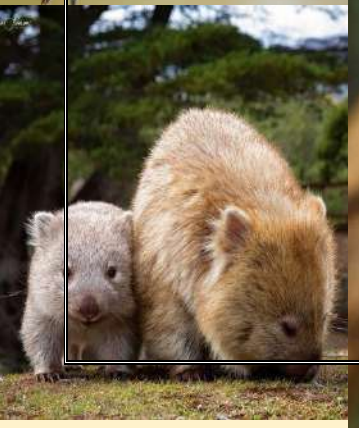


FIG – *Petunia axillaries*



FAUNA



FIVE DIFFERENT TYPES OF ANIMALS

CATS



FIG.- HOUSEHOLD CAT AND KITTEN

Scientific name – *Felis catus*

Kingdom – Animalia

Phylum – Chordata

Class – Mammalia

Order – Carnivora

Family – Felidae

Genus – *Felis*

- * They can see clearly in the dark. They have better sense of smell than human.
- * Domestication of cats was done in Egypt. Now, they are popular all over the world.
- * Lions, leopards, tigers, cheetahs are the family of cats.
- * Their life span is 10-12 years.
- * Neutered male cats live twice as long as feline (female) cats.

DOGS



FIG – PET DOG

Scientific name – *Canis lupus familiaris*

Kingdom – Animalia

Phylum – Chordata

Class – Mammalia

Order – Carnivora

Family – Canidae

Genus – *Canis*

Species – *C. lupus*

- * There are six qualities that every dog has, they are – child-friendly, affectionate, intelligent, loyal, energetic and easy to groom.
- * Their height is 6 inches to 40 inches at the shoulder.
- * They live for 9 – 15 years and some live for 20 years.
- * They shed hair once a year.
- * They have non-retractable claws.
- * They have 42 adult teeth.
- * They have pointed canine teeth.



FIG – STREET DOG

COWS



FIGURE – A COW

Scientific name – *Bos taurus*

Kingdom – Animalia

Phylum – Chordata

Class – Mammalia

Order – Artiodactyla

Family – Bovidae

Genus – *Bos*

- * Brown and white patches in almost equal amounts with some cows tending to dark mahogany color.
- * The skin is pliable and soft with silky hair.
- * The bone structure is fine and flat being proportionate to body weight.
- * Cattle remains an important part of the Indian economy.
- * India is the biggest exporter of beef.
- * The milk that cow provides is fully enriched with all the nutrients that a balanced diet must have, so it is of high nutritional value.

GOATS



FIGURE – A GOAT

Scientific name – *Capra aegagrus hircus*

Kingdom – Animalia

Phylum – Chordata

Class – Mammalia

Order – Ungulata

Family – Bovidae

Genus – *Capra*

Species – *C. aegagrus*

- * The goat is a member of the animal family Bovidae and the subfamily Caprinae meaning it is closely related to the sheep.
- * There are over 300 distinct breeds of goat.
- * It is one of the oldest domesticated species of animal.
- * Goats have been used for milk, meat, fur and skins.
- * Milk from goats is often turned into goat cheese.
- * Female goats are called *does or nannies*, intact males are called *bucks or billies*, and juvenile goats of both sexes are called *kids*.

RABBIT



FIGURE – PET / DOMESTICATED
RABBIT

Scientific name – *Oryctolagus cuniculus*

Kingdom – Animalia

Phylum – Chordata

Class – Mammalia

Order – Lagomorpha

Family – Leporidae

Genus – *Oryctilagus*

- * Rabbits are small, furry mammals with long ears, short fluffy tails, and strong, large hind legs.
- * They have 2 pairs of sharp incisors (front teeth), one pair on top and one pair on the bottom.
- * They also have 2 peg teeth behind the top incisors.
- * Some speies of rabbit can reach speeds of 35-45 miles per hour. Young rabbits seem to walk instead of hop.
- * Rabbits vary in colour, ranging in weight from 2-16 pounds (1-7 kg).
- * Pet rabbits that have been well taken care of and neutered early in life have a life expectancy of 8-12 years.

FIVE DIFFERENT TYPES OF BIRDS

SPARROW

Scientific name – *Passer domesticus*

Kingdom – Animalia

Phylum – Chordata

Class – Aves

Order – Passeriformes

Family – Passeridae

Genus – *Passer*

Species – *P. domesticus*



Figure - Sparrow

- * Male sparrow is brownish streaked with black on their wings and back, with a white bar on a wing, black bill and gray on top of head with chestnut stripe behind the eyes.
- * Females are dusky brownish gray with faint blackish stripes on wings and back and a faint chestnut stripe behind the eye: beak yellowish and gray below.
- * Their droppings are of medical concern because they are associated with more than 29 diseases and ectoparasites.
- * They are relatively small with size of 4-8 inches in length, though 5-7 is the most common range.



* Sparrows are omnivores and feeds on grains, cereals, fruits, flower nectar, kitchen scrap, insects and insect larvae. Their weight is 26-32 grams. They are very light – weighted birds.

PIGEON

Scientific name – *Columba livia*

Kingdom – Animalia

Phylum – Chordata

Class – Aves

Order –Columbiformes

Family –Columbidae

Genus – *Columba*



Figure – pigeons on rooftop of a house

- * They are warm – blooded animals.
- * Body is divided into head, neck, trunk and tail.
- * Body is covered by feathers and legs have scales.
- * They do not have any external ear and their bones are light and porous with air cavities to reduce the body weight. The heart is four chambered.
- * Pigeons have the ability to fly at higher altitudes of limit up to 6000 feet or above.
- * Pigeons can fly up to 77.6 mph at average speeds, but flying at 92.5 mph has been observed. Like humans, they have the ability to see colors. They can also see ultra violet light, another side of the spectrum that humans cannot see.

CROW



Figure – House Crows

Scientific name – *Corvus splendens*

Kingdom – Animalia

Phylum – Chordata

Class – Aves

Order – Passeriformes

Family – Corvidae

- * The house crow is also known as Indian, grey-necked, , which is a common bird of the crow family that is of Asian origin but now found in many parts of the world.
- * They are between the jackdaw and carrion crow in size (40 cm (16 inch) in length) but is slimmer than either.
- * The forehead, crown, throat, and upper breast are a richly glossed black, whilst the neck and breast are a lighter grey – brown in color.
- * The wings, tails and legs are black.
- * House crows feeds largely on refuse around human habitations and other animals such as insect. and other small vertebrates, eggs, nestlings, grain and fruits.

COMMON MYNA



Figure – Common Myna

Scientific name – *Acridotheres tristis*

Kingdom – Animalia

Phylum – Chordata

Class – Aves

Order – Passeriformes

Family – Sturnidae

Genus – *Acridotheres*

- * Common myna is an omnivorous open woodland bird with a strong territorial instinct, the common myna has adapted extremely well to urban environments.
- * In particular, the species poses a serious threat to the ecosystems of Australia where it is named as “The Most Important Pest/Problem”.
- * As it is omnivorous, it feeds on insects, arachnids, crustaceans, reptiles, small mammals, seeds, grain and fruits and discarded waste from human habitation.
- * Common mynas roost communally throughout the year, either in pure or mixed flocks with jungle mynas, rosy starlings, house crows etc.



KOEL

Scientific name – *Eudynamys scolopaceus*

Kingdom – Animalia

Phylum – Chordata

Class – Aves

Order – Cuculiformes

Family – Cuculidae

Genus – *Eudynamys*



Figure – koel

- * the Asian koel is a member of the cuckoo order of birds, Cuculiformes. They are found in Indian subcontinent, china and South east Asia.
- * The name 'koel' is echoic in origin with several different language variants. The bird is widely used symbol in Indian and Nepali poetry. They have long tail upto 39-46 cm and weighing around 190-327 grams.
- * Female of the nominate race is brownish on the crown and has rufous streaks on the head.



- * The back, rump and wing coverts are dark brown with white and buff spots. They are very vocal during the breeding season. Their voice is very pleasant to ears and they have different range of vocal calls.

FIVE DIFFERENT TYPES OF INSECTS

BUTTERFLY



- * There are more than 17,500 recorded butterfly species around the world, 750 of which can be found in the U.S.

- * Butterflies and moths are part of the class of

insects in the order Lepidoptera.

- * Butterflies are flying insects with large scaly wings.
- * Like all insects, they have 6 jointed legs and three body parts: the head, the thorax and the abdomen.
- * The wings are attached to the thorax and they also have a pair of antennae, compound eyes and an exoskeleton.
- * The Cabbage White is the most common butterfly in the U.S.

Scientific name – *Lampides boeticus*

Kingdom – Animalia

Phylum – Arthropoda

Class – Insecta

Order – Lepidoptera

Family – Lycaenidae



FIGURE – A BUTTERFLY

MOTHS



- * Moths vary greatly in size, ranging in wingspan from about 4 mm to nearly 30 cm.
- * They are highly adapted as they live in all but polar habitats.

- * The wings, bodies and legs of moths are covered with dust-like scales that come off if the insect is handled.
- * Compared with butterflies, moths have stouter bodies and duller colouring.
- * Moths also have distinctive feathery or thick antennae.
- * They are paraphyletic group of insects.

Scientific name – *Lampides boeticus*

Kingdom – Animalia

Phylum – Arthropoda

Class – Insecta

Order – Lepidoptera

Family – Chelariinae

MOSQUITOES

Scientific name – *Culiseta longiareolata*

Kingdom – Animalia

Phylum – Arthropoda

Class – Insecta

Order – Diptera

Family – Culicidae



- * The word 'mosquito' is Spanish for "little fly".
- * They are harmful to humans and infect them with **Zika virus, yellow fever, dengue, malaria and other diseases.**
- * They have bedeviled humans for centuries, spreading disease and deaths to millions.
- * The virus they spread leads to **encephalitis, meningitis and microcephaly.**
- * Many humans have died because of malaria and dengue for past few years.
- * In India, the life span of mosquitoes ranges from 45-60 days after becoming adult.



COCKROACHES

Scientific name – *Blatta orientalis*

Kingdom – Animalia

Phylum – Arthropoda

Class – Insecta

Order – Blattodea

Family – Blattidae



- * They are also called ‘roaches’, they are the insects of order *Blattodea*, which also includes termites.
- * About 30 cockroach species out of 4,600 are associated with human habitats.
- * Some species are well – known as pests.
- * They are common and hardy insects capable of tolerating wide range of climates from arctic cold to tropical heat.
- * Tropical cockroaches are much larger than temperate species.
- * They carry a serious disease like **Salmonella** which causes **Typhoid fever, Gastroenteritis and Dysentery leading to severe Diarrhoea.**

GRASSHOPPER



Scientific name – *Poekilocerus pictus*

Kingdom – Animalia

Phylum – Arthropoda

Class – Insecta

Order – Orthoptera

Family – Pyrgomorphidae

* Grasshoppers are typically ground-dwelling insects with powerful hind legs which allow them to escape from threats by leaping vigorously.

- * No evidence has been found that suggest that they hurt people or animals or carry any diseases that could harm humans.
- * They do not sting humans like mosquitoes do as they only eat plants. They do not bite people or animals but just pinch them to defend themselves.

CONCLUSION

Flora and Fauna are two of the most important groups that our planet has provided to us. They are crucial for most of the life of our Earth. Flora and Fauna interact with each other in a complex system. Without flora, there would be no fauna and *vice versa*. Flora provides humanity with precious resources which can be used in several important ways.

Flora and fauna include a huge variety of species which are estimated to range from 7,000,000 to over 11,000,000 species worldwide.

Since flora and fauna are crucial for human life, so we have to stop destroying them and rather we should protect them accordingly. We must follow all the strict laws of protection to Flora and Fauna.

ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my respectful teachers of Microbiology Department as well as our Principal and Vice Principal who gave me the golden opportunity to do this wonderful project on the topic “Study of flora and fauna in our Locality”, which helped me to know so much about different flora and fauna species. It made me aware about the importance of each specie and also the importance to protect them from disappearing from the planet. Secondly, I am thankful to my family and friends who helped me a lot to complete this project on time.



AUDITING

OF

FLORA AND FAUNA

OF

BALLYGAUNGE

AREA

Name of Examination: BSc. Semester 2 (ENVS)
(Under CBCS) Project Work 2021

Subject: Environmental Science
Paper: AECC2
University of Calcutta

CU Roll Number: 203223-11-0091
CU Registration Number: 223-1211-0492-20
College Roll Number: MCBA20F439

Total Number of Page Written: 33

Department of Microbiology

CONTENTS

<u>Topics</u>	<u>Page Number</u>
1. Cover Page	1
2. Self Information Page	2
3. Contents	3
4. Introduction	4
5. Flora	5
(i) Trees	6
(ii) Flowers	7
6. Fauna	11
(i) Animals	16
(ii) Birds	17
(iii) Insects	22
7. Conclusion	27
8. Acknowledgement	32
	33

INTRODUCTION

The topic of this ENVS project is "Auditing of Flora and Fauna of Ballygaunage Area". As the name suggests the project deals with the flora (plants and flowers) and fauna (animals, insects, birds) found in my locality. Every plants and animals have a lot of significant role to play in the environment be it small or large thus promoting a proper balance in our ecosystem but we also know everything on this earth is made with keep it's advantage and disadvantage in mind. Nevertheless; auditing flora and fauna in one's locality gives one a wonderful opportunity to gain immense knowledge about every good and ill effects of a particular component in the ecosystem and I am no exception to this.



TREES



NEEM (Azadirachta indica)

① Neem (Azadirachta indica)

Azadirachta indica, commonly known as neem, nimtree or Indian lilac, is a tree in the mahogany family Meliaceae

Significance • Neem also helps in restoring and maintaining soil fertility which makes it highly suitable in agro-forestry.

- Neem is a natural source to keep environment clean
- Neem is extremely useful in urban forestry because it has remarkable ability to withstand air and water pollution as well as heat
- It is an unique medicinal plant in that all of its parts including its leaves, flowers and seeds

Harmful effects: • The ingestion of neem oil is potentially toxic and can cause metabolic acidosis, seizures, kidney failure, encephalopathy and severe brain ischemia in infants and young children



MANGO (Mangifera indica)

② Mango (Mangifera indica)
Mangifera indica, commonly known as mango, is a species of flowering plant in the sumac and poison ivy family Anacardiaceae

- Significance: • Mango trees have larger surface area compared to other fruit bearing trees hence absorbs more CO₂
- Mango trees provide fruit, firewood, poles, organic matter for soil amendments, living fence post, shade, soil conservation and cattle feed
 - Mango prevents anaemia, improves digestion, helps weight gain and boosts immunity

Harmful effects: • The use of agrochemicals (including fertilisers) and transport of mangoes together account for approximately 60% of the industry's greenhouse gas emission hence contributing to the increased state of pollution



BANANA (Musa acuminata)

④ Banana (Musa acuminata)

Bananas are believed have originated upto 10,000 years ago and some scientists believe they may have been the world's first fruit.

Significance: • Crop rotation every few years using banana trees replenishes the soil and proves to be very beneficial in keeping pests and diseases from developing resistance to the natural pesticides.

- Its fruit is a source of vital nutrients. It is also great digestive, which aids bowel movement and contains good fiber for your gut.
- It also helps in increasing the haemoglobin count and overall blood and cardiovascular health.

Harmful effects: • Major environmental problems arise from the production of bananas for export or from large scale commercial production of bananas for local markets like habitat conversion, soil erosion and degradation, pollution from agrochemical use, solid waste and water usage.



SAL (Shorea robusta)

③ **Sal** (Shorea robusta)
Shorea robusta, the sal tree, also sarai and other names
is a species of tree in the family Dipterocarpaceae

Significance: • It has anti-bacterial property
• Having astringent properties which are found helpful
for treating dysentery and diarrhea
• It is used for treatment of bleeding
• It is cured item for urinary tract infection
• It is used for metrorrhagia and leucorrhoea

Harmful effects: • Sal tree has no apparent effect on the
environment but has long term adverse effects of the
ecology of the forest.



BANYAN (Ficus)

⑤ Banyan (Ficus)

is a big tree that begins life as an epiphyte, i.e. a plant that grows on another plant, that grows on another plant. It is referred to as an epiphyte when its seed germinates in a crack or crevice of a host tree or edifice.

Significance: • Banyan trees are ecological linchpins. They produce vast crops of figs that sustain numerous species of creatures which helps in pollination hence helps in plant diversification.

• Banyan trees also provide a wide variety of health benefits like cure of chronic diarrhoea, dysentery and piles. Treats gums and teeth disorders and cure rheumatic pains.

Harmful effects: • Few parts of the banyan tree plant are poisonous (if ingested), caution should be used while handling it, as sensitive individuals may be susceptible to skin reactions or allergic reactions.

FLOWERS



ROSE (Rosa)

① Rose (Rosa)

A rose is a woody perennial flowering plant of the genus Rosa, in the family Rosaceae, or the flower it bears. There are over three hundred species and ten of thousands of cultivars.

Significance: • Growing a rose garden helps in beautification of the ecosystem.

- It is used as a air refreshment.
- It is used to make money as a boquet of roses can fetch a lot amount of money.

Harmful effects: • The delivery of roses is an exercise in carbon emission which not only pollutes the environment but also serves to expand one's personal carbon footprint.

• According to one estimate of US, 100 million roses produce 9,000 metric tons of carbon dioxide emission.



TUBE ROSE (Polianthes tuberosa)

② Tube Rose (Polianthes tuberosa)

Agave amica, formerly Polianthes tuberosa, the tuberose is a perennial plant in the family Asparagaceae, subfamily Agavoideae, extracts of which are used as a note in perfumery.

Significance: Tuberose essential oil is used for:

- Aphrodisiac
- Home disinfectant
- Insect repellent
- Increase skin health
- Ease Insomnia
- Reduce stress

Harmful effects: • Tuberose is poisonous. Its flower fragrance has certain toxicity, which can make people who smell it appear dizziness, and other adverse reactions.

- If the smell of tuberose inhaled for a long time, it may cause chest tightness, dyspnea and other symptoms.



SUN FLOWER (Helianthus)

③ Sunflower (Helianthus)

Helianthus is a genus comprising about 70 species of annual and perennial flowering plants in the daisy family of Asteraceae.

Significance: • Sunflowers are able to absorb radioactive materials and other pollutants from the soil without much harm to the plant.

- Sunflowers symbolise unwavering faith and unconditional love.
- It also has several medicinal uses.
- Its seeds are used to make edible oil.

Harmful effects: • Sunflower seed production is relatively sustainable, there is no known significant damage to air, water, land, soil forests etc as long as pesticides have not been used which contributes in increasing pollution levels.



CHINA ROSE (Hibiscus rosa sinensis)

④ China rose (Hibiscus rosa sinensis)
Hibiscus rosa sinensis also known as chinese hibiscus,
china rose, Hawaiian hibiscus, rose mallow and
shoeblack plant, is a species of tropical hibiscus, a flowering
plant in the Hibiscaceae tribe of the family Malvaceae.

Significance: • The leaves, fruits and roots are decocted
and used in the treatment of arthritis, boils, coughs etc.
• It's sweet taste, cold potency and astringent properties
provide cooling relief from the hot and dry hot summer.
• China rose cools your digestive gland and reduces
the heat of the blood by purging hot bile fluid from
the gall bladder.

Harmful effects: • Side effects of using hibiscus are
uncommon but include temporary stomach upset or
pain, gas, constipation, nausea, painful urination,
headache, ringing in the ears or shakiness.



LOTUS (Nelumbo nucifera)

⑤ Lotus (Nelumbo nucifera)

Nelumbo nucifera, also known as Indian lotus, scared lotus, or simply lotus, is one of two extant species of aquatic plant in the family Nelumbonaceae.

Significance: • The lotus flower is regarded in many different cultures, especially in eastern religions, as a symbol of purity, enlightenment, self-generation and rebirth.

• It produce antioxidants much required for our skin in form of skin boosting nutrients, serums, facial creams.

Harmful effects: • Lotus rhizomes can be eaten raw, but if growing conditions are not properly sanitary it can present a risk of parasitic infection particularly fasciolopsiasis if pigs are raised nearby.

FAUNA

ANIMALS



DOG (Canis lupus familiaris)

① Dog (Canis lupus familiaris)

The domestic dog is a domesticated descendent of the wolf. The dog derived from an ancient extinct wolf and the modern grey wolf is the dog's nearest living creature.

Significance: • By digging up the soil and exposing it to air, as well as burying food and bones, dog helps to renew and enrich the environment.

- In some regions, dogs and their keen noses have been trained to help scientists finding threatened species like Tiger Quolls.
- Elsewhere they are helping to flush out and control feral cats.

Harmful effects: • The biggest environmental impact associated with dog companions comes from producing meat based pet food which uses land, water and energy resources and is a significant source of green house gas emission.

- Several researchers contend that dogs rank third in their ability to disturb other species outdone only by cats and rodents.



COW (Bos taurus)

② Cow (Bos taurus)

cattles, or cows and bulls are large domesticated even hooved herbivores. They are a prominent member of the subfamily Bovinae, are the most wide spread species of the genus, Bos.

Significance: • Cattle play an irreplaceable role in maintaining top soil, promoting biodiversity, protecting wildlife habitat, reducing the spread of wildfires, providing natural fertiliser.

- Cattle utilise land that would otherwise remain unproductive to humans

Harmful effects: • Each year, a single cow will belch about 220 pounds of methane. Methane from cattle is shorter lived than carbon dioxide but 28 times more potent in warming the atmosphere

- About 92% of freshwater is used for cow farming purposes, and 1/3 rd for rearing the livestock and manufacturing cattle products



SHEEP (Ovis)

③ Sheep (Ovis)

Ovis is a genus of mammals, part of the Caprinae subfamily of the dominant family Bovidae. It's seven highly socialable species are known as sheep.

Significance: • Leaving the roots in place makes it possible for a plant to grow again. Sheep have split hooves which help them to move about and climb rocky areas. These split hooves help break up the soil, this helps spread seeds so new plants will grow.

• Sheep continue to be important for wool and meat today and are also occasionally raised for pelts as dairy animals or as model organisms.

Harmful effects: • Sheep grazing can impact negatively on soil structure through trampling which may lead to increased erosion, decreased soil biodiversity through leaching and volatilisation losses of nutrients.

• The excreta from sheep is also polluting our land, air, water causing eutrophication.



BAT (Chiroptera)

④ Bat (Chiroptera)

Bats are mammals of the order Chiroptera. With their forelimbs adapted as wings, they are the only mammal capable of true and sustained flight.

Significance: • Bats fulfil their ecological role which includes pollinating and dispersing the seeds of hundreds of species of plants thus promoting biodiversity and support the health of ecosystem.

- Bats eat copious quantities of insects and other arthropods hence keeping the population of arthropods in check.

Harmful effects: • Bats can carry viruses that are deadly including rabies, Ebola, SARS coronavirus without themselves showing serious symptoms.

- The bat excreta is toxic as it contains large amount of a fungus called Histoplasma causing Histoplasmosis in humans.



PIG (Sus)

⑤ Pig (Sus)

A pig is any of the animals in the genus Sus, within the even-toed ungulate family Suidae. Pigs include domestic pigs and their ancestors, the common Eurasian wild boar, along with other species.

Significance: • Wild pigs play an important role in managing ecosystems and main farming biodiversity. By rooting and thus disturbing the soil, they create areas for new plant colonisation.

• They also spread fruit plants by dispersing their seeds.

Harmful effects: • Pig farming is bad because due to unnaturally large size and lack of space to move around, they become trapped in their own waste in dirty feedlots fostering the spread of pathogens and rampant disease. High density pig production can release excessive amount of nitrogen and phosphorus hence adding to the constituent of pollution.

BIRDS



CROW (CORVUS)

① Crow (Corvus)

Crow (genus Corvus), any of various glossy black birds found in most parts of the world, with the exception of southern parts of world.

Significance: • An extended family of crows can feed on more than forty thousand caterpillars, armyworms and grubs during a nesting season.

- They also act as pollinators by transporting pollen from one plant to another.
- They eat dead carcasses, thus preventing decay and consequently an influx of insect.

Harmful effects: • Flocks of crows create a lot of noise, leave messy droppings that can spread disease, strew garbage around and cause property damage to buildings and landscaping.

- Crows are also major agricultural pests that damage crops particularly corn, peanuts, sunflowers, pecans and various fruits.



CHICKEN (Gallus gallus domesticus)

② Chicken (Gallus gallus domesticus)

The chicken (Gallus gallus domesticus), a subspecies of the red jungle fowl, is a type of domesticated fowl

Significance • Chickens are omnivores by nature and enjoy chasing down plant-destroying insects like grasshoppers, grubs, beetles and larvae, reducing an area of potential pests in a very short time

- Many of our organic farmers rely on their chickens as a 'natural insecticide' for their flowers and vegetable gardens

Harmful effects : • chicken production has devastating consequences on water quality, contributes to global climate change and harms natural habitat

- chicken can also wreak havoc on the climate



PIGEON (Columbidae)

③ Pigeon (Columbidae)

Columbidae is a bird family consisting of pigeons and doves. These are stout bodied birds with short necks and short slender bills that in some species features fleshy cere. They primarily feed on seeds, fruits and plants.

Significance: • Pigeons play a vital role in the environment, they serve as food for peregrine falcons, hawks, owls and martins.

- They also maintain and regulate insect species in an environment as well as weeds such as thistles.
- These birds also play a part in seed dispersal by eating seeds and distributing them.

Harmful effects: • A small health risk can be associated with pigeon contact.

- Three human diseases, histoplasmosis, cryptococcosis and psittacosis are linked to pigeon droppings.



PEACOCK (Pavo cristatus)

④ Peacock (Pavo cristatus)

Peacock also called peafowl, any of three species of resplendent birds of the pheasant family, Phasianidae (order Galliformes). Male peafowls are called peacock and females are referred to as peahen.

Significance: • The peafowl is extremely crucial for our ecosystem as they feed on insects which may harm the crops, thus they keep the farmers and keeping a check on the insect population.

• In addition, peafowl consume a variety of insects, as well as snakes, amphibians and rodents. So some people use them to help keep pest populations under control.

Harmful effects: • Peafowls are known to be damaging crops as well as other items of the farmers making them unhappy.



PARROT (Psittacula)

⑤ Parrot (Psittacula)

Parrots also known as psittacines, are birds of the roughly 398 species in 92 genera comprising the order Psittaci forms, found mostly in tropical and sub-tropical regions.

Significance: • The parrots play an important role in its habitat by helping to propagate the forest, because not all seeds consumed are digested, many are passed in the bird's guano over new areas of the forest.

- Some species eat nectar and are important pollinators of many species of plants in the tropical forests.

Harmful effects: • Non native parrots can cause substantial agricultural damage and threaten native biodiversity but severe impacts remain rare and localised.

- By digesting garbage thus promoting the transportation of diseases, water contamination etc.

INSECTS



COCKROACH (Periplaneta americana)

① Cockroach (Periplaneta americana)

Cockroaches are insects of the order Blattodea, which also includes termites. About 30 cockroach species out of 4600 are associated with human habitats. Some species are well known as pests.

Significance: • Professional scavengers, chowing down just about anything including dead plants to animal waste

• Their digestive systems are up to the task because they contain bacteria and protozoa that help convert the world's waste into easily absorbable nutrients

Harmful effects: • Cockroaches carry pathogens that cause variety of diseases including gastroenteritis, dysentery, cholera, typhoid fever

• They destroy food and contaminate it with their smelly excreta

• They are considered to be dangerous as an allergen source and cause asthma trigger



HONEYBEE (Apis)

② Honey Bee (Apis)

A honey bee is an eusocial flying insect within the genus Apis of the bee clade, all native to Eurasia.

- Significance:
- Honeybees are responsible for pollinating 85% of all food crops for humans as well as numerous crops for cattle.
 - Bees play an important role in the life cycle of most plants and flowers.
 - Honeybees produce honey which is natural and has a long list of health benefits due to its antibacterial properties.
 - Beewax can be used as an ingredient in fuels, candles, beauty products, lip balm, chewing gum etc.

- Harmful effects:
- Honeybee's sting may not commonly be hazardous, some people may be allergic to bee venom which causes severe side effects even at times death.
 - Although they are important for agriculture, honeybees destabilize natural ecosystem by competing with native bees - some of which are species at risk.



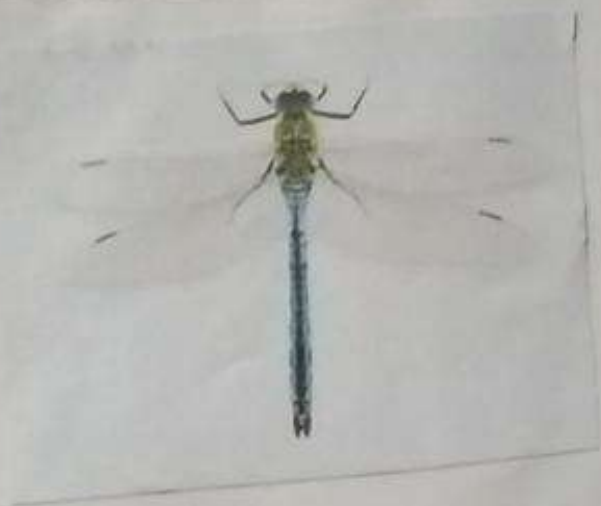
SILK MOTH (Bombyx mori)

③ Silk moth (Bombyx mori)

Bombyx mori, the domestic silk moth, is an insect from the moth family Bombycidae. It is the closest relative of Bombyx mandarina, the wild silk moth. The silkworm is the larva or caterpillar of a silk moth.

Significance: • It is cultivated to produce a wide variety of silk included muga, tussar (sericulture)
• Sericulture also provides employment and is a massive source of income for Indians.

Harmful effects: • Giant silkworms' utriculating hairs are quite fragile, and release a potent toxin that is poisonous when ingested hence responsible for several human deaths each year.



DRAGONFLY (Anisoptera)

④ Dragon fly (Anisoptera)

A dragonfly is an insect belonging to the order Odonata, suborder Anisoptera. Adults are characterised by large, multifaceted eyes, 2 pairs of strong transparent wings, sometimes with coloured patches and an elongated body.

Significance: • Dragonflies eat mosquitoes and other agricultural pests thus helping the environment because it allows humans to reduce the use of pesticides to kill these pests.

Their larvae are under water and the terrestrial and aerial pests are predated by the adults.

Harmful effects: • Water pollution is the major cause for the well being of dragon flies which in turn have harmful effects on the environment like pollution, habitat loss.



LADY BIRD (Coccinellidae)

③ Ladybird (Coccinellidae)

Coccinellidae is a widespread family of small beetles varying in size from 0.8 to 18 mm. The family is commonly known as ladybirds in Britain and other parts of the English speaking world and ladybugs in North America.

Significance: • Ladybirds are important predators of insect herbivores in managed and natural ecosystem throughout the world.

• They play a tremendous role in protecting crop and non crop plants from the savages of herbivores.

Harmful effects: • Ladybirds are not poisonous to humans, but they do have toxic effects on some small animals like birds and lizards.

• When threatened, ladybugs secrete a fluid from the joints of their legs, creating a foul odour to ward off predators.

CONCLUSION

After completing the project, I conclude that every locality is blessed with variety of flora and fauna which maintains diversity of ecosystem and a proper balance in the environment. Every animals and plants I have observed has wide range of contributions and certain amount of significance to the environment but at the same time they also cause harm by either hosting a number of pathogens, or using a lot of environmental products or emitting harmful substances which may cause havoc in near future. Nevertheless I got an interesting opportunity to learn about a wide variety of flora and fauna in the locality I live in.



ACKNOWLEDGEMENT

I am Raima Sen Sharma studying BSc. Microbiology Honours (Semester 2) at Scottish Church College. I would like to thank my all honourable teachers of my department for giving me an opportunity to work on this wonderful project. I would like to thank all my classmates because of their kind help during the course of the project. Last but not the least I would extend my thanks to my parents and my brother for their all time support during the time of preparing this project.



SCOTTISH CHURCH COLLEGE



ENVIRONMENTAL SCIENCE PROJECT



CU Reg. No. - 223-1211-0493-20

CU Roll No. - 203223-11-0092

College Roll no.- MCBA20F440

SEMESTER 2

Department- MICROBIOLOGY

AECC-2

TOPIC- “Study of flora and fauna of your locality,
'RISHRA'.”



CONTENTS

- Introduction
- 5 trees—
 - Arecanut tree
 - Coconut tree
 - Mango tree
 - Lemon grass plant
 - Tulsi plant
- 5 flowers—
 - Rose
 - Marigold
 - China rose
 - Nayantara
 - Jungle geranium
- 5 animals—
 - Squirrel
 - Goat
 - Dog
 - Monkey
 - Cow
- 5 birds—
 - Parrot
 - Bulbul
 - Pigeon
 - Owl
 - Eagle

- 5 insects—
 - Butterfly
 - Moth
 - Ladybug
 - Bumblebee
 - Black garden ant
 - Conclusion
 - Acknowledgement
-

INTRODUCTION

Environment is the surrounding in which we (human beings), animals and plants live together. We often confuse between nature and environment. The difference between environment and nature is that environment is the surrounding of, and influences on particular item of interest while nature, on the other hand, means the natural world; consisting of all the things unaffected by or predating human technology, production and designing e.g. the ecosystem, the natural environment, virgin ground, unmodified species, laws of nature.

Through this project, I would like to shed some light on the environment surrounding me. The topic of my project is "Study of flora and fauna of your locality (i.e. Rishra)". Rishra is a small city of district Hooghly. It comes under the outskirts of Kolkata. This is a plain land tropical area, so the flora and fauna present in my city are very much common. The word 'common' is used because the flora and fauna of my area don't have any kind of special adaptations as seen in the flora and fauna of hilly areas or desert areas. These special adaptations are seen in them for their survival in such harsh and extreme climatic conditions. On the other hand, the climatic condition of my area is very normal and suitable. We face five major seasonal changes in a year-summer, winter, monsoon, spring and autumn. With the change in seasons, a difference in the surrounding environment is witnessed but as they are not that extreme and long-term so any special adaptation is not seen.



FLORA

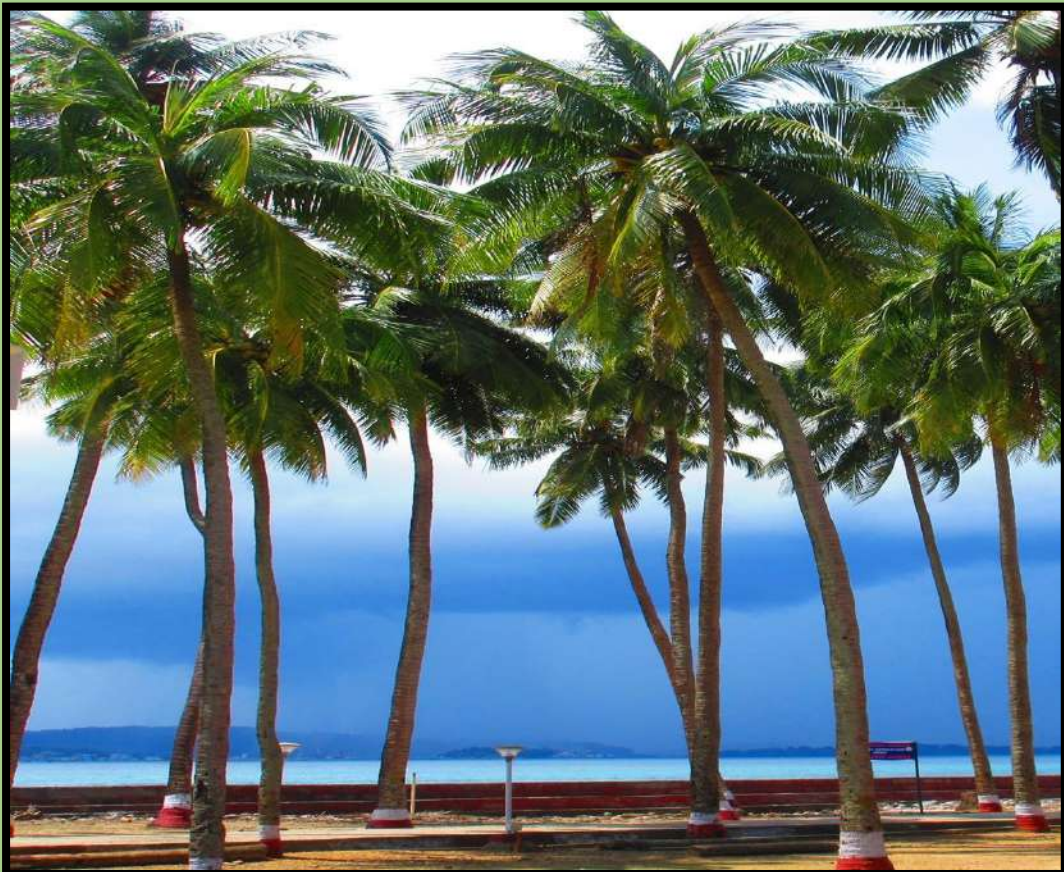
ARECANUT TREE

- Scientific name- *Areca catechu*
- The palm is believed to have originated in the Philippines.
- This is commonly called as the betel tree because its fruit, the areca nut, is often chewed along with the betel leaf.
- Very tall, sometimes up to 20m (66ft)
- Leaves are 1.5-2m long, pinnate, with numerous, crowded leaflets.
- The dry, fallen leaves are collected and hot-pressed into disposable palm leaf plates and bowls.
- The nut itself can be addictive
- Chewing this nut as an addiction may even cause oral cancer.



COCONUT TREE

- Scientific name- *Cocos nucifera*
- Only living species of the genus *Cocos*
- They are ubiquitous in coastal tropical region
- Often referred to as the “tree of life”
- The inner flesh of the mature seed, as well as the coconut milk extracted from it is consumed by people
- They are distinct from other fruits because their endosperm contains a large quantity of clear liquid, called coconut water.
- The ripen fruit is processed for oil and plant milk
- Charcoal can be obtained from the hard shell
- Trees grow up to 30m tall and can yield up to 75 fruits per year
- Plants are intolerant of cold weather and prefer copious precipitation, as well as full sunlight.



MANGO TREE

- Scientific name- *Mangifera indica*
- Originated from the region between northwestern Myanmar, Bangladesh and northeastern India.
- It is a large fruit-tree, capable of growing to a height and crown width of about 30m.
- Grows best in well-drained sandy loam.
- Flowers appear at the end of winter and beginning of spring.
- The fruit, mango, ripe during April, May
- Allergenic urushiols are present in the fruit peel and can trigger contact dermatitis in sensitized individuals.



LEMON GRASS

- Scientific name- *Cymbopogon sp.*
- Tropical island plants in the grass family
- Commonly cultivated as culinary and medicinal herbs
- The grass grows maximum to about 2m
- This grass is used as an insect repellent in insect sprays
- Used in aromatherapy
- The tea made from the grass may cause a recurrence of contact dermatitis in some cases.



TULSI PLANT

- Scientific name- *Ocimum tenuiflorum*
- Commonly known as holy basil or tulsi
- It is an aromatic perennial plant
- Native to Indian subcontinent
- Cultivated for religious and traditional medicinal purposes and also for its essential oil.
- Widely used in herbal tea, commonly used in ayurveda
- Many- branched subshrub, 30-60cm tall with hairy stem
- Leaves are green or purple; they are simply petioled
- The purplish flowers are placed in close whorls on elongated racemes.



ROSE

- Scientific name- *Rosa sp.*
- There are over three hundred species
- Stems are armed with sharp prickles
- Flowers vary in size and shape and are usually large and showy
- In colours ranging from white through yellows and reds
- They are all widely grown for their beauty and often are fragrant.
- Best known use is, as ornamental plant
- Rose perfumes are made from rose oil
- Rose water is also made which is used for cooking, cosmetics, medicine and religious practices.
- A sweet preserve of rose petals called gulkand is made.
- Rose hip is used as a minor source of vitamin C.
- These have been used for stomach problems, and for controlling cancer growth.



MARIGOLD

- Scientific name- *Tagetes sp.*
- Plants are native to the Americas
- Varies in size from 0.1-2.2m tall
- Blooms naturally occur in golden, orange, yellow and white colours, often with maroon highlights
- Floral heads are typically 1-6cm in diameter
- In horticulture, they tend to be planted as annuals
- Marigold foliage has a musky, pungent scent, though some varieties have been bred to be scentless



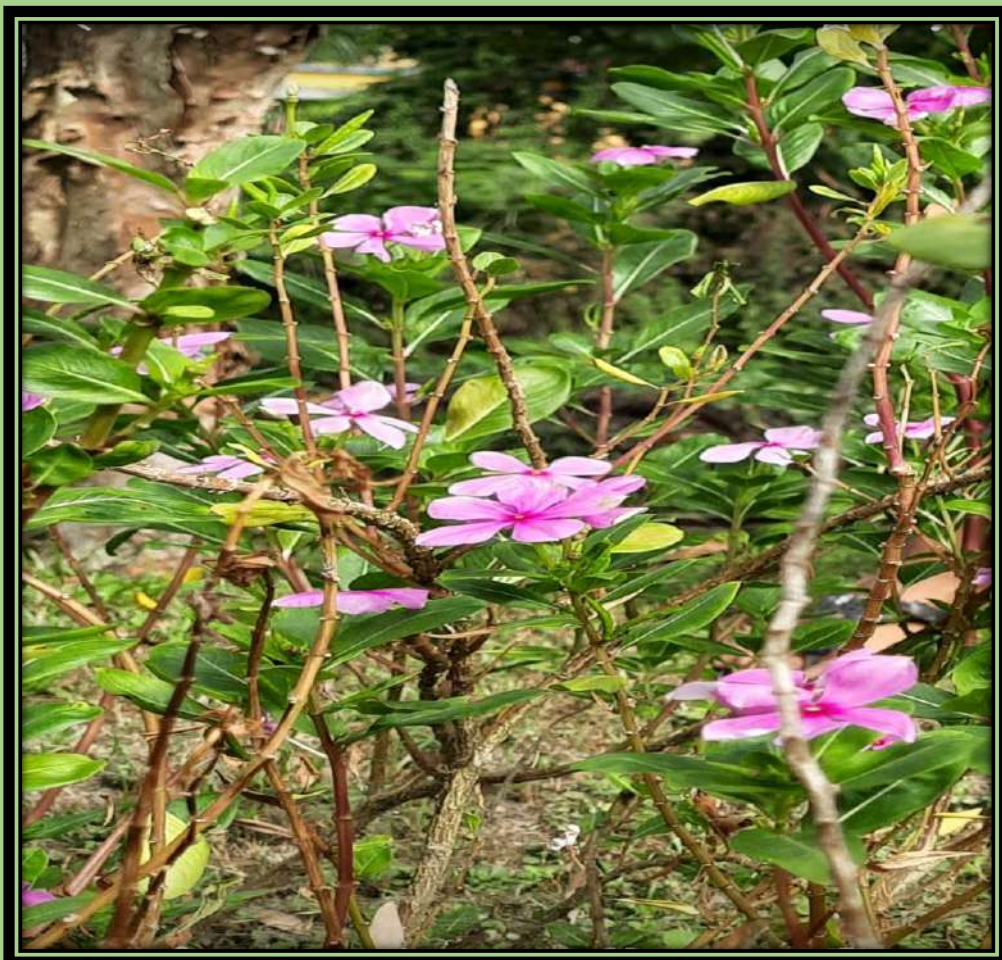
CHINA ROSE

- Scientific name- *Hibiscus rosa-sinensis*
- This is a bushy, evergreen shrub or small tree growing 2.5-5m tall
- The flowers are of various shades varying from white to pink, red, orange, peach, and yellow or purple
- Flowers mostly bloom in summer and autumn
- The 5-petaled flowers are 10cm in diameter
- The flowers are edible and are used in salads in the Pacific Islands
- The flower is used in hair care as a preparation
- It can be used as a pH indicator
- This is the national flower of Malaysia.



NAVANTARA

- Scientific name- *Catharanthus roseus*
- It is native and endemic to Madagascar, but grown in many places
- It is a source of the drugs vincristine and vinblastine
- Used to treat cancer
- It is an evergreen subshrub or herbaceous plant growing 1m tall
- The flowers are white to dark pink
- Basal tube of the flower is 2.5-3cm long
- A corolla is 2-5cm in diameter with five petal-like lobes
- Its flowering period is from spring to late autumn, in warm temperate regions



JUNGLE GERANTUM

- Scientific name- *Ixora coccinea*
- Common flowering shrub native to Southern India, Bangladesh, and Sri Lanka
- National flower of Suriname
- Commonly 4-6ft in height
- Small-tubular, scarlet flowers in dense rounded clusters 2-5in across
- The flowers are produced almost all year long
- Grows best at temperate regions
- Used in ayurveda and various folks medicine



Fauna

SQUIRREL

- Scientific name- *Funambulus palmarum*
- The Indian palm squirrel or three-striped palm squirrel (*F. palmarum*) is a species of rodent in the family Sciuridae
- Found naturally in India and Sri Lanka
- It is about the size of a large chipmunk
- It has a bushy tail slightly shorter than its body.
- The back is a grizzled, grey-brown colour with three conspicuous white stripes
- It has a creamy white belly
- The ears are small and triangular
- These squirrels eat mainly nuts and fruits.



GOAT

- Scientific name- *Capra aegagrus hircus*
- The domestic goat or simply goat is a subspecies of *C. aegagrus* from the wild goats
- There are over 300 distinct breeds
- One of the oldest domesticated species of animal
- Goats have been used for milk, meat, fur and skins
- Goats naturally have two horns, of various shapes and sizes depending on the breed
- In matter of eating, goats are browsing animals, not grazers
- They chew on and taste just about anything remotely resembling plant matter to decide whether it's good to eat



DOG

- Scientific name – *Canis familiaris*
- Domestic dogs are the domesticated descendant of the wolf
- Dog was the first species to be domesticated by hunter-gatherers
- Their long association with humans has led dogs to be uniquely adapted to human behaviors
- Dog breeds vary widely in shape, size and colour
- They perform many roles for humans, such as hunting, protection, assisting policed, companionship, therapy and aiding disabled people.
- This influence on human society has given them the sobriquet of “man’s bestfriend”



MONKEY

- Scientific name- *Macaca mulatta*
- The rhesus macaque, is a species of Old World monkey
- Native to South, Central and Southeast Asia
- It is brown or grey in colour and has a pink or black face
- It's tail averages between 20.7 and 22.9cm
- They adapt well to human presence, and form larger troops in human-domesticated landscapes than in forest
- They are mostly herbivorous, feeding mainly on fruits, but also eating seeds, roots, bud, bark, and cereals
- In psychological research, monkeys have demonstrated a variety of complex cognitive abilities.
- Monkeys interact using a variety of facial expressions, vocalizations, body postures, and gestures.



COW

- Scientific name- *Bos taurus*
- Cattles, or cow (female) and bulls (male), are large domesticated cloven-hooved herbivores.
- They are commonly raised as livestock for meat, for milk and for hides
- Another cattle product is their dung, which can create manure or fuel
- In some regions, such as parts of India, cattle have significant religious meaning
- In 2009, cattle became one of the first livestock animals to have a fully mapped genome.



PARROT

- Scientific name- *Psittacula krameri*
- Commonly seen parrots are also known as the ring-necked parakeet
- One of the few parrot species that have successfully adapted to living in disturbed habitats
- They are sexually dimorphic
- This is a noisy species with an unmistakably squawking call
- Captive individuals can be taught to speak
- They are herbivorous species
- They are non-migratory bird
- From April to June, they care for their young ones
- Both males and females have the ability to mimic human speech.



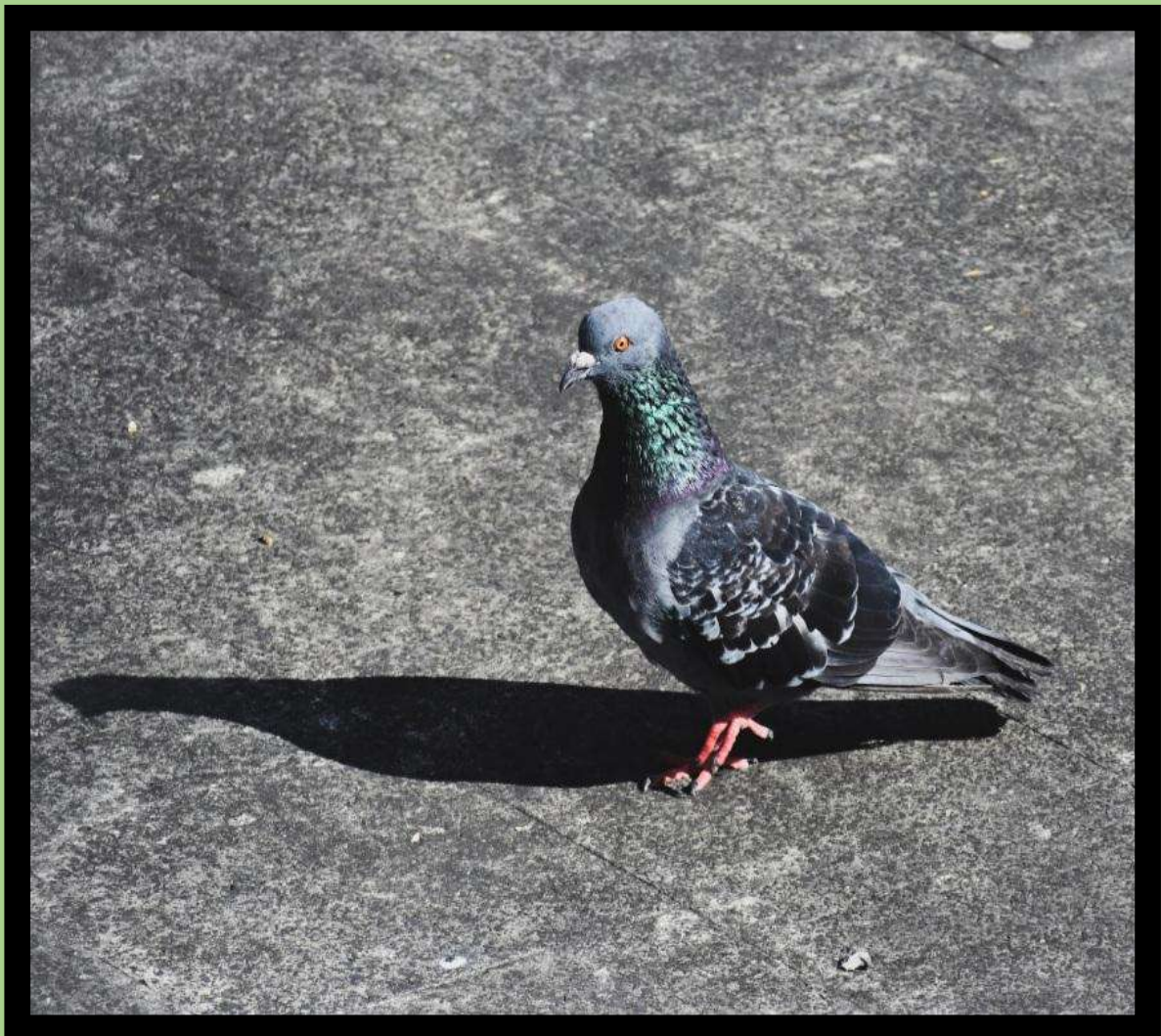
BULBUL

- Scientific name- *Pycnonotus jocosus*
- Common name – red-whiskered bulbul, or crested bulbul
- Native to tropical Asia
- It has a loud three or four note call
- They feed on fruits and small insects
- It is common in hill forests and urban gardens
- It is about 20cm in length
- It has brown upper-parts and whitish underparts
- It has a red face patch which makes it distinct
- They have a loud and evocative call and the song is a scolding chatter
- They perches conspicuously on trees
- The life span is about 11 years
- The breeding seasons are at peaks from December to May in southern India and March to October in northern India
- Young birds are fed on caterpillars and insects



PIGEON

- Scientific name- *Columba livia*
- They are pale grey with two black bars on each wing
- It has a dark bluish-grey head, neck and chest
- It has glossy yellowish, greenish and reddish-purple iridescence along its neck and wing feathers
- Young birds show little luster and are duller
- Eye colour of the pigeon is generally orange
- Pigeons feed on the ground in flocks or individually
- Pigeons are naturally granivorous, sometimes also consume small invertebrates
- A rock pigeon's lifespan ranges from 3-5 years in the wild while upto 15 years in captivity.



OWL

- Scientific name- *Athene brama*
- The spotted owlet is a small owl which breeds in tropical Asia from mainland India to Southeast Asia
- A common resident of open habitats including farmland and human habitation
- It nests in a hole in a tree or building, laying 3-5 eggs
- The upperparts are grey-brown, heavily spotted with white
- The underparts are white, streaked with brown
- They are nocturnal
- It hunts a variety of insects and small vertebrates
- The call is harsh and loud churring and chuckling
- The breeding season is November to April



EAGLE

- Scientific name- *Milvus migrans*
- Commonly known as black kite
- Black kites are opportunistic hunters and are more likely to scavenge
- Their angled wing and distinctive forked tail make them easy to identify
- They are also vociferous with a shrill whinnying call
- This kite is widely distributed through the temperate and tropical parts, with the temperate region populations tending to be migratory
- They are most often seen gliding and soaring on thermals as they search for food
- They swoop down while flying with their legs lowered to snatch small live prey
- They are attracted to smoke and fires, where they seek escaping prey.



BUTTERFLY

- Scientific name- *Tirumala limniace*
- The common name of this butterfly is blue tiger
- This butterfly shows gregarious migratory behavior in southern India
- Blue tiger butterflies show the high-intensity light absorption which significantly increase flight activity
- The wing surface colour is composed of both light and dark colours
- The dark areas on the wing surface are the heat absorption areas that allow for the facilitation of autonomous flight
- They are green with golden scattered spots and beaded dorsal crescent



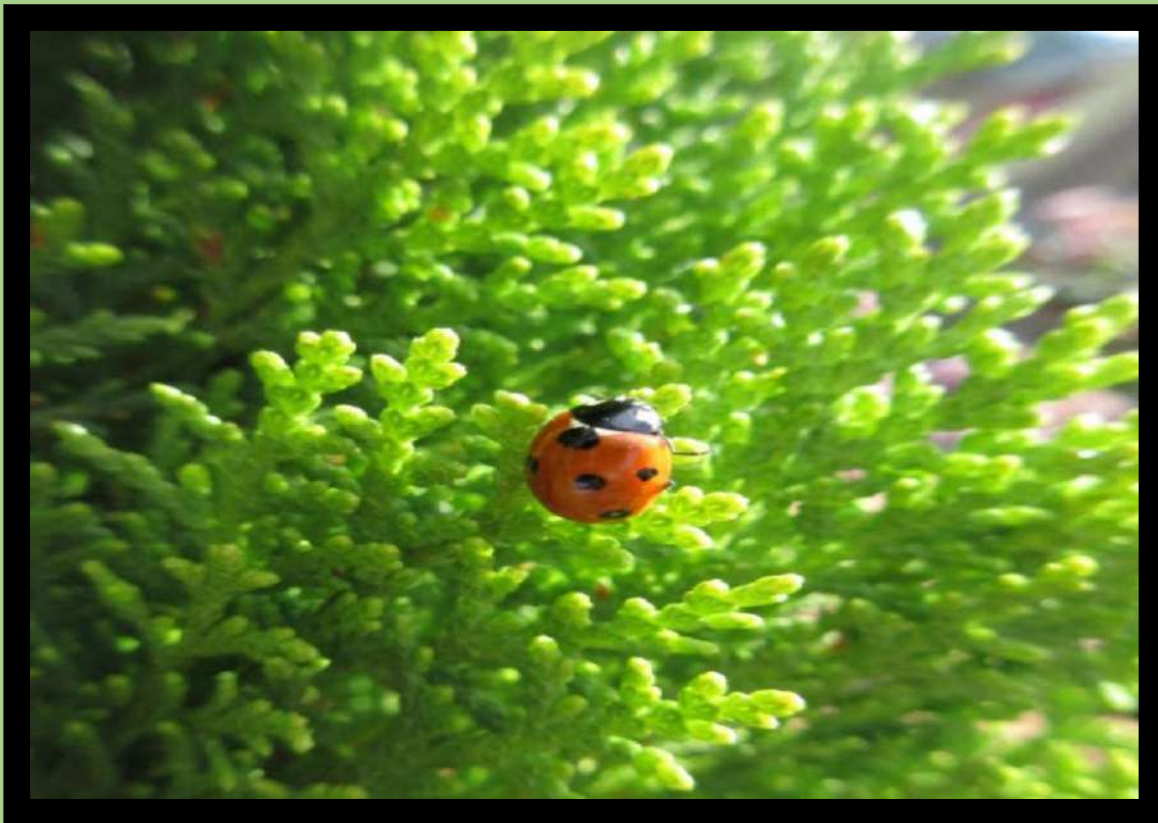
MOTH

- Scientific name- *Hemithea aestivaria*
- The common emerald is a moth of the family Geometridae
- All wings are generally green with grey and white chequered fringes
- The green colouration tends not to fade over time as much as seen in other emeralds
- The hindwings have a sharply angled termen
- The wingspan is 30-35mm
- It flies at dusk and night in June and July and will come to light



LADYBUG

- Scientific name- *Coccinella septempunctata*
- It is the seven-spotted and most common ladybug
- They are voracious predators of aphids
- There are one or two generations per year
- Adults overwinter in ground litter parks, gardens, and forest edges of treelines
- Their distinctive spots and attractive colours apparently make them unappealing to predators
- They synthesizes the toxic alkaloids which can be very much toxic for the potential predators



BUMBLEBEE

- Scientific name – *Bombus sp.*
- It has over 250 species in the genus
- Female bumblebees can sting repeatedly, but generally ignore humans and other animals
- They have round bodies covered in soft hair called 'pile'
- Bumblebees feed on nectar, using their long hairy tongues to lap up the liquid
- They are important agricultural pollinators
- These are typically found in temperate climates
- Wax is secreted from glands on the abdomen
- They do not have ears; they are sensitive to vibrations
- They may also communicate by the buzzing sounds made by their wings



BLACK GARDEN ANT

- Scientific name – *Lasius niger*
- They are 3-5mm long and are dark glossy black
- They nest underground, commonly under stones, but also in rotten wood, and under roots
- They get their nutrition from nectar, small insects, fruit etc.
- Ants mate on the wings, so flying ants are alates
- The mating occurs around June to September throughout the species range
- Ants have four stages of development: egg, larva, pupa and adult
- Black ant removes predators such as ladybirds from the vicinity of black bean aphid thus helping them to yield more
- The *Plebejus argus* butterfly lays eggs near their nest, forming a mutualistic relationship.



CONCLUSION

From this project I can conclude that how much important environment is, for us. All the flora and fauna that have been discussed in this project are found in my locality. I am glad that my locality still has so much greenery, but still it is not enough.

Due to increasing civilization, as we know, we are ignoring our environment, way too much. Due to, over population and subsequently all the increasing needs of human beings, we the humans, are exploiting our beautiful natural environment. This is the high time, we come together, we realize and act accordingly, not to exploit our environment, but to save it. We believe that by cutting more trees and increasing industrialization, and by constructing big buildings in place of forests, is the ultimate modernization and by that, the city looks beautiful but what we fail to understand is that, by doing so we only are endangering the future of our upcoming generations. Civilization is up to a point very much important. But that certainly does not mean civilization will have to occur by taking down the trees and snatching the habitats of fauna. A proper planning is needed which will promote civilization but simultaneously will end the exploitation of natural environment.

This project helped me to become more aware about my environment. Many of the plants mentioned in this project are of my house only. Lastly, I would like to spread the same awareness among everyone watching this project.

ACKNOWLEDGEMENT

I would like to thank my college, "SCOTTISH CHURCH COLLEGE", for giving me the chance to do this project. I would like to prolong my gratitude to our respected Principal ma'am and all the professors for their constant support and help; without them, this project would have been impossible to complete. Through this project I got to know so much about my area. This project gave me a chance to spread awareness.

I will give my special thanks to my elder sister for giving me all her captured pictures. All the pictures (except two) used in this project are self-captured by my elder sister. Lastly, I would like to thank my parents too for always helping me with anything I need, anytime.

The page is framed by a decorative border of various tropical plants. On the left and right sides, there are large, dark green leaves with prominent veins, including a large Monstera leaf on the right. At the top and bottom, there are smaller, lighter green leaves and vines. The central text is set against a white background.

Flora
and
Fauna
Auditing

In Bhadreshwar

Subject : ENVS (AECC 2)

Paper : AECC2

Semester : 2nd

Department : Microbiology

CU roll no. : 203223-11-0097

CU registration no. : 223-1211-0503-20

College roll no. : MCBA20F442

Index

1. Introduction.....	1
2. Study of Flora.....	2
• Rose.....	3
• China Rose.....	4
• Marigold.....	5
• Blue Pea.....	6
• Night-Flowering Jasmine.....	7
• Neem.....	8
• Sacred Fig.....	9
• Bengal quince.....	11
• Coconut Palm.....	12
• Banana.....	13
3. Study of Fauna.....	15
• Cow.....	16
• Goat.....	17
• Dog.....	18
• Gray Langur.....	20
• Domestic Pig.....	22
• Indian Runner Duck.....	23
• Chicken.....	24
• Owl.....	25
• Crow.....	26
• Domestic Pigeon.....	28
• Mosquito.....	29
• Indian Honey Bee.....	30
• Black Garden Ant.....	31
• House Fly.....	33
• Asian Giant Hornet.....	35
4. Conclusion.....	36
5. Acknowledgement.....	37

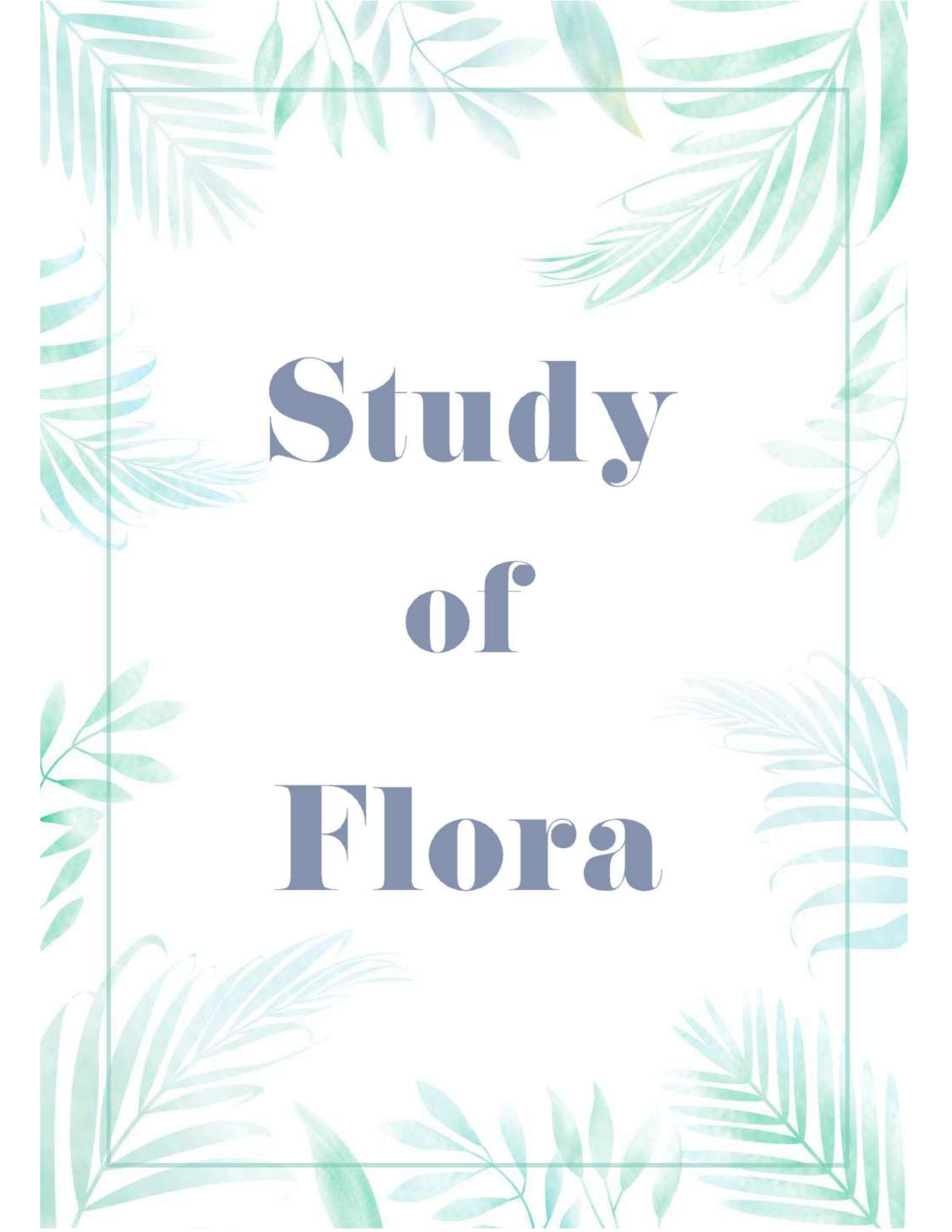


INTRODUCTION

Nature makes our planet a beautiful place to live in. The untamed rivers, lofty mountains, blue skies, plants and animals everything serves a defined purpose in the ecosystem. All these components are intrinsically connected to each other. Human life is possible because of the blessings, nature has bestowed upon us. Out of them plants and animals are inarguably indispensable for our survival. Thus, the study of flora and fauna i.e., the plants and animals is fascinating and important to observe and study.

Flora is a collective term for a group of plant life (trees and flowers) found in a particular region. **Fauna** represents the animal life (animals, birds and insects) indigenous to a region.

This project, "**FLORA AND FAUNA AUDITING IN MY LOCALITY (Bhadreshwar)**", briefly describes the flora and fauna found in my locality, their benefits and in some cases, detriments.



**Study
of
Flora**

Rosa chinensis



Beneficial Role :

- Roses are best known as **ornamental plants** grown for their flowers in the garden and sometimes indoors. Rose plants are generally used for beautifying the gardens and walkways.
- Gulkand made by the mixture of Rose petals and white sugar in equal proportion acts as the **tonic and laxative**.
- Rose petals are used to make **skin healthy and glowing**. It cures dry and patchy skin.
- Roses are also used in the preparation of **rose water and rose vinegar**.
- Dried Rose petals called Pankhuri are used during the hot weather for **preparing cool drinks**.
- Rose petals are used in cooking, which increases its flavour and make it even more delicious. They are used for making herbal tea, jam and jellies.

9

Hibiscus rosa-sinensis



Beneficial Role :

- **Hibiscus** is known for its aesthetic beauty and traditional role in sacred ceremonies, like the worship of Goddess Kali in Bengal.
- External application of Hibiscus powder or the flower paste with coconut oil on the scalp helps in promoting **hair growth and prevents greying of hair.**
- Drinking Hibiscus tea might help in the management of **menorrhagia, bleeding piles and diarrhoea.**
- Hibiscus also has good aphrodisiac and laxative properties.
- Hibiscus heals swollen areas and other types of skin problems such as **itching, burning, etc.**
- Hibiscus is a traditional **remedy for high blood pressure** due to its diuretic action and blood-thinning properties.

Tagetes erecta



Beneficial Role :

- Marigolds are usually planted in gardens to **repel bugs**, add colour and give off a pleasant smell.
- *Tagetes sp.* is used for digestive tract problems including poor **appetite, gas, stomach pain, colic, intestinal worms, and dysentery.**
- The flowers of Marigold are used as a **mosquito repellent.**
- In foods and beverages, *Tagetes sp.* is used as a flavour component.
- The oil extracted from the plant is used as a **fragrance** in perfumes.
- Marigold contains ingredients that might help decrease **swelling (inflammation) and spasms, calm the nerves, and reduce blood pressure.**
- The juice of the leaves is put on the skin for treating **eczema.**

P

B

G

Clitoria ternatea



Beneficial Role :

- The flower of Aparajita is used as a **natural food colourant** to colour glutinous rice and dessert.
- *Clitoria ternatea* is useful for **treating throat ailments** and also improve voice quality. It also helps to strengthen the heart.
- Blue Pea extracts have natural anti-inflammatory properties which makes it effective against any inflammations in the body. It also **relieves indigestion**.
- Aparajita is actively used in Ayurveda for diseases like **mania, schizophrenia and other neurological disorders**.
- This herb also helps improve the process of spermatogenesis in males and is a useful for people suffering from **infertility or impotence**.

L

Nyctanthes arbor-tristis



Beneficial Role :

- The small, aromatic, white flowers of *Nyctanthes arbor-tristis* works wonderfully for **gastric ailments and respiratory problems**.
- In Ayurveda, Parijat leaves has been used to treat a different kind of **fevers, cough, worm infestation**, etc. The leaves juice is bitter and **works as a tonic**.
- Parijat stem powder is very good to treat **joint pain and malaria**.
- Parijat leaves and flowers possess anti-inflammatory properties and specific essential oils to makes them beneficial in the treatment of **arthritic knee pain**.
- Parijat oil works wonderfully as an **anti-allergic, antiviral, and antibacterial agent**. It helps to inhibit germs like E. coli. , staph infection, and some fungal infection. It can also be used to treat the various fungal infection of the skin.

Azadirachta indica



Beneficial Role :

- Neem leaves are dried in India and placed in cupboards to **prevent insects eating the clothes**, and also in tins where rice is stored.
- The tender shoots and flowers of the neem tree are **eaten as a vegetable in India**. In Bengal, young neem leaves are fried in oil with tiny pieces of eggplant (brinjal).
- Products made from neem trees have been used in the **traditional medicine of India** for centuries although there is insufficient clinical evidence.
- Neem is a **key ingredient in non-pesticidal management (NPM)**, providing a natural alternative to synthetic pesticides. Neem oil has been shown to avert termite attack as an eco-friendly and economical agent.

Harmful role :

- Neem may cause **miscarriages, infertility, and low blood sugar**.
- Neem oil has the ability to cause some forms of toxic encephalopathy and ophthalmopathy if consumed in any quantity.

t F G

Ficus religiosa



Beneficial role :

- Peepal is an effective herb for **controlling diarrhoea**. Using Peepal bark powder helps to control the loss of water from the body and makes the stool thicker due to its astringent and absorbent properties.
- Peepal is beneficial for **managing skin diseases**. The topical application of Peepal leaf extract in the form of ointment helps in wound healing. It helps in reducing the inflammation related to **eczema** due to its anti-inflammatory property.
- The root bark extract of *Ficus religiosa* is found to have the property of **lowering blood sugar**. Studies have suggested that Peepal extracts possess significant anti-diabetic property.

Harmful effects:

- The leaf extract of the Peepal tree, when consumed in medicinal amounts up to a month, is usually safe. However, if consumed in high doses, the latex might cause **bleeding in the digestive**

tract in some people. It is better to seek physician's advice before consuming Peepal tree extract.

- The fruit of the Peepal tree might also cause **skin rash or allergies** upon contact in some people. Additionally, people who are sensitive to natural rubber latex might have allergic reactions to fig.

p**Ip****G**

Aegle marmelos



Beneficial role :

- The fruits of *Aegle marmelos* can be **eaten either fresh from trees or after being dried**. It is also used to produce Bael-flavoured candy, toffee, pulp powder or nectar.
- The juice from a fresh Bael fruit is strained and sweetened to make **a drink similar to lemonade**. It can be made into sherbet, also called as Bela pana, a beverage.
- Bael fruits are of dietary use and the fruit pulp is used to prepare **delicacies like murabba, puddings and juices**. The leaves and small shoots are eaten as salad greens.
- **Bael fruit helps digestive problems** as it has anti-bacterial, anti-fungal properties. It also has laxative properties that prevent constipation.
- It also **helps manage cough** due to its expectorant property. This promotes the secretion of sputum by the air passages and helps in easy breathing.

Q

Cocos nucifera



Beneficial role :

- Coconut oil is commonly used in **cooking, especially for frying**. It is also applied on hair to promote hair growth. Coconut oil also **serves as a soap base** as it lathers very easily.
- Coconut oil is also a biodiesel, **used as diesel engine fuel**.
- The edible white, fleshy part of the seed (the endosperm) known as the "**coconut meat**" is **jelly-like soft in immature fruits and can be eaten as is or used in salads, drinks, desserts**.
- Coconut milk is obtained by pressing the grated coconut meat, usually with hot water added which extracts the coconut oil. It is used for cooking various dishes. **Coconut milk can be diluted to create coconut milk beverages**.
- **Coconut milk can be used as a substitute of milk as it has a much lower fat content**.
- Coconut water serves as a suspension for the endosperm of the coconut during its nuclear phase of development. It is consumed throughout the humid tropics, and has been introduced into the retail market as a processed sports drink.

P**Musa acuminata****Beneficial role :**

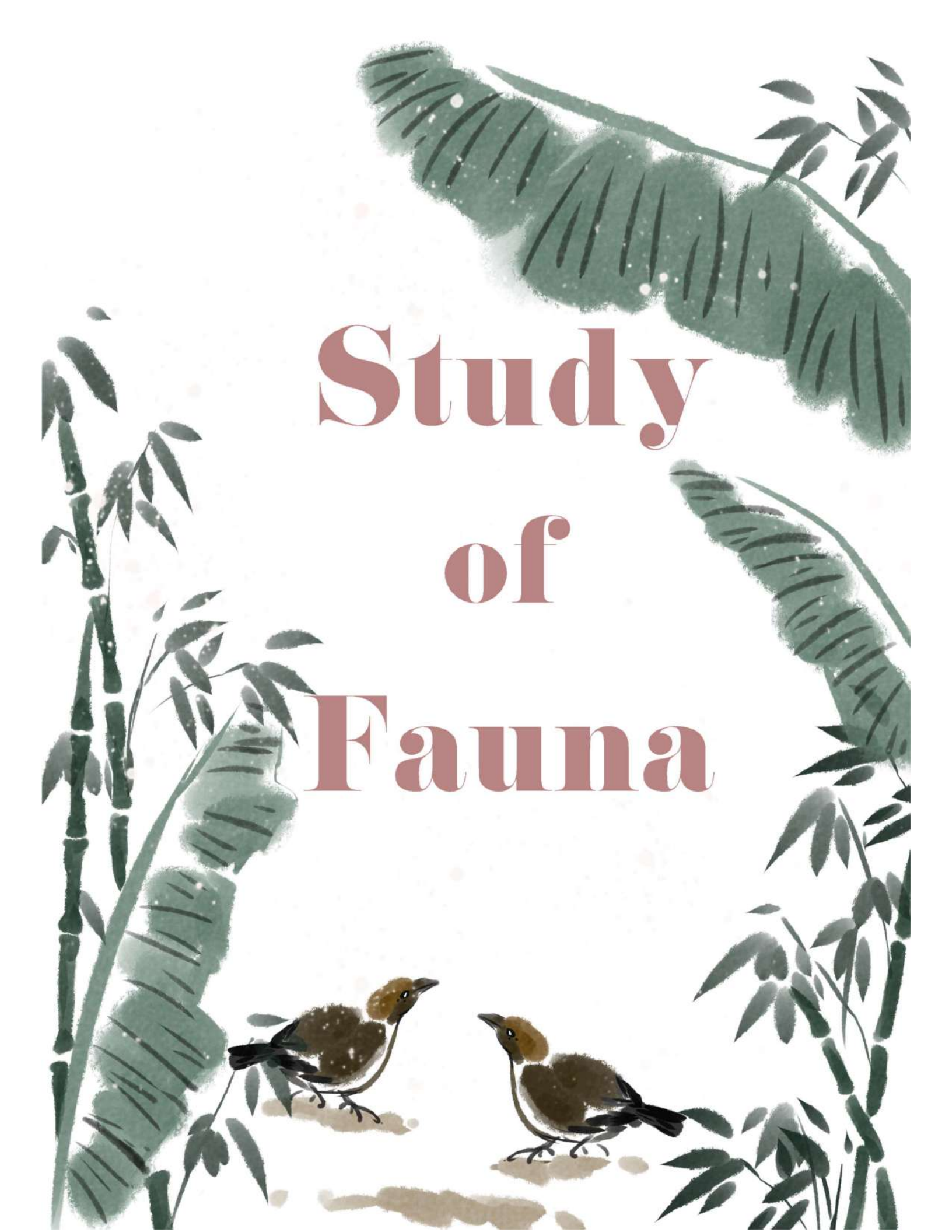
- Bananas are a staple starch for many tropical populations. Both the skin and inner part can be eaten raw or cooked. Banana pancakes are popular among travellers in South Asia and Southeast Asia. **Banana chips** are a snack produced from sliced dehydrated or fried banana, which have an intense banana taste.
- **Banana hearts are used as a vegetable**, in South Asian and Southeast Asian cuisine, either raw or steamed with dips or cooked in soups, curries and fried foods.
- Banana leaves are large, flexible, and waterproof. They are often used as **ecologically friendly disposable food containers** or as "plates" in South Asia and several Southeast Asian countries.
- **Banana fibres** harvested from the pseudo stems and leaves of the plant has been **used for textiles in Asia** since at least the 13th century. In India, a banana fibre separator machine has been

developed, which takes the agricultural waste of local banana harvests and extracts strands of the fibre.

- **Banana fibre is used in the production of banana paper.** The papers are usually hand-made or by industrial process.
- In young children, **cooked green bananas reduce symptoms of diarrhoea** due to various causes.

Harmful effects:

- **Individuals with a latex allergy may experience a reaction to bananas.**
- Side effects to banana are rare but may include **bloating, gas, cramping, softer stools, nausea, and vomiting.** In very high doses, bananas might cause high blood levels of potassium.

A watercolor illustration of a forest scene. The background is white with faint, light green and brown speckles. Large, dark green leaves with prominent veins are scattered around the text. At the bottom, two small, fluffy brown birds with yellow heads are standing on a patch of brown ground. The text "Study of Fauna" is written in a dark red, serif font, centered on the page.

Study of Fauna

Q

Bos indicus



Beneficial Role :

- The most important thing **cow gives us is milk**. Milk has a lot of benefits like enhancing our immune system and manufacturing products **like butter, cream, curd, cheese** etc.
- Cow dung is used as an **efficient source of fuel and biogas**.
- **Cow hides, used for leather to make shoes, couches and clothing**, are a widespread product.
- Cow is also used a **source of meat**. Although, in India, cow-slaughter is a controversial topic as Cow is regarded as a sacred animal.
- Cows are worshipped as sacred animals in India and cow urine, along with cow dung, is also used in many religious ceremonies.

U

Capra hircus



Beneficial Role :

- In the Indian subcontinent and much of Asia, goats are kept **largely for milk production**, both for commercial and household purposes.
- Goat meat known as '**mutton**' in India, Bangladesh and Pakistan is an important source of food.
- Goats have been used by humans to clear unwanted vegetation. They have been described as "eating machines" and "**biological control agents**".
- **Goatskin** is durable and are often used to make gloves, boots etc.
- The two most common fibers produced from Goats are mohair and cashmere. **Cashmere or Pashmina** (in South-Asia), is used to make shawls.

r

r

Canis lupus familiaris



Beneficial Role :

- Dogs **provide companionship as pets**. According to Vanderbilt University, dogs can decrease levels of human loneliness and give humans a sense of purpose as they care for their animal companions.
- Dogs are also **bred for herding livestock, rodent control, hunting**. They are also trained as service dogs to assist individuals with disabilities.
- Dogs **employed by government agencies and police organizations** sniff out contraband in places like airports and large public venues to ensure public security.

Harmful role :

- Dogs can be a **deadly menace to the wildlife**, including threatened ones dwindling in numbers, such as the golden langur (*Trachypithecus geei*), the great Indian bustard (*Ardeotis nigriceps*).

- The numbers of **dog bites and deaths due to dog attacks** are increasing every year. Since these dogs are largely not vaccinated, **they frequently carry rabies.**

U

Semnopithecus entellus



Beneficial Role :

- Hanuman langurs are sacred animals in many parts of India. Various body parts are sometimes **kept as amulets**, which are thought to have a positive effect on the bearer.
- Soapberry bug nymphs (*Leptocoris augur*) rely on Hanuman langurs to remove fruit casings, enabling them to eat. They **help in seed dispersal**.
- *Semnopithecus entellus* can also be **used in experiments**. An experiment served to confirm the fact that Indian langurs are more susceptible than rhesus monkeys to an Indian strain of *P. pestis*.
- Hanuman langurs are also kept as pets and are susceptible to animal trafficking.

Harmful role :

- One of the negative economic impacts of Hanuman langur is that **they raid crops and steal food from people's homes.**

P

Sus scrofa domesticus

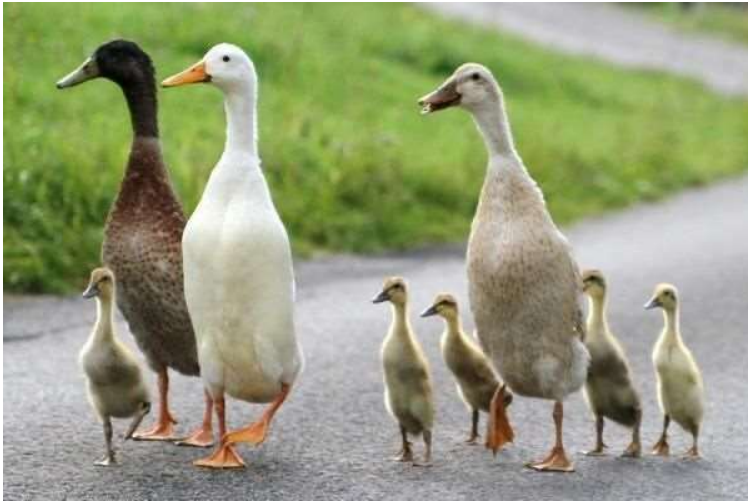


Beneficial role :

- Domestic pigs (Yorkshire pigs) are **raised commercially as livestock for their meat**. Meat obtained from pigs is commonly called 'pork'. Other food products made from pigs include **pork sausage, bacon, gammon, ham and pork rinds**.
- **Pig's skin is used to produce leather**. Peccary leather obtained from boar is the most representative for the leather industry. Domestic pigs also provide leather, rich in fat. The bristly hair of boars is used to make brushes.
- Pig skin is very similar to human skin therefore, **pig skin is used in many preclinical studies**, biomedical research and drug testing.
- Boars (uncastrated male pigs) are farmed and **used for hunting**.
- Pigs are currently thought to be **the best non-human candidates for organ donation to humans**.

Harmful role :

- Pigs can harbor a range of parasites and diseases that can be transmitted to humans. **These include trichinosis, *Taenia solium*, cysticercosis, and brucellosis**.

r l r G**Anas platyrhynchos domesticus****Beneficial role:**

- *Anas platyrhynchos domesticus* are mainly kept as **an egg laying duck breed**. Indian Runner duck can outproduce any chicken in number of eggs laid per year. They usually lay up to 250 eggs per year.
- They are **excellent foragers**, probably the most active forager of all breeds and are good for organic pest control.
- Since ancient times, the duck has been **eaten as food**. Usually only the breast and thigh meat are eaten.
- **Duck feathers** are sometimes used to stuff pillows and as decorations.
- **Ducks have been domesticated as pets** and farm animals for more than 500 years, and all domestic ducks are descended from either the mallard or the Muscovy duck.

Q

Gallus gallus domesticus



Beneficial role :

- Chickens are mainly **bred for their meat**. Most commercial broilers reach slaughter weight between four and seven weeks of age.
- **Chicken eggs** are high in nutrition and protein and are a convenient, low-cost food consumed for breakfast, lunch, dinner or even a snack.
- Chickens have been domesticated since ancient times and are still **kept as pets today**. Keeping chickens as pets provides ready access to fresh eggs.
- Like any animal, the chicken is a part of the food chain. Chickens **eat unwanted insects**, including ticks, slugs, termites, ants and pill bugs.
- **Chicken manure is used as compost and fertilizer**. Chickens also help to reduce household food waste by eating vegetable scraps.

Bubo bengalensis



Beneficial role :

- Encouraging natural predators to control rodent population is a natural form of pest control. **Owls hunt rodents thus helping keep the rodent population under control.**
- In Hinduism, an owl is the mount of the goddess Lakshmi, especially in eastern region of India. Owl is considered a **symbol of wealth, prosperity, wisdom, good luck and fortune.**
- Owl pellets are regurgitated waste that owls cannot digest, and they often contain the bones of animals – making them great for study in the classroom. Educational pellets have even become a thriving business.

Harmful role :

- Although humans and owls frequently live together in harmony, there have been incidents when **owls have attacked humans.**

9

Corvus splendens



Harmful role :

- Crows have been found to carry *Cryptococcus neoformans*, which can **cause cryptococcosis in humans**.
- It is suspected that paramyxoviruses, such as PMV 1 that causes **Newcastle disease may be spread by *Corvus splendens***.
Outbreaks of Newcastle disease in India were often preceded by mortality in crows.
- *Corvus splendens* usually **causes local declines of native avifauna** as its population builds up, through intensive nest predation of small bird species.
- **House crow is a pest of a wide range of crops** – cereals, maize, sunflowers, peanuts, pulses, and many fruits and nuts; it is responsible for serious economic losses to agricultural productivity.
- **Crows predate young domestic fowl and hurt larger livestock.**

Beneficial role :

- Crows play a **vital role in waste management**. They consume tons of waste every year, preventing the spread of diseases and bad odour.
- Their ability to **clear pests and parasites from farmlands** greatly outweigh the minimal damage they inflict on vegetation. An extended family of crows can feed on more than forty thousand caterpillars, armyworms and grubs during a nesting season.
- They also **act as pollinators** by transporting pollen from one plant to another.
- They eat dead carrion, thus preventing decay and, consequently, an influx of insects.

R

Columba livia



Beneficial role :

- Rock doves have been domesticated for several thousand years, giving rise to the **domestic pigeon** (*Columba livia domestica*). They may have been domesticated as long as 5,000 years ago. Domesticated pigeons are used as homing pigeons as well as **food and pets**.
- They were used as **carrier pigeons** in the past and so-called war pigeons have played significant roles during wartime, including **delivering urgent medicines, helping save many human lives**.
- Pigeons have notably been "**employed**" as **medical imaging data sorters**, and have been successfully trained under research conditions to examine data on a screen. It appears to use their innate visual navigation skills.

Harmful role :

- Contact with pigeon droppings poses a minor risk of contracting **histoplasmosis, cryptococcosis** and long-term exposure to both droppings and feathers can induce **an allergy known as bird fancier's lung**.

Aedes aegypti , *Anopheles gambiae*



Harmful effects:

- Mosquitoes put 40% of the world at risk for **Dengue**. The disease can also develop into severe dengue, a hemorrhagic condition that is much more dangerous, causing bleeding, organ impairment, and persistent vomiting. There is no medicine or vaccine for dengue.
- Mosquitoes spread **Yellow Fever**. After a period of severe illness, most patients recover, but about 15% enter a toxic phase, when they start to bleed internally and organs begin to fail. However, there is an effective vaccine, one dose of which provides life-long immunity. The fever is spread by *Aedes aegypti*.
- *Aedes aegypti* and *Aedes albopictus* are behind the outbreaks of **Chikungunya**, which can sometimes lead to agonizing pain.
- *Anopheles gambiae* is one of the most effective **Malaria** vectors. Female *Anopheles* mosquitoes transmit Plasmodium parasites in their bites, which then cause high fever and chills.
- **Lymphatic filariasis**, spread by *Anopheles gambiae* is a leading cause of permanent disability for people around the world.

y w p

Apis cerana indica



Beneficial Role :

- Bees are beneficial because of their **pollination services**, helping to provide food in the form of fruits, berries, nuts, leaves, roots and seeds. **They pollinate wild flowers** as well as shrubs, thus enhancing and ensuring plant biodiversity and beauty in landscapes and gardens.
- **Honey is the complex substance made when bees ingest nectar**, process it, and store the substance into honey combs. *Apis mellifera* is some of the only species that have had their honey harvested for commercial purposes.
- Worker bees of a certain age **secrete beeswax** from a series of exocrine glands on their abdomens. Beeswax is gathered by humans for various purposes such as **candle making, waterproofing, soap and cosmetics manufacturing, pharmaceuticals, art, furniture polish and more.**
- **Royal jelly** is a honey bee secretion used to nourish the larvae. It is marketed for its alleged but unsupported claims of health benefits.
- Worker bees combine pollen, honey and glandular secretions and allow it to ferment in the comb to make **bee bread**. The product is used as a health supplement.

p u o

Lasius niger



Beneficial role :

- In areas of India, and throughout Burma and Thailand, a paste of the green weaver ant (*Oecophylla smaragdina*) is **served as a condiment with curry.**
- The behavior of ants has been documented in early writings and fables passed from one century to another. **Myrmecologists, study ants in the laboratory and in their natural conditions.** Their complex and variable social structures have made ants ideal model organisms.
- **Ant farms** were popular educational children's toys. Some later commercial versions use transparent gel instead of soil, allowing greater visibility at the cost of stressing the ants with unnatural light.
- **Anthropomorphized ants** have often been used in fables and children's stories, like in Aesop's The Ant and the Grasshopper.

Harmful role :

- Some **ant species are considered as pests**, primarily those that occur in human habitations, where their presence is often problematic, like in hospitals or kitchens.

W

Musca domestica



Harmful role :

- Houseflies carry a wide variety of organisms on their hairs, mouthparts, vomitus, and feces. Parasites carried include cysts of protozoa, e.g., *Entamoeba histolytica* and *Giardia lamblia* and eggs of helminths. **They act as vectors of pathogens such as those causing typhoid, cholera, salmonellosis, bacillary dysentery, tuberculosis.**
- During the Second World War, **Houseflies were used in entomological warfare**, a type of biological warfare.
- The ability of housefly larvae to feed and develop in a wide range of decaying organic matter is important for recycling of nutrients in nature. This could be exploited to combat ever-increasing amounts of waste.

Beneficial role :

- The ease of culturing houseflies, and the relative ease of handling, have made them **useful as model organism for use in laboratories.**
- **Houseflies have also found a place in literature** like the fables *The Impertinent Insect* by Aesop and in Greek mythology.

W B U W G

Vespa mandarinia



Beneficial role :

- Hornets are predators that serve a special function in controlling other populations of insects. **Hornets control the populations of the pests by eating them.**
- Similar to the honey bee, hornets serve an essential function to fruiting and flowering plants. **As they travel from plant-to-plant hornets also pollinate the flowers.**
- In some places around the world, **Hornets are consumed as a delicacy.**

Harmful role :

- When disturbed or provoked, hornets can become increasingly aggressive, **inflicting a painful sting that may elicit allergic reactions.**



Conclusion

In conclusion, the Flora and Fauna are a very important part of our environment. Not only do they provide us with our everyday needs, they are also pivotal for the smooth functioning of this planet. The chances of survival of our future generation is slim if we remain ignorant of the harm we are causing the environment. We need to start putting active effort into preserving nature. It is important to conserve the flora and fauna to maintain the balance in nature.

This project, "**The Flora and Fauna in my Locality**", presents a detailed account of the vegetation and wildlife found in my locality. It also describes the advantages and disadvantages of various flora and fauna. This project assisted me in doing a detailed study of the flora and fauna found in my surrounding area.

Acknowledgement

In successfully completing this project, many people have helped me. I am overwhelmed with gratitude to acknowledge my debt to all those who have helped me make my ideas into something concrete. I would like to thank all those who are related to this project.

Firstly, I would thank God for always watching over me. Then I would like to thank our respected Principal and Vice Principal for always motivating us to reach greater heights. I offer special thanks to my professors for their suggestions and directions which helped me greatly in the completion of this project.

Any attempt at any level can't be satisfactorily completed without the support and guidance of my parents and friends. Thus, I would like to thank my parents and friends who have provided me with their valuable suggestions and knowledge and have been very helpful in various stages of project completion.

ENVIRONMENTAL SCIENCE PROJECT

BSc. SEMESTER-II (UNDER CBCS)

PAPER : AECC 2

COLLEGE : SCOTTISH CHURCH COLLEGE

COLLEGE ROLL NO : MCBA 20F443

DEPARTMENT : MICROBIOLOGY

CU ROLL NO : 203223-11-0099

CU REGISTRATION NO : 223-1211-0507-20

INDEX

1. Introduction

2. Flora

- Mango
- Neem
- Coconut
- Papaya
- Drumstick

T
R
E
E
S

- ▲ Jungle Geranium
- ▲ Jasmine
- ▲ Golden Trumpet
- ▲ Madagascar Periwinkle
- ▲ Bougainvillea

F
L
O
W
E
R
S

3. Fauna

- ▲ Honeybee
- ▲ Monarch Butterfly
- ▲ Ladybug
- ▲ Mosquito
- ▲ Cockroach

I
N
S
E
C
T
S

- > Kingfisher
- > Sparrow
- > Parrot
- > Pigeon
- > Crow
- > Rat
- > Monkey
- > Squirrel
- > Dog
- > Cat

B
I
R
D
S

A
N
I
M
A
L
S

4. Conclusion

5. Acknowledgement.

• INTRODUCTION •

The scientific study of distribution and abundance of organisms and the interaction between living organisms and abiotic environment is popularly known as 'Ecology'. Earth is the only planet in universe to sustain life because of its environment. No life can exist without suitable environment and so no human being. The earth is made up of beautiful plants, animals and various microscopic forms. The plant kingdom is represented by 'Plantae' or 'Flora' which means 'garden of flowers' and 'Animalia' or 'Fauna' represents animals indigenous to a region. In our surrounding we regularly watch birds, insects, animals who are the ready visitors playing significant role. The United Nations Conference on Environment and Development (UNCED) known as 'Earth Summit Rio 1992' inspired to review the environmental stand to act effectively to save the earth with sustainable approach. Here a small study of 'Flora and Fauna' - is made on advantages and disadvantages of flora and fauna surrounding us.

MANGO TREE



SCIENTIFIC NAME - Mangifera indica

SCIENTIFIC CLASSIFICATION

Kingdom : Plantae
Division : Angiospermae
Class : Dicotyledonae
Order : Sapindales
Family : Anacardiaceae
Genus : Mangifera
Species : indica

IMPORTANCE OF MANGO TREE

- provides fruits, firewood, used in juice and pickles.
- contain high Vitamin C thus maintaining cholesterol level.
- has anti-inflammatory and anti cancer properties.
- aids good digestion and a way to lose weight.
- high iron content present thus helping to cure anaemia.
- supports healthy skin and benefits our hair.
- one of the delicious juicy fruits exported to different countries.

NEEM TREE



SCIENTIFIC NAME - Azadirachta indica

SCIENTIFIC CLASSIFICATION

Kingdom : Plantae
Division : Angiospermae
Class : Dicotyledonae
Order : Sapindales
Family : Meliaceae
Genus : Azadirachta
Species : indica

IMPORTANCE OF NEEM TREE

- ▲ Neem is a tree native to the Indian subcontinent, one of the most important medicinal plants of which leaves, flowers, seeds, roots, bark can be used.
- ▲ improves hair and skin health, reduces acne
- ▲ prevents gastrointestinal diseases
- ▲ used as insect and mosquito repellent
- ▲ treats wounds
- ▲ helps to get rid of Diabetes

COCONUT TREE



SCIENTIFIC NAME - Cocos nucifera

SCIENTIFIC CLASSIFICATION

Kingdom : Plantae
Division : Angiospermae
Class : Monocotyledonae
Order : Arecales
Family : Arecaceae
Genus : Cocos
Species : nucifera

IMPORTANCE OF COCONUT TREE

- one of the most useful trees grown in more than 80 countries of the world.
- supplies food, refreshing drink, ropes, broom, shelter, oil, and other raw materials.
- high in manganese, calcium essential for bone health and metabolism of carbohydrates, proteins, cholesterol.
- rich in copper and iron helping to form RBC
- selenium is also present used as antioxidant to protect our cells.

PAPAYA TREE



SCIENTIFIC
NAME —

Carica papaya

SCIENTIFIC CLASSIFICATION

Kingdom : Plantae
Division : Angiospermae
Class : Dicotyledonae
Order : Brassicales
Family : Caricaceae
Genus : Carica
Species : papaya

IMPORTANCE OF PAPAYA TREE

- ▶ a previously exotic and rare plant, now grows in tropical climates, their sweet taste and vibrant colour and medicinal values make them more popular.
- ▶ prevents cancer and asthma
- ▶ cures diabetes and heart disease
- ▶ aids good digestion
- ▶ promotes skin and hair health
- ▶ excellent source of vitamin C and also good source of vitamin A, magnesium, copper, fibre, antioxidant

DRUMSTICK TREE



SCIENTIFIC NAME - Moringa oleifera

SCIENTIFIC CLASSIFICATION

Kingdom	:	Plantae
Division	:	Angiospermae
Class	:	Dicotyledonae
Order	:	Brassicales
Family	:	Moringaceae
Genus	:	Moringa
Species	:	oleifera

IMPORTANCE OF DRUMSTICK TREE

- contains many healthy compounds like Vitamin A, B1, 2, 3, calcium, iron, potassium, Zinc, low in fats, contains no cholesterol.
- nourishes skin and hair
- treats edema and asthma
- protects liver and cardiovascular system and kidney
- reduces high pressure
- treats diabetes and anaemia
- fights against bacterial diseases.
- treats cancer

JUNGLE GERANIUM



SCIENTIFIC NAME - Ixora coccinea

SCIENTIFIC CLASSIFICATION

Kingdom : Plantae
Division : Angiospermae
Class : Dicotyledonae
Order : Gentianales
Family : Rubiaceae
Genus : Ixora
Species : coccinea

IMPORTANCE OF JUNGLE GERANIUM FLOWER

- ▲ a flowering plant containing a bunch of colourful flowers native tropical and subtropical areas of the world.
- ▲ heals wounds and body pain
- ▲ used as haemorrhoid medicine and dysentery medicine
- ▲ relieves cramp pain in calves
- ▲ maintains health of uterus, cures irregular periods
- ▲ used for home and food decoration
- ▲ get rid of sinus and cold.

JASMINE



SCIENTIFIC NAME : Jasminum officinale

SCIENTIFIC CLASSIFICATION

Kingdom : Plantae
Division : Angiospermae
Class : Dicotyledonae
Order : Lamiales
Family : Oleaceae
Genus : Jasminum
Species : officinale

IMPORTANCE OF JASMINE FLOWER

- > a popular garden plant, beloved not only of its fragrant flowers but because the plant has a long bloom time producing perfume, oil
- > used for liver disease, liver pain due to cirrhosis
- > cures diarrhoea
- > used as sedative
- > treats cancer

GOLDEN TRUMPET



SCIENTIFIC NAME — Allamanda cathartica

SCIENTIFIC CLASSIFICATION

Kingdom	:	Plantae
Division	:	Angiospermae
Class	:	Dicotyledonae
Order	:	Euryciales
Family	:	Apocynaceae
Genus	:	Allamanda
Species	:	cathartica

IMPORTANCE OF GOLDEN TRUMPET FLOWER

- an ornamental plant, whose flowers are commonly used for decoration because of its beautiful colour, shape.
- cures abscesses, eczema, ulcers, ringworm
- treats dysentery
- prevents malaria and swelling of spleen.
- used for antidote to the poison.
- a good purgative.

MADAGASCAR PERIWINKLE



SCIENTIFIC NAME - Catharanthus roseus

SCIENTIFIC CLASSIFICATION

Kingdom : Plantae
Division : Angiospermae
Class : Dicotyledonae
Order : Gentianales
Family : Apocynaceae
Genus : Catharanthus
Species : roseus

IMPORTANCE OF MADAGASCAR PERIWINKLE

- traditional medicinal plant of which leaves, flowers, stems can be used
- used for diabetes
- lowers high blood pressure
- Treats cancer
- cures sore throat and cough
- heals insect bites

BOUGAINVILLEA



SCIENTIFIC NAME — Bougainvillea spectabilis

SCIENTIFIC CLASSIFICATION

Kingdom : Plantae
Division : Angiospermae
Class : Dicotyledonae
Order : Caryophyllales
Family : Nyctaginaceae
Genus : Bougainvillea
Species : spectabilis

IMPORTANCE OF BOUGAINVILLEA FLOWER

- a thorny, woody, high climbing vine with colourful flowers.
- beneficial for diabetics
- helps to treat cough and alleviate sore throat
- used for hepatitis
- used as an effective body detoxifier
- eases joint pain.

HONEYBEES



SCIENTIFIC NAME: Apis indica

SCIENTIFIC CLASSIFICATION

Kingdom	Animalia
Phylum	Arthropoda
Class	Insecta
Order	Hymenoptera
Family	Apidae
Genus	Apis
Species	indica

IMPORTANCE OF HONEYBEES

- > social and hardworking insects produce honey, wax, venom, propolis used by people for economical, nutritional and medicinal purposes.
- > are pollinators playing a part in every aspect of ecosystem
- > serve as food and shelter for small, large creatures

MONARCH BUTTERFLY



SCIENTIFIC NAME : Danaus plexippus

SCIENTIFIC CLASSIFICATION

Kingdom	:	Animalia
Phylum	:	Arthropoda
Class	:	Insecta
Order	:	Lepidoptera
Family	:	Nymphalidae
Genus	:	Danaus
Species	:	plexippus

IMPORTANCE OF MONARCH BUTTERFLIES

- play a number of roles in ecosystem.
- act as pollinators and as a food source for other species, acting as an important connector in thriving ecosystem web.
- need milkweed plants to lay their eggs and contribute to the health of planet. With them, while feeding on nectar, they pollinate other type of wildflowers.

LADY BUG



SCIENTIFIC NAME — Coccinella magnifica

SCIENTIFIC CLASSIFICATION

Kingdom : Animalia
Phylum : Arthropoda
Class : Insecta
Order : Coleoptera
Family : Coccinellidae
Genus : Coccinella
Species : magnifica

IMPORTANCE OF LADY BUG

- considered as beneficial bug which helps rid an area of crop damaging aphids, mealybugs and other destructive insect pests.
- act as pollinators
- The adult ladybugs feed on harmful insects and lay eggs among aphids so the emerging larvae can feed on the insects too.

MOSQUITO



SCIENTIFIC NAME - Culiseta longiareolata

SCIENTIFIC CLASSIFICATION

Kingdom : Animalia
Phylum : Arthropoda
Class : Insecta
Order : Diptera
Family : Culicidae
Genus : Culiseta
Species : longiareolata

HARMFUL EFFECTS OF MOSQUITO

- Mosquito bites may be transmission of various diseases like malaria, dengue, Zika and West Nile virus which can lead to deadly effects
- also transmit diseases and parasites that dogs and horses are very susceptible to like dog heart worms, encephalitis and so on

COCKROACH



SCIENTIFIC NAME - Periplaneta americana

SCIENTIFIC CLASSIFICATION

Kingdom	Animalia
Phylum	Arthropoda
Class	Insecta
Order	Blattodea
Genus	Periplaneta
Species	americana

IMPORTANCE OF COCKROACH

- food source for birds, reptiles, mammals thus contributing to the ecosystem.
- feed on decaying organic matter which traps huge nitrogen which then gets into the soil thus used by plants
- can sometimes act as carriers of intestinal diseases like dysentery, cholera, typhoid

KINGFISHER



SCIENTIFIC NAME - Ceyx azureus

SCIENTIFIC CLASSIFICATION

Kingdom	Animalia
Phylum	Chordata
Class	Aves
Order	Coraciiformes
Family	Alcedinidae
Genus	Ceyx
Species	azureus

IMPORTANCE OF KINGFISHER

- small unmistakable bright blue birds of slow moving or still water, feed on a wide variety of prey.
- famous for hunting and eating fish
- some species eat frogs, amphibians, worms, molluscs, insects, and so on.

SPARROW



SCIENTIFIC NAME - Passer domesticus

SCIENTIFIC CLASSIFICATION

Kingdom	Animalia
Phylum	Chordata
Class	Aves
Order	Passeriformes
Family	Passeridae
Genus	Passer
Species	domesticus

IMPORTANCE OF SPARROW

- ▲ help in seed dispersal from one place to another.
- ▲ there are the chirping birds keeping the atmosphere peaceful and helping us to save nature's balance.
- ▲ play an important role in ecosystem.

PARROT



SCIENTIFIC
NAME — Pittacula krameri

SCIENTIFIC CLASSIFICATION

Kingdom	Animalia
Phylum	Chordata
Class	Aves
Order	Pittaciformes
Family	Pittaculidae
Genus	Pittacula
Species	krameri

IMPORTANCE OF PARROT

- ▲ have been popular companion because they are intelligent, colourful and musical birds, also can imitate human speech.
- ▲ help in seed dispersal thus assisting in pollination of other plants, trees.
- ▲ promote growth of large varieties of plants.

PIGEON



SCIENTIFIC NAME - Columba livia

SCIENTIFIC CLASSIFICATION

Kingdom	Animalia
Phylum	Chordata
Class	Aves
Order	Columbimorphae
Family	Columbidae
Genus	Columba
Species	livia

IMPORTANCE OF PIGEON

- > play a vital role in environment, they serve as food for falcons, hawks, jones.
- > maintain insect species in the environment as well as weeds like thistles.
- > play a part in seed dispersal by eating seeds and distributing them

CROW



SCIENTIFIC NAME - Corvus splendens

SCIENTIFIC CLASSIFICATION

Kingdom	Animalia
Phylum	Chordata
Class	Aves
Order	Passeriformes
Family	Corvidae
Genus	Corvus
Species	splendens

IMPORTANCE OF CROW.

- are scavengers and opportunists
- get attracted to trash, food waste in composts, wild animals
- as foragers, they also clean up dead animals and garbage.
- good environmental citizens for transporting seeds helping in forest renewal.

RAT



SCIENTIFIC NAME - Rattus norvegicus

SCIENTIFIC CLASSIFICATION

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Rodentia
Genus	Rattus
Species	norvegicus

HARMFUL EFFECTS OF RAT

- transmit diseases if they bite or scratch human and also by leaving their droppings and urine around home.
- human can get sick when rats contaminate food or run across counter tops where food is late prepared.

MONKEY



SCIENTIFIC NAME : Macaca radiata

SCIENTIFIC CLASSIFICATION

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Primata
Genus	Macaca
Species	radiata

IMPORTANCE OF MONKEY

- used in research and testing, is used to develop and test the safety and effectiveness of potential medicines and vaccines.
- help in seed dispersal from one place to another thus promoting growth of plants.

SQUIRREL



SCIENTIFIC NAME - Sciurus carolinensis

SCIENTIFIC CLASSIFICATION

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Rodentia
Family	Sciuridae
Genus	Sciurus
Species	carolinensis

IMPORTANCE OF SQUIRREL

- ▲ help in forest regeneration in ecosystem
- ▲ huge contributor in shaping plant composition due to their food saving habit.
- ▲ help in seed dispersal

DOG



SCIENTIFIC NAME - Canis familiaris

SCIENTIFIC CLASSIFICATION

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Carnivora
Family	Canidae
Genus	Canis
Species	familiaris

IMPORTANCE OF DOG

- > first animal to be domesticated
- > bring health, social and economic benefits to all of us.
- > guide people who have lost their sight
- > can sense when something is wrong and alert their owners.
- > known from hunting to guarding to providing good companionship.

CAT



SCIENTIFIC NAME - Felis catus

SCIENTIFIC CLASSIFICATION

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Carnivora
Family	Felidae
Genus	Felis
Species	catus

IMPORTANCE OF CAT

- > can be domesticated
known from hunting to guarding to providing companionship.
- > pollinate plants, spread seeds, control insects, protect environment
- > help to lower risk of severe health problems

• CONCLUSION •

This project 'The Study of Flora and Fauna' gives us all the details about the plants, animals, insects, flowers and other surroundings present in my locality. This project helped me to know about their advantages and disadvantages in our life. The environment around us is beautiful because of the flora and fauna but in present era, human beings are the cause of destruction of earth's biodiversity. Habitat loss and destruction is caused by deforestation, overpopulation, pollution, global warming which is a major cause of biodiversity loss. So it's our duty to be aware of the fact and respect the law of protection and conservation of flora and fauna. We must live in a healthy environment which is important for existence of life on earth and to grow and develop naturally.

— X —

ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to the teachers as well as principal and vice-principal of my college who gave me the golden opportunity to do the wonderful project on environment named "Study of Flora and Fauna in my Locality" which helped me in doing a lot of research and I came to know a lot of new things. This project helped me to study my surroundings and to be aware of its further depletion. I am thankful to my parents who helped me in gathering information and guiding me to complete the project within time.

—X—



FLORA AND FAUNA AUDITING IN BARRACKPORE.



**ENVS PROJECT
(MICROBIOLOGY DEPARTMENT)**

**UNIVERSITY OF CALCUTTA
(UNDER CBCS)**

**SUBJECT: ENVIRONMENTAL SCIENCE (AECC 2)
(ENV)**

COLLEGE ROLL NUMBER: MCBA20F424.

CU ROLL NUMBER: 203223-11-0106.

CU REGISTRATION NUMBER: 223-1212-0292-20.

CONTENTS :-

Introduction - Pg no → 01.

Types of animals - Pg no → 02 - 06

Types of birds - Pg no → 07 - 11.

Types of insects - Pg no → 12 - 16

Types of trees - Pg no → 17 - 21

Types of flowers - Pg no → 22 - 26

Conclusion - Pg no → 27

Acknowledgement - Pg no → 28.

INTRODUCTION

Ecology is the study of the relation and interactions between organisms and their environment. This project "The study of flora and fauna" gives us all the details about the vegetation, animals and other surroundings present in my area "Barrackpore". It gives us information about the advantages and disadvantages of various flora and fauna. This project also highlights the need of conservation of the plants and animals as they help in maintaining ecological balance and perform a number of important roles. Thus, this project helped me to do a detailed study of my surroundings in my area.

• TYPES OF ANIMALS IN OUR LOCALITY :-

1.



Cow.

Scientific name of the animal - Bos taurus.

Two importance of cow :-

- (a) Cow milk is necessary for growth in our body.
- (b) Cow dung is used in planting and sewer more nutrients to the plants.

Two harmful effects of cow :-

- (a) Cow manure consists of nitrogen and phosphorus that cause algal bloom and produce toxins.
- (b) Cow's gas consist of methane, a green house gas thus causing environment pollution.

2.



Dog.

Scientific name of the animal -

Canis lupus familiaris.

Two importance of dog :-

- (a) Dogs provide protection and helps to pull load.
- (b) Dogs provide companionship to people.

Two harmful effects of dog :-

- (a) Dog bites cause rabies.
- (b) Dog faeces is an environment pollutant which pollutes the water ways, rivers.

3.



Cat .

Scientific name of the animal - Felis catus .

Two importance of cat :-

- (a) Owning a cat lowers stress level, thus reducing cardiovascular diseases.
- (b) Cats provide companionship.

Two harmful effects of cat :-

- (a) Cat bites cause cat-scratch disease.
- (b) Cat faeces transmit toxoplasmosis (an infectious disease which is caused by Toxoplasma gondii).

(4.)



Mouse

Scientific name of the animal - Mus musculus.

Two importance of mouse :-

- (a) Mice represent food to predators of all sizes, hence are the keystone species.
- (b) Mice are used as model organisms in experiments.

Two harmful effects of mouse :-

- (a) Mice spread diseases as hantavirus, fever.
- (b) Mice contaminate food and other surfaces.



Squirrel.

Scientific name of the animal - Funambulus
palmarum.

Two importance of squirrel :-

- (a) Squirrel play an important ecological role by taking seeds and burying them.
- (b) Squirrels help in plant regeneration by disposing the seeds in the ground through faeces.

Two harmful effects of squirrel :-

- (a) Squirrel bites cause plague and ringworm.
- (b) Squirrel damage attics by chewing wires.

5.

TYPES OF BIRDS IN OUR LOCALITY :-



Sparrow.

Scientific name of the animal - Passer domesticus.

Two importance of sparrow :-

- (a) Sparrows play an important role in environmental balance.
- (b) Sparrows destroy insects feasting on crops.

Two harmful effects of sparrow :-

- (a) Sparrows carry disease causing bacteria, fungus.
- (b) Sparrows compete with native species thus harming them and eliminating them.



Crow

Scientific name of the animal - Corvus splendens.

Two importance of crow :-

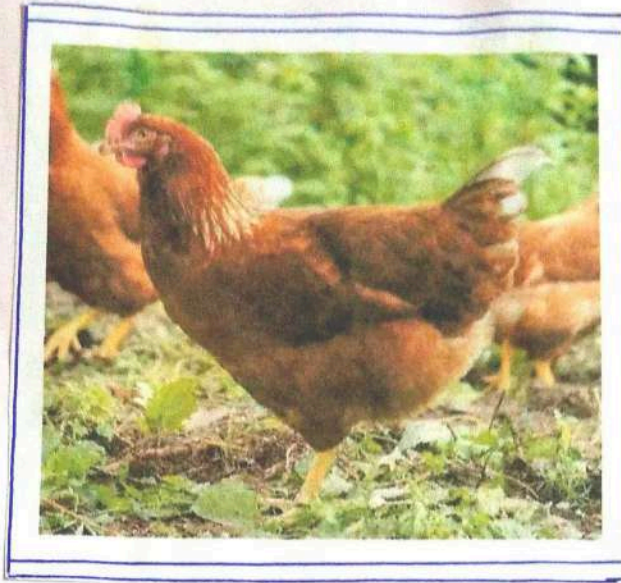
- (a) Crows play a vital role in waste management by consuming tons of waste.
- (b) Crows prevent bad smell by consuming waste.

Two disadvantages of crow :-

- (a) Crow steal other bird's egg, thus reducing population.
- (b) Crows damage crops, particularly corn, peanuts.

2.

3.



Hen.

Scientific name of the animal -

Gallus gallus domesticus

Two importance of hen :-

- (a) In addition to proteins, hen is also rich in vitamins, such as vitamin B.
- (b) Eggs of hen are a good source of fat.

Two harmful effects of hen :-

- (a) Chicken production causes climate change and harms natural habitat, when done in large scale.
- (b) Consumption of much chicken causes obesity.

(4.)



Pigeon.

Scientific name of the animal - Columba
livia.

Two importance of pigeon :-

- (a) Pigeons maintain and regulate insect species in an environment.
- (b) Pigeons also serve as a source of meat.

Two harmful effects of pigeon :-

- (a) Pigeon faeces cause histoplasmosis, a fungal infection.
- (b) Pigeons carry bird mite, which causes itch in human.

(5.)



Myna.

Scientific name of the animal -

Acridotheres tristis.

Two importance of myna :-

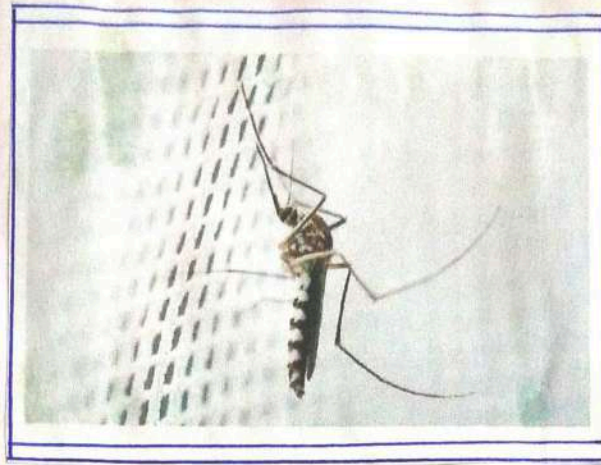
- (a) Mynas destroy the eggs of native species, thus maintaining ecological balance.
- (b) Myna serve as food to higher predators.

Two harmful effects of myna :-

- (a) Myna causes avian malaria.
- (b) Myna carry parasites, which cause dermatitis.

TYPES OF INSECTS FOUND IN OUR LOCALITY :-

1.



Mosquito

Scientific name of the insect - Anopheles sp.

Two importance of mosquito :-

- (a) Larval mosquito serve as food source in aquatic food chain.
- (b) Male mosquitoes eat nectar, hence pollinate all types of plant.

Two harmful effects of mosquito :-

- (a) Mosquito cause malaria, yellow fever.
- (b) Mosquito cause harmful allergic reaction.

2.



Ants.

Scientific name of the insect - Lasius
niger.

Two importance of ants :-

- (a) Ants aerate soil, allowing oxygen to reach plant roots.
- (b) Ants provide food for many different organisms.

Two harmful effects of ants :-

- (a) Some ants damage wood, and other food materials.
- (b) Ants carry harmful bacteria which spread diseases, such as E. coli, Streptococcus sp.



Cockroach.

Scientific name of the insect - Periplaneta
americana.

Two importance of cockroach :-

- (a) Cockroach are important in breakdown of organic matter.
- (b) Cockroach are recyclers of animal waste.

Two harmful effects of cockroach :-

- (a) Cockroach contaminate food materials.
- (b) Cockroach spread a number of diseases such as cholera, dysentery.

(4.)



Bee.

Scientific name of the insect - Apis mellifera.

Two importance of bee :-

- (a) Bees consume nectar, hence play an important role in pollination.
- (b) Bees support the growth of trees, flowers and also provide honey.

Two harmful effects of bee :-

- (a) Honey bees destabilize natural ecosystems by competing with native bees.
- (b) Bees carry a number of viruses which causes disease, Deformed Wing Virus (DWV) for example.

⑤



House Fly.

Scientific name of the insect - Musca domestica

Two importance of fly :-

- (a) Flies play a crucial role in food chain, both as hunter and being hunted.
- (b) Flies help in the breakdown of organic matter.

Two harmful effects of fly :-

- (a) Flies are the carriers of organisms that cause diseases in human.
- (b) Flies contaminate food surfaces.

TYPES OF TREES IN OUR LOCALITY :-



Mango tree.

Scientific name of the tree - Mangifera indica.

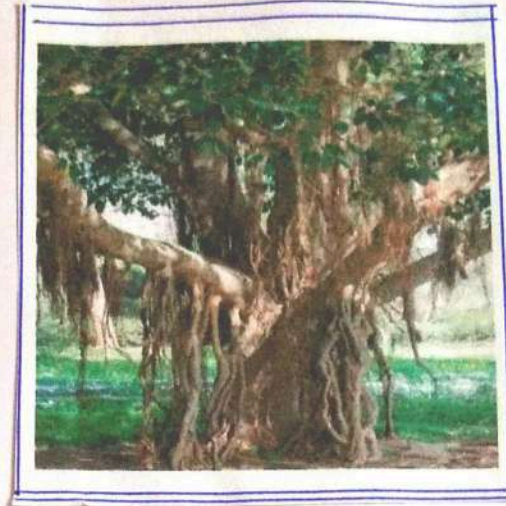
Two importance of mango tree :-

- (a) Mango consumption helps to increase iron levels in body.
- (b) Mango is rich in vitamins.

Two harmful effects of mango tree :-

- (a) Overeating mangoes may cause diarrhoea.
- (b) Mango contains high sugar, -thus causes diabetes.

(2)



Banyan tree.

Scientific name of the tree -

Ficus benghalensis.

Two importance of banyan tree :-

- (a) The roots of banyan tree are used for curing teeth and gum disorders.
- (b) Banyan bark is used to treat diabetes.

Two harmful effects of banyan tree :-

- (a) The banyan tree extract causes harm to women.
- (b) The roots of banyan tree damages houses and buildings when grows all over the area.



Lemon tree

Scientific name of the tree - Citrus sp.

Two importance of lemon tree :-

- (a) Lemons are a good source of vitamin C.
- (b) Lemons aid weight loss and reduce heart diseases.

Two harmful effects of lemon tree :-

- (a) Drinking lots of lemon water cause enamel erosion.
- (b) Lemon water consumption in large amounts cause nausea, vomiting.

(4.)



Papaya tree.

Scientific name of the tree - Carica papaya.

Two important uses of papaya tree :-

- (a) The papaya is high in vitamins C and A.
- (b) The papaya contains an enzyme papain, used to tenderize meat.

Two harmful effects of papaya tree :-

- (a) Papain is said to be a potential allergen.
- (b) Excessive consumption of papaya causes asthma, congestion.

5.



Neem plant

Scientific name of the plant -

Azadirachta indica.

Two importance of neem plant :-

- (a) Neem leaf is used to treat fever, diabetes.
- (b) The leaf is used for birth control, such as neem leaf tablets for men.

Two harmful effects of neem plant :-

- (a) Neem oil and neem bark consumption may cause miscarriage during pregnancy.
- (b) Neem causes irritation to eyes in certain cases.

• TYPES OF FLOWERS IN OUR LOCALITY :-

①



Lotus

Scientific name of the flower -

Nelumbo nucifera

Two importance of lotus :-

- (a) The seeds of lotus plant is used to treat kidney problems.
- (b) Lotus has a number of medicinal values.

Two harmful effects of lotus :-

- (a) Lotus may cause eye infections.
- (b) The place where lotus grows, consists of snakes thus causing death of humans.

②



Dahlia.

Scientific name of the flower - Dahlia
pinnata.

Two importance of dahlia :-

- (a) Dahlia is the raw material for extraction of dye.
- (b) Dahlia is used in floristry, as a cut flower.

Two harmful effects of dahlia :-

- (a) Dahlia plants are toxic to cats and dogs.
- (b) Dahlia causes vomiting in pet animals due to the presence of toxic substances.

3.



Lily.

Scientific name of the flower - Lilium
longiflorum.

Two importance of lily :-

- (a) Lily oil helps to reduce insomnia and promotes skin health.
- (b) Lily flowers are used abundantly in weddings.

Two harmful effects of lily :-

- (a) The toxin of lily affects dogs and cats causing stomach ache.
- (b) Eating certain lilies causes death in human.



Sunflower.

Scientific name of the flower - Helianthus annuus.

Two importance of sunflower :-

- (a) Sunflower are rich in healthy fats, vitamins.
- (b) These nutrients in sunflower reduce heart diseases and diabetes.

Two harmful effects of sunflower :-

- (a) Sunflower seeds cause allergic reactions.
- (b) Sunflower oil contains aldehydes, which causes cancer on large accumulation.

5.



Rose.

Scientific name of the flower - Rosa
rubiginosa.

Two importance of rose :-

- (a) Roses are the best ornamental plants.
- (b) Roses are used in commercial perfumery and cut flower crops.

Two harmful effects of rose :-

- (a) Rose may cause skin irritation in sensitive skin.
- (b) Rose may cause allergic reaction such as skin burning.

▲ CONCLUSION :- Flora and fauna are very important for human existence. The flora liberates oxygen that is consumed by the fauna for respiratory activities. The fauna in turn, release carbon dioxide which is consumed by the flora for photosynthesis. The human being is mainly responsible for the destruction of trees and wild life. Hence to conserve a healthy environment with abundant flora and fauna species, we need to plant more trees, build sanctuaries, national parks and animal reserves. This project on "The Study of Flora and Fauna" made me aware of the environmental issue, animal care, the need of preservation and protection of the flora and fauna.

ACKNOWLEDGEMENT :-

I would like to express my special thanks of gratitude to all my teachers of the Microbiology department, as well as our Principal, who gave me the golden opportunity to do this wonderful project on "Flora and Fauna Auditing in Barrackpore", which also helped me in doing a lot of research about the local surroundings around me.

I would also extend my gratitude to my parents and friends who helped me to complete the project within the given time period.

ENVS PROJECT

Subject - Environment Studies

Paper - AECC 2

Department - Microbiology (Sem II)

College roll no - MCBA20F433

CU roll no - 203223 II 0119

CU Registration no - 223-1213-0384 20

Total no of pages - 27



Contents

Topic

Introduction

Conclusion

Acknowledgement

1. Trees 1-5

2. Birds 6-10

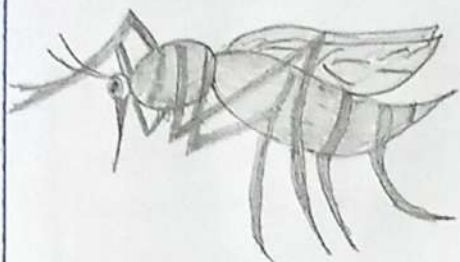
3. Flowers 11-15

4. Animals 16-20

5. Insects 21-25

TOPIC

Observation of flora & fauna in my area



INTRODUCTION

The entire habitat we live in have immense biodiversity. Flora and fauna forms the nature and flora and fauna are the natural beauti of the nature.

In this project I have focussed on the tree indentification, also noticing the branches and benefits and harmful effects.

This project includes looking at behavioural and nesting patterns, their scientific names, benefits and harmful effects of fauna.

There are so many trees and animals in our area that not so useful but they are not harmful for us but those are very common. In this project I observed them.

MANGO TREE

Page - 1



Scientific name - Mangifera indica

The mango tree is erect and branching with a thick trunk and broad, rounded canopy. The leaves of the tree are shiny and dark green.

Scientific classification

Kingdom : Plantae
Order : Sapindales
Family : Anacardiaceae
Genus : Mangifera
Species : M. indica

Use : The tender leaves of the mango tree contain tannins called anthocyanidins that may help in treating early diabetes, leaves are dried and powdered.

Harmful effect : Mango is very rich in fibre and high consumption of fibrous fruits can cause diarrhoea issues. Mango contains a chemical called urushiol. People who are sensitive to this can start experiencing dermatitis too.



Palm tree is a robust tree and can reach a height of 30 metres. The leaves are fan-shaped and 3m long, with robust black teeth on petiole margins. The fruits are black to brown with sweet, fibrous pulp and each seed is enclosed within a woody endocarp.

Scientific name - Borassus flabellifer

Scientific Classification

Kingdom: Plantae

Order: Arecales

Family: Arecaceae

Genus: Borassus

Species: B. flabellifer

Uses: The palmyra palm has long been one of the most important trees of India, where it has over 800 uses. The leaves are used for thatching, mats, baskets, fans, hats, and as writing material.

Harmful effects: No harmful effects is known or reported after the normal use of palm.

BANYAN TREE

Page - 3



The leaves of the banyan tree are large, leathery, glossy, green and elliptical. Like most figs, the leaf bud is covered by two large scales. As the leaf develops the scales abscise.

The banyan tree sends out aerial roots known as prop roots.

Scientific name - Ficus benghalensis

Scientific classification

Kingdom : Plantae

Order : Rosales

Family : Moraceae

Genus : Ficus

Subgenus : F. subg. Urostigma

Use : Banyan tree is used for digestive system, oral health, vaginal infection treatment etc. Banyan tree is used against mosquito-borne diseases, This tree is used as anti-bacterial and anti-fungal.

Harmful effect : The medicines and mixtures prepared using banyan tree leaf extract have not been found to cause any harmful effects.

NEEM TREE

Page-4



Scientific name - Azadirachta indica

Neem, also called nim or margosa, fast-growing tree of the mahogany family, valued as a medicinal plant, as a source of organic pesticides, and for its timber.

Scientific Classification

Kingdom : Plantae
Order : Sapindales
Family : Meliaceae
Genus : Azadirachta
Species : A. indica

Use : Neem leaf is used for leprosy, eye disorders, bloody nose, intestinal worms, stomach upset, fever, liver problems. The leaf is also used for birth control.

Harmful effects : Neem is possibly safe for most adults. When neem is taken in large doses or for long periods of time, it is possibly unsafe.



Scientific name - Carica papaya

The papaya plant is considered a tree, though its palmlike trunk up to 8 metres tall, is not as woody as the other trees. The plant is crowned by deeply lobed leaves, borne on hollow petioles long.

Scientific classification

Kingdom : Plantae
 Order : Brassicales
 Family : Caricaceae
 Genus : Carica
 Species : C. papaya

Use : The leaves are used to make medicine. Papaya is used for preventing and treating gastrointestinal tract disorder, It is also used for nerve pains and elephantoid growths.

Harmful effects : Applying papaya latex to the skin can cause severe irritation in some people. Taking large amounts of papaya by mouth could damage the esophagus.

House Crow

Page - 6



Scientific name - Corvus splendens

House Crow is a slender, blackish medium sized with a long bill. The grayish nape and sides form a paler collar that contrasts with the glossy black body.

Scientific Classification

Kingdom: Animalia
Phylum: Chordata
Class: Aves
Order: Passeriformes
Family: Corvidae
Genus: Corvus
Species: C. splendens

Benefits: They are highly opportunistic birds and given their omnivorous diet, they can survive on nearly anything that is edible. They have also been observed to eat sand after feeding on carcasses.

Harmful effects: They are also considered to be effective predators. When they are flocking, many birds take over trees, creating noise while harassing both people and animal.

Common Myna

Page-7



Scientific name - Acridotheres tristis

The common myna is an omnivorous open woodland bird with a strong territorial instinct, the common myna has adapted extremely well to urban environment.

Scientific classification

Kingdom: Animalia

Phylum: Chordata

Class: Aves

Family: Sturnidae

Genus: Acridotheres

Species: A. tristis

Benefits: The bird was a success as a bug killer but the territorial common myna frequently displaced native birds and depleted their food supply.

Harmful effects: Common myna can be an economic problem because they damage fruit and grain crops. And their noise can be annoying.

Indian Cuckoo

Page - 8



Scientific name - *Cuculus micropterus*

The cuckoo is a brood parasite. It is well-known for its habit of laying an egg in the nest of another bird, then leaving the offspring to be hatched and fed by 'foster parents'. This cunning tactic allows for more young cuckoos to be reared than would otherwise be possible. The species is distinctly long-tailed, slim with an overall brown or greyish colour, streaked on the upper plumage and having a distinctive whitish throat.

Scientific Classification

Kingdom: Animalia

Phylum: Chordata

Class: Aves

Order: Cuculiformes

Family: Cuculidae

Genus: *Cuculus*

Species - *C. micropterus*



Scientific name - Ardea alba

Scientific classification -

Kingdom: Animalia

Phylum: Chordata

Class: Aves

Order: Pelecaniformes

Family: Ardeidae

Genus: Ardea

Species: A. alba

Sometimes called "The Great Heron", the Greeks agreed with African concept of Egret having Divine connections. The Egret is Athena's messenger. The Goddess of wisdom.

Uses: In the early 20th century, the long feathers of the great egret were used on ladies hats and this bird was almost hunted into extinction.

Side effects: Within the colony, Great egret are territorial and aggressive, defending their space with bill jabs and harsh calls.

Common babbler

Page-10



Scientific name - Argya caudata

Common babbler is a faintly streaked warm buffy-brown babbler. Dark eyes and pale throat separate this species from the similar Striated Babbler. A common and familiar city and town bird throughout much of its range.

Scientific classification

Kingdom: Animalia
Phylum: Chordata
Class: Aves
Order: Passeriformes
Family: Leiothrichidae
Genus: Argya
Species: A. caudata



Scientific name - Nelumbo nucifera

The Lotus flower is regarded in many different cultures, especially in eastern religions, as a symbol of purity, enlightenment, self-regeneration and rebirth. When its roots are in the dirtiest waters, the lotus produces the most beautiful flower.

Scientific Classification

Kingdom: Plantae

Order: Proteales

Family: Nelumbonaceae

Genus: Nelumbo

Uses: The flowers, seeds, leaves and parts of the underground stem are used to make medicine. People use lotus for bleeding, cough, fever, liver and stomach problems, and other conditions, but there is no scientific evidence to support these uses.

Harmful effects: Lotus is likely safe when eaten as food. However, there is not enough known about lotus to know if it is safe when used as medicine. It can cause allergic reactions.



Scientific name - Clitoria ternatea

It is grown as an ornamental plant and as a revegetation species requiring little care when cultivated. As a legume, it's roots form a symbiotic association with soil bacteria known as rhizobia.

Scientific Classification

Kingdom: Plantae
Division: Angiosperms
Order: Fabales
Family: Fabaceae
Genus: Clitoria

Uses: The flower is used as a natural food colouring, it is also used as traditional Ayurvedic medicine, the flower can be used to dye natural fibers.

Harmful: That said, past research has shown that consumption of the seeds or roots can also lead to nausea, diarrhea and diuresis.



Scientific name - Nyctanthes arbor

Coral Jasmine also known as parijat, Harsingar, Tree of sorrow, Queen of the night, is as an exotic small tree or shrub with large attractive leaves and sweet scented flowers.

Scientific Classification

Kingdom: Plantae

Order: Lamiales

Family: Oleaceae

Genus: Nyctanthes

Species: N. arbor-tristis

Uses: The leaves have been used in Ayurvedic medicine and Homoeopathy for sciatica, arthritis, and fevers and as a laxative.

Harmful effects: Due to lack of human studies, there are no known harmful effects of Coral Jasmine.



Scientific name - Plumeria alba

This flower are most fragrant at night. ~~is~~
The flowers yield no nectar, however, and simply trick their pollinators. Plumeria species may be propagated easily by cutting leafless stem tips in Spring.

Scientific Classification

Kingdom : Plantae

Order : Gentianales

Family : Apocynaceae

Subtribe : Plumeriinae

Genus : Plumeria

Uses : Champa cures fever, improves the eyesight. The fragrance of Champaka flowers is unique. It is used in the worship of all gods except Lord Shiva.



Scientific name - Hibiscus rosa-sinensis

The tropical Chinese hibiscus, or China rose which may reach a height of 4.5 metres rarely exceeds 2 metres in cultivation. It is grown for its large somewhat bell-shaped blossoms.

Scientific Classification

Kingdom: Plantae

Order: Malvales

Family: Malvaceae

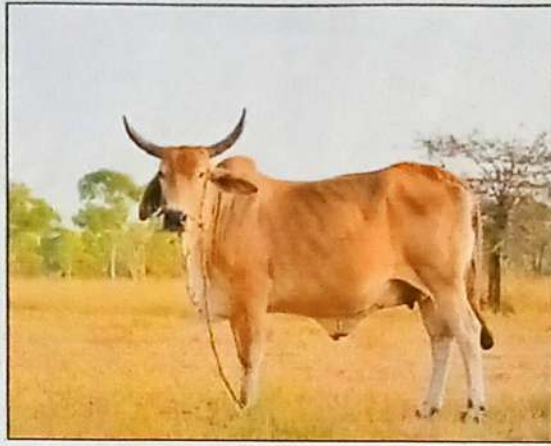
Subfamily: Malvoideae

Tribe: Hibiseae

Species: H. rosa-sinensis

Uses: China rose is considered to have a number of medical uses in Chinese herbology. The flowers are also used in parts of China to colour various intoxicating liquors.

Harmful effects: Harmful effects of this flower are uncommon but might include temporary stomach upset or pain, gas, nausea, shakiness etc.



Scientific name - Bos taurus

Domesticated cows are able to convert the energy in a way that we as humans could not do. They have been bred over the ages to give us almost 2000 different breeds today. Cows also provide us with many other by products.

Scientific classification

Kingdom: Animalia	sub family: Bovinae
Phylum: Chordata	Genus: Bos
class: Mammalia	Species: <u>B. taurus</u>
Order: Artiodactyla	
Family: Bovidae	

Uses: Cows play an important role in maintaining top soil, promoting biodiversity, they provide us with important by products. Cow dung is used for many purposes in villages for house floors, cooking.

Harmful effects: Domestic cows don't have a reputation as being dangerous farm animals. But they have the potential to seriously hurt humans. It's important to understand how to handle them.



Scientific name - Felis catus

The cat is a domestic species of small carnivorous mammal. It is the only domesticated species in family Felidae and is often referred to as the domestic cat to distinguish it from the wild members of family.

Classification

Kingdom: Animalia

Phylum: Chordata

Class: Mammalia

Order: Carnivora

Family: Felidae

Genus: Felis

Species: F. catus

Uses: Cats help our mental health just by being themselves. Their ability to reduce stress, offer companionship, heal with purrs, and offer their services as therapy animals makes them the ideal champions for mental health.

Harmful effects: Many cat bites will become infected, sometimes with serious such as cat-scratch disease, may possibly also pose a danger to pregnant women.



Scientific name - Canis lupus familiaris

The dog is the first domesticated animal, and is symbolically associated with loyalty and vigilance, often acting as guardian and protector.

Scientific classification

Kingdom: Animalia
Phylum: Chordata
Class: Mammalia
Order: Carnivora
Family: Canidae
Genus: Canis
Species: C. familiaris

Benefits: Dogs make us feel less alone, they provide companionship and company, they help us gain a sense of responsibility,

Harmful effects: Although dogs can be beneficial to health but people should aware that dogs of any age, including puppies, can sometime carry harmful germs that can make people sick. Germs from dogs can cause a variety of illnesses.



Scientific name - Bubalus bubalis

The general meaning of Buffalo throughout the Plains was that of power, safety, strength, life's sacredness, and durability. The buffalo were incredibly important to the plains Indians, their way of life and survival depended on them.

Scientific Classification

Kingdom: Animalia

Phylum: Chordata

Class: Mammalia

Order: Artiodactyla

Family: Bovidae

Genus: Bubalus

Species: B. bubalis

Uses: The buffalo was the most important natural resource. The plains Indians were hunters. They hunted many kinds of animals, but it was the buffalo which provide them with all of their basic needs: food, clothing and shelter.

Side effects: A recent study suggests that high intake of milk may lead to a higher bone fracture risk and a higher death rate.



Scientific name - Capra aegagrus hircus

The domestic goat is a domesticated mammal. It comes from the wild goat. The goat has cloven hooves, a long beard on its chin, a short tail that turn up, and horns that grow up from the head in an arc. The hair is straight with a woolly coat under it during winter. They are one of the few species to have unique eyes.

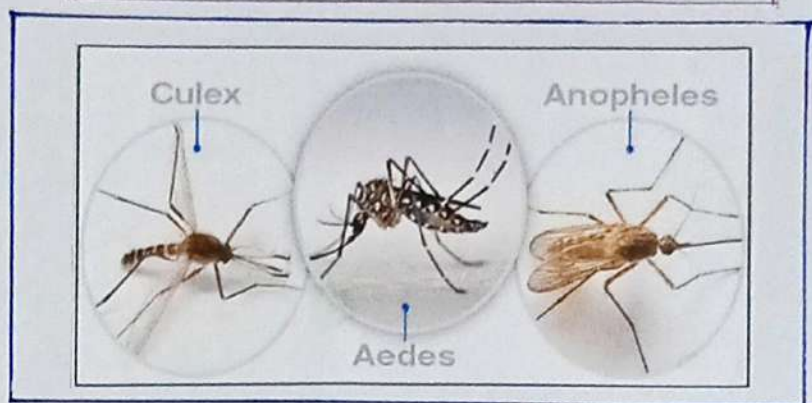
Scientific classification

Kingdom: Animalia
Phylum: Chordata
Class: Mammalia
Order: Artiodactyla
Family: Bovidae
Genus: Capra
Species: C. aegagrus

Uses: Goat are mainly grown to produce milk, meat or fiber. Usually the primary production is meat and milk, and there is little global information on fiber production.

Mosquito

Page-21



Scientific name of Anopheles - Anopheles stephensi
Scientific name of Culex - Culex pipiens
Scientific name of Aedes - Aedes aegypti

Mosquitoes are common, flying insects that live in most parts of the world. Not all mosquitoes bite people or animals. Some mosquitoes can be vectors. Some mosquitoes bite, but do not spread germs.

Scientific Classification

Kingdom: Animalia
Phylum: Arthropoda
Class: Insecta
Order: Diptera
Family: Culicidae

Harmful effects: A more serious consequence of some mosquito bites may be transmission of serious diseases and viruses such as malaria, dengue, Zika virus, which can lead to disabling and potentially deadly effects.

Solution: Way to keep mosquitoes away are — use screens. Maximize fresh air, get rid of standing water, keep yard under control, by using repellent etc.



Scientific name - Musca domestica

Houseflies play an important ecological role in breaking down and recycling organic matter. Adults are mainly carnivorous, their primary food is animal matter, carrion, and feces but they also consume milk, sugary substance and rotting fruit and vegetables.

Scientific Classification

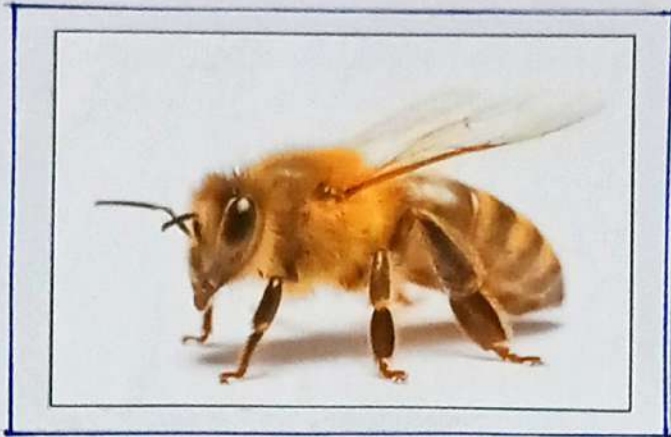
Kingdom: Animalia
Phylum: Arthropoda
Class: Insecta
Order: Diptera
Family: Muscidae
Genus: Musca

Species: M. domestica

Harmful effects: The common housefly can transmit the pathogens that cause shigellosis, typhoid fever, E. coli and cholera. The disease-causing agents can either be transmitted by the body hairs or by the tarsi which are transmitted to food or surface when the fly lands.

Honey Bee

Page-23



Scientific name - Apis mellifera

Honey bees are the world's most important pollinator of food crops. It is estimated that one third of the food that we consume each day relies on pollination mainly by bees, but also by other insects, birds and bats.

Scientific Classification

Kingdom: Animalia
Phylum: Arthropoda
Class: Insecta
Order: Hymenoptera
Family: Apidae

Benefits: Nature and humans, we both need bees as bees help plants to have productive sex. Plant sex is the initiation act for seeds, which are used by plants to reproduce and move around.

Harmful effect: The main disadvantage of honey bees is their painful stings. That sting can cause a severe allergic reaction from a honey bee's allergic reaction.



Scientific name - Lasius niger

Black ants are social insects which form small to large colonies. A typical colony contains an egg laying queen and many adult workers together with their brood. In many males look more like wasps than ants.

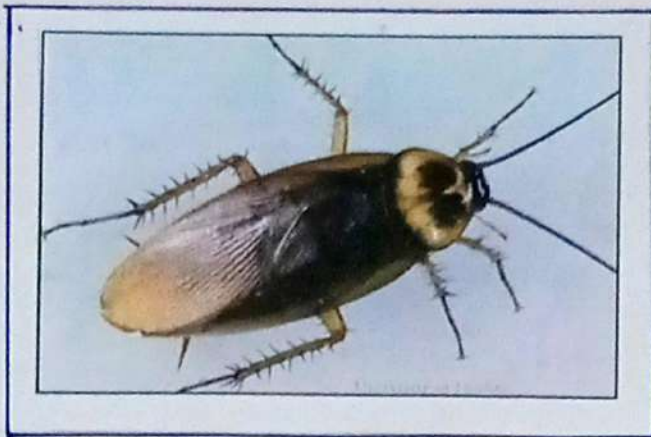
Scientific Classification

Kingdom: Animalia
 Phylum: Arthropoda
 Class: Insecta
 Order: Hymenoptera
 Family: Formicidae

Genus: Lasius
 Species: L. niger

Uses: Black ants act as decomposers, feeding on organic waste, insects or other dead animals. Even carpenter ants keep the environment clean.

Side effects: These ants can cause structural damage by shifting the foundation sand and create uneven patches and even holes in turf by moving soil underneath.



Scientific name - Periplaneta americana

Cockroaches are insects of the order Blattodea which also includes termites. About 30 cockroach species out of 4,600 are associated with human habitats. Some species are well-known as pests. Cockroaches have extremely strong and flexible exoskeletons, which make them almost impossible to squish.

Scientific Classification

Kingdom: Animalia
 Phylum: Arthropoda
 Class: Insecta
 Order: Blattodea
 Family: Blattidae
 Genus: Periplaneta

Species: P. americana

Benefits: Cockroaches also play a vital role in the life cycle of plants. They also transport pollen, thus help with plant reproduction. They eat what other organisms leave laying, breaking it down and increasing the amount of nitrogen in the soil.

Side effects: Cockroaches can spread a range of bacteria and disease.

Conclusion

I would like to conclude that, it is immense learning experience while preparing the project. After conducting the observation of flora and fauna, I get to understand more about the diversity and I get to know my area very well.

As a conclusion, fauna and flora constitute our environment. The human being is the main responsible of the destruction of fauna and flora. So, people can do many efforts to respect the law of protection of fauna and flora.

It is important, because we must live in a health environment and to conserve our animal and tree species.

Acknowledgement

I would like to thank the professor from department for giving the opportunity to do this project and for giving me the extraordinary idea about this project and guiding this project until finish line.

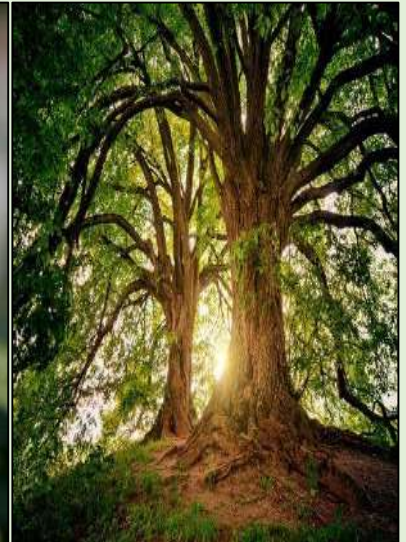
I would also like to express my thanks to our envs professors for encouraging us.

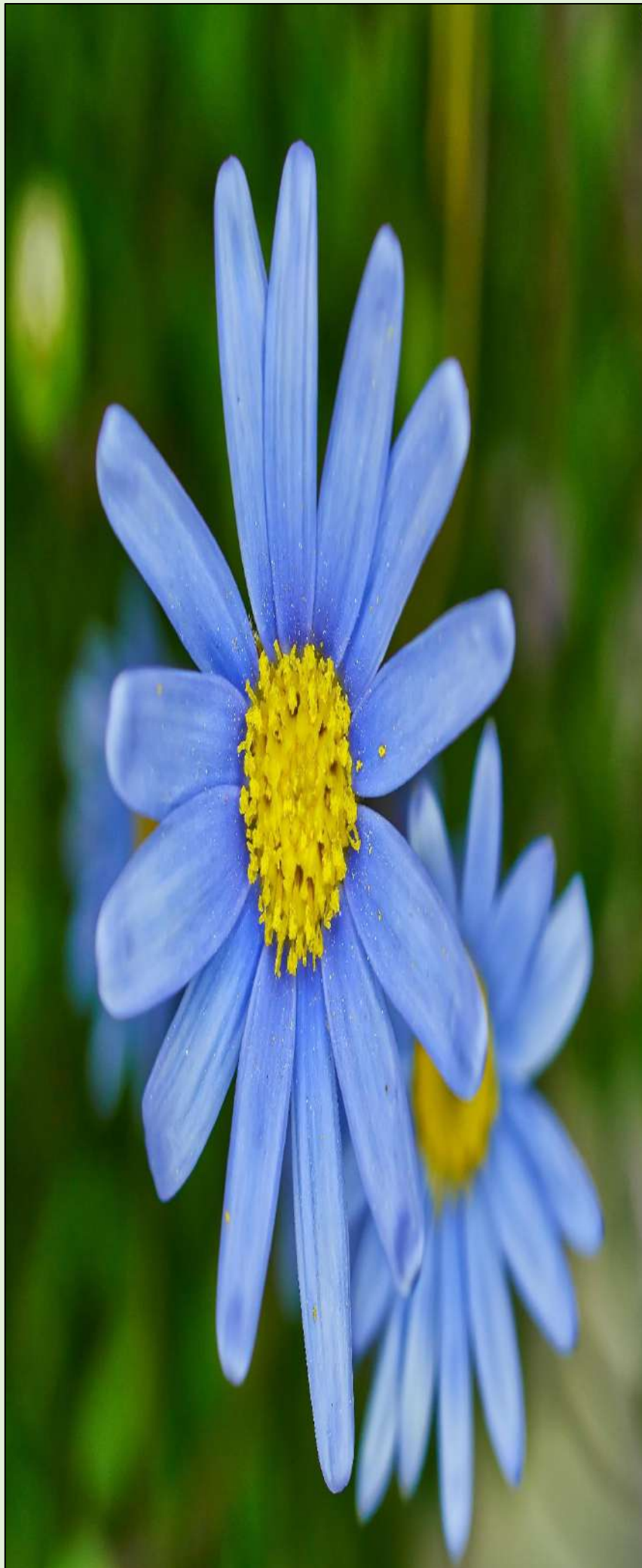
My thanks should not stop alone with professors. My friends and parents even played a big part in it. I see this project as a result of hardwork from myside and innovation from our professors. So, I once again thank all of them who put their hands in it and made successful.



A PROJECT WORK ON

**STUDY OF FLORA AND
FAUNA OF PARNASREE
(BEHALA) AREA**





SUBJECT:

ENVIRONMENTAL
STUDIES (ENVS)

PAPER: AECC2

SEMESTER: 2

DEPARTMENT:
MICROBIOLOGY

CU ROLL NO.:
203223-21-0031

CU REGISTRATION
NO.:

223-1111-0260-20

COLLEGE ROLL NO.:
MCBA20M417

INDEX:-

- INTRODUCTION

- STUDY OF FLORA
 - i) Study of five different kinds of trees- Aloe vera, Coconut tree, Neem tree, Papaya tree, Pomelo tree.

 - ii) Study of five different kinds of flowers- Hibiscus, Asian pigeonwings, Datura, Giant calotrope, Bougainvillea.

- STUDY OF FAUNA
 - i) Study of five different kinds of birds- Parrot, Pigeon, Crow, Kingfisher, and Spotted Dove.

 - ii) Study of five different kinds of animals- Cat, Dog, Mouse, Cow, and Rabbit.

 - iii) Study of five different kinds of insects- Ladybug, Butterfly, Housefly, Mosquito, and Grasshopper.

- CONCLUSION

- ACKNOWLEDGEMENT



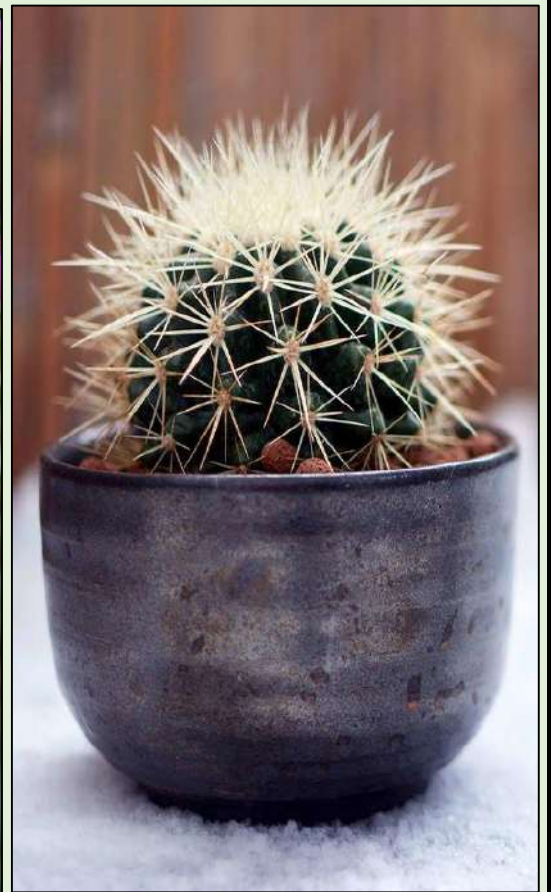


INTRODUCTION:-

The word '**environment**' is derived from the old French word '**environer**'- which means to '**surround**, enclose and encircle'. Environment refers to an aggregate of conditions and surroundings in which living beings such as humans, animals and plants live or survive and non-living things exist.

Through the topic of this project is- "**Study of flora and fauna of my locality (Parnasree, Behala)**", I would like to express my concern for my surrounding environment. Parnasree is located in Behala at Kolkata. It's a small area with lots of flora and fauna. Basically, the **climatic condition is tropical** and the surface is plain which help in the abundant tropical plants to grow. **Evergreen, deciduous** plants are very common here. The people are so much concerned that every house has a big or small garden, where lots of **flowers** and trees can grow with proper care. The **fauna** of my locality includes dogs, cats, rats, cows (specially located in Parnasree flying club region) etc. Many birds can be observed here.

The project is the **collection of observations** of flora and fauna that I have noted, in my locality. The detailed observation is given below.



STUDY OF FLORA OF
PARNASREE (BEHALA)
AREA



STUDY OF FIVE DIFFERENT KINDS OF TREES:-

1) ALOE VERA:-

❖ Scientific name: *Aloe vera*

❖ Characteristic features:

i) *Aloe vera* is a stem less or very short-stemmed plant growing 60-100 centimetres tall, spreading by **offsets**.

ii) The leaves are **thick and fleshy**, green or grey-green and margin of the leaf has small **white teeth**.

iii) The flowers are produced in summer on a spike up to 90 cm tall, each flower is **pendulous**, with a yellow tubular corolla.

❖ Habitat: *Aloe vera* is basically **succulent xerophyte** belong to the genus Aloe. They can grow in **human altered environments** (yards, fields, and around the abandoned houses).

❖ Significance and uses:

i) From *Aloe vera* two substances – a **clear gel** and its **yellow latex** are used to manufacture commercial products.

ii) Aloe gel typically is used to make **topical medications** for **skin conditions**, such as burns, wounds, cold sores, rashes or dry skin.

iii) Aloe latex is used individually or manufactured as a product with other ingredients to be ingested for relief of **constipation**.

iv) Aloe latex may be obtained in a dried form called **resin** or as “**aloe dried juice**”.

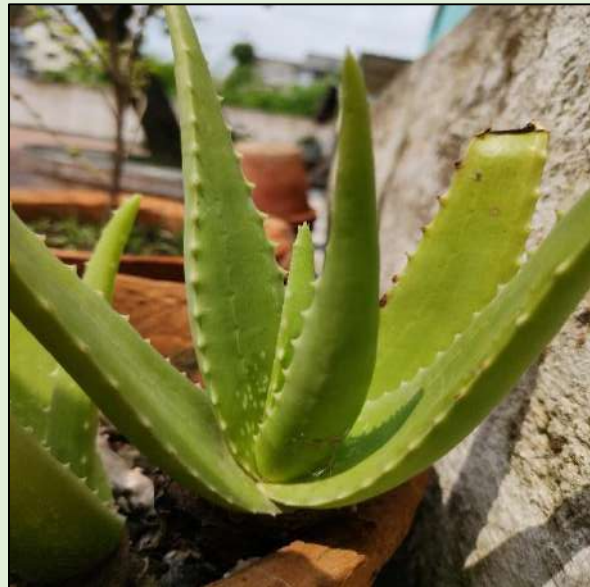


Figure: *Aloe vera* (picture is collected from my garden)

2) COCONUT TREE:-

❖ Scientific name: *Cocos nucifera*

❖ Characteristic features:

i) Coconut tree is a large palm, growing up to 30m. It has a **huge trunk**, with **pinnate** leaves of 4-6m long.

ii) The coconut fruit is a **drupe**, not a true nut. It has three layers: exocarp, mesocarp, and endocarp. The **inner flesh** of mature seed as well as **coconut milk** extracted from it.

iii) It has a **fibrous root** system. It neither has tap root nor root hairs. 2000-4000 **adventitious roots** may grow, each about 1cm large.

❖ Habitat: It grows in warm rainforests and tropical coastal region, warm weather and moisture are needed for the growth of the tree.

❖ Significance and uses:

i) Coconut tree is often referred as “**tree of life**”, it provides food, fuel, cosmetics, folk medicines and building materials.

ii) The coconut water serves as a **healthy refreshing drink**.

iii) The hard shell, fibrous husks and long pinnate leaves can be used as material to make a variety of products for **furnishing** and **decoration**.

iv) The wood is used for **fire** in traditional kitchens.

v) Coconut milk has high nutritious value, this has **5%-20% fat** with essential fatty acids.

vi) The coconut oil is used for **cooking** and as **hair oil**.



Figure: *Cocos nucifera* (picture has been clicked near Parnasree bus terminus)

3) NEEM TREE:-

❖ Scientific name: *Azadirachta indica*

❖ Characteristic features:

i) Neem is a very fast growing tree, **deciduous** in nature, the branches are **wide and spreading**.

ii) The **compound** Neem leaves have toothed leaflets, vibrant green, glossy and sharp, serrated edges.

iii) White and fragrant flowers are produced, the fruit is smooth, olive-like **drupe**, roundish in shape.

❖ Habitat: Neem generally grows open woodlands, grasslands, disturbed natural vegetation. It can grow **semi-shade** or **full sun**. It prefers dry or moist soil and can tolerate **drought**.

❖ Significance and uses:

i) As food: A soup like dish called **veppampoo charu** (neem flower rasam) made of the flower of Neem is prepared in Tamil Nadu. In Bengal, young neem leaves are fried in oil with tiny pieces of eggplant, is known as **neem begun bhaja**, acts as an appetizer.

ii) Medicinal value: Neem leaf is used for **leprosy, eye disorders**, bloody nose, **stomach upset**, fever, liver problems etc. The leaf has the value of birth control, causing abortion.

iii) Other uses: Neem is a key ingredient in **non-pesticidal management** (NPM), providing a natural alternative of synthetic pesticides. Neem oil is used to prepare **polymeric resins**. Neem extract is also added to **fertilizers** like urea, it can be occasionally used as **forage** for ruminants and rabbits.



Figure: *Azadirachta indica* (picture is clicked from the road near my house)

4) PAPAYA TREE:-

❖ Scientific name: *Carica papaya*

❖ Characteristic features:

i) Papaya is a small tree, usually with a **single stem** growing up to 5-10 m tall.

ii) The spirally arranged leaves are confined to the top of the trunk, leaves are large, **palmately** lobed with seven lobes.

iii) Male and female flowers are borne in the **leaf axils**, the fruit is large **spherical** or **cylindrical** in form.

❖ Habitat: Papaya is cultivated in most tropical countries, it grows rapidly, fruiting within 3 years and highly frost-sensitive.

❖ Significance and uses:

i) Papaya fruits contain high levels of **antioxidants**, may reduce heart disease.

ii) Consuming the antioxidant **beta-carotene**, found in papaya fruits, may reduce **cancer** risk.

iii) Papaya fruits contain an enzyme called **papain** that aids **digestion**, in fact, it can be used as meat tenderizer.

iv) In traditional medicine, papaya leaves have been used as a treatment for **malaria**, a **purgative**, or smoked to relieve **asthma**.

v) Papaya fruit is also great **for hair** because it contains **vitamin A**.



Figure: *Carica papaya* (the picture has been clicked at the roof of my house)

5) POMELO TREE:-

❖ Scientific name: *Citrus maxima*

❖ Characteristic features:

i) The Pomelo tree may be 5-15 tall, with **crooked trunk** and irregular branches.

ii) Leaf **petioles** are distinctly winged, dull green upper layer, and hairy under leaf.

iii) The fruit is large, has a **thicker rind** than grapefruit.

❖ Habitat; Pomelo tree grows in tropical and coastal climate and it prefers wide variety of soil from sand to heavy clay.

❖ Significance and uses:

i) Pomelo fruit contains a variety of vitamins, it is an excellent source of **vitamins C**.

ii) One Pomelo fruit offers 6 grams of fibre, especially insoluble fibre, which helps to prevent **constipation**.

iii) Pomelo fruit is rich in minerals, including **potassium**, which helps to regulate fluid balance and **blood pressure**.

iv) Pomelo fruit is full of **antioxidants**, which can help to prevent and reverse cellular damage caused by free radicals.



Figure: *Citrus maxima* (picture is clicked at neighbour's garden)

STUDY OF FIVE DIFFERENT KINDS OF FLOWERS:-

1) HIBISCUS:-

❖ Scientific name: *Hibiscus rosa sinensis*

❖ Characteristic features:

- i) Hibiscus is a **typical bisexual** flower, having all the floral whorls, i.e. calyx, corolla, androecium, gynoecium.
- ii) The sepals are united and termed as **gamosepalous**, sepals are five, tubular and valvate.
- iii) Petals are free and termed as **polypetalous**.
- iv) **Self-pollination** is predominant, but sometimes cross-pollination also occurs.

❖ Significance and uses:

- i) Many species are grown for their showy flowers or used as **landscape shrubs**.
- ii) Dried hibiscus is **edible**, it can also be candied and used as **garnish**, usually for desserts.
- iii) *Hibiscus rosa sinensis* is described as having a number of **medical** uses in Indian Ayurveda.
- iv) In Hindu religion, it is used for **worship** purpose.
- v) Hibiscus tea may lower the **blood pressure**.
- vi) Hibiscus tea is rich in powerful **antioxidants** and prevent the disease caused by the build-up free radicals.



Figure: *Hibiscus rosa sinensis*
(picture is collected from my garden)

2) ASIAN PIGEONWINGS (APARAJITA):-

❖ Scientific name: *Clitoria ternatea*

❖ Characteristic features:

- i) Asian pigeonwings are **bisexual, bracteates**, usually large.
- ii) Sepals are five, **gamosepalous**, showing **valvate aestivation**.
- iii) The flower is **polypetalous**, irregular.
- iv) Stamens are ten, nine stamens fused to form a bundle and the tenth stamen is free (**diadelphous**).
- v) Ovary is superior and **monocarpellary**.

❖ Significance and uses:

- i) It has natural **antioxidants**, helps to improve blood circulation, prevent hair loss and graying.
- ii) It has been widely used in **traditional medicine**, particularly as a supplement to enhance cognitive function.
- iii) It alleviates symptoms of numerous ailments including **fever, inflammation, pain and diabetes**.
- iv) This flower has **antiglycation** properties, which is excellent for skin and prevents skin ageing.



Figure: *Clitoria ternatea* (picture is collected from my neighbour's balcony)

3) DATURA:-

❖ Scientific name: *Datura stramonium*

❖ Characteristic features:

i) Datura flowers are bracteates, **bisexual** and pedicellate.

ii) Sepals are 5, **gamosepalous**, showing **valvate aestivation**.

iii) Petals are 5, **gamopetalous**, funnel shaped with wide mouth and 10 lobed.

iv) Stamens are 5 and ovary is superior, **bicarpellary**, and syncarpous.

❖ Toxicity: All parts of Datura plant are toxic, it contains a high concentration of **Daturine, Atropine** which are extremely poisonous alkaloids. An over dosage of impurified Datura can lead **Hallucination, Vertigo, fever, allergic reactions etc.**

❖ Significance and uses:

i) Though narcotic plant, *Datura stramonium* is described as a useful remedy for various human ailments including **ulcers, wounds, inflammation** etc.

ii) Datura is truly effective as an alternative for **asthmatic conditions**.



Figure: *Datura stramonium* (picture is collected from my neighbour's roof)

4) GIANT CALOTROPE (AKANDA):-

❖ Scientific name:
Calotropis gigantea

❖ Characteristic features:

i) Flowers are large, white, peduncles arising between the petioles.

ii) Calyx lobes 5, corolla broadly rotate, **valvate**, lobes 5.

iii) Stamens are 5, and anther are short with **membranous appendages**.

❖ Significance and uses:

i) Calotropis is used for **digestive disorders** including diarrhoea, constipation and stomach ulcers.

ii) According **Shiva Purana**, this flowers are very much liked by Lord Shiva, therefore they are offer to Lord Shiva for peace and prosperity.

iii) The **cotton** produced from Calotropis (**Crown flowers**) can be used to make pillow.

iv) **Allelopathic effects** of Calotropis on different agricultural crops have been well studied.

❖ Toxic effect: **Crown flower keratitis** is a rare condition and is usually the result of accidental ocular exposure to the sap.



Figure: ***Calotropis gigantea*** (picture is collected from my roof)

5) BOUGAINVILLEA (PAPERFLOWER):-

❖ Scientific name :
Bougainvillea glabra

❖ Characteristic features :

i) The flower contains colourful **bracts** (leaf-like structures), which are often mistaken as petals.

ii) Tiny white flowers usually appear in **clusters** surrounded by papery bracts, hence the name is **paperflower**.

iii) The flowers are about **0.4 cm** in diameter.

❖ Significance and uses:

i) Bougainvillea has been traditionally used for controlling **diabetes**, helps to get rid of mucus from the respiratory tract thereby boosting **cough recovery**.

ii) In other parts of the world the Bougainvillea means protection and **spiritual** connection, whilst others see it as symbol of **peace**.

iii) The aqueous extract and decoction of the plants have been used as **fertility control** among the tribal people in many countries.

iv) The flower is used for **aesthetic purposes**.



Figure: *Bougainvillea glabra* (picture has been clicked near Parnasree lake)



STUDY OF FAUNA OF
PARNASREE (BEHALA)
AREA



STUDY OF FIVE DIFFERENT KINDS OF BIRDS:-

1) PARROT:-

❖ Scientific name:

Psittacula krameri (Indian rose-ringed parakeet)

❖ Characteristic features:

i) The rose-ringed parakeet is **sexually dimorphic**.

ii) The adult male sports a **red and black neck ring**, while the immature bird of both sexes generally shows no neck rings.

iii) They are **herbivorous** and non-migratory species.

iv) Body colour is **green** and the parakeet measures on average **40 cm**.

❖ Significance and ecological role:

i) The Parrot plays an important role in its habitat by helping to **propagate the forest**, because not all of the seeds consumed are digested, many are passed in the bird's guano over new areas of the forest.

ii) Some eat nectar and are important in the **pollination** of many species of plants in the tropical forests.

iii) Parrots want people to talk and interact with them. This develops the **talking skill** in the owner.



Figure: *Psittacula krameri* (picture is collected from neighbour's house)

2) PIGEON:-

❖ Scientific name:

Columba livia

❖ Characteristic features:

i) Body is divided into **head, neck, trunk and tail.**

ii) Body is covered with **feathers** and legs have scales.

iii) Fore limbs are modified into **wings** for flying.

iv) Hind limbs are used for **walking, perching** etc.

v) Bones are **porous** with **air cavities** to reduce body weight, there is no external ear.

❖ Significance and ecological role:

i) Pigeons maintain and regulate **insect species** in an environment as well as **weeds such as thistles.**

ii) Pigeons also play a part in seed **dispersal** by eating **seeds** and distributing them.

iii) In religion, Pigeons are regarded as the **symbol of peace.**

iv) Pigeons are eaten by many hawks, foxes, and martins, thereby maintaining the balance of **food chain** as well as ecosystem.



Figure: *Columba livia* (picture is collected from my neighbour's roof)

3) CROW:-

❖ **Scientific name:** *Corvus splendens* (house crow)

❖ **Characteristic features:**

i) Crows are **black** birds known for their intelligence and adaptability, and for their loud harsh '**caw**'.

ii) **House crows** are between the jackdaw and carrion crow in size (40 cm in length), and the neck and breast are lighter **grey-brown** in colour.

iii) Crows have **powerful beaks** through which they can catch smaller animals or can eat crops in the farms.

❖ **Significance and ecological role:**

i) They consume tons of waste every year, preventing the spread of diseases and bad odour, therefore, crows play vital role in **waste management**.

ii) Crows play an important role to **clear the pests and parasites** in the farmland, because they eat grubs and insects rather than vegetables and fruits.

iii) Crows are susceptible to the West Nile Virus and are used by health authorities as an **indicator species**. During an outbreak, the birds die in large numbers prompting a health concern response.



Figure: *Corvus splendens* (picture has been clicked at my house)

4) KINGFISHER:-

❖ Scientific name:

Alcedo atthis

❖ Characteristic features:

- i) The bird has typical short tail, dumpy body, and large head.
- ii) It has a green-blue neck stripe, white neck blaze and a black bill with some red at the base.
- iii) The flight of Kingfisher is fast, direct and usually low over water.
- iv) The bill is usually longer and more compressed in species that hunt fish.



Figure: *Alcedo atthis* (picture is downloaded from Google)

❖ Significance and ecological role :

- i) Common kingfishers are important predators throughout their range of small **fish from freshwater** habitats, thus controlling their population.
- ii) Some species of Kingfisher take crustaceans, frogs and other amphibians, annelid worms etc. In this way, they maintain the **ecological balance**.
- iii) Common Kingfishers serve as a good indicator of the health of an ecosystem, as they feed on small aquatic animals, toxins in the water affect them severely. A strong Kingfisher population therefore means a **healthy habitat**.

5) SPOTTED DOVE:-

❖ Scientific name:
Spilopelia chinensis

❖ Characteristic features:

- i) The ground colour of this long and slim dove is rosy buff below shading into grey on the head and belly.
- ii) The body is covered with black, grey and white feathers.
- iii) The length ranges from 28 to 32 centimetres.
- iv) Abnormal plumages such as leucism can sometimes occur in the wild.



Figure: *Spilopelia chinensis* (picture is clicked at the balcony of my house)

❖ Significance and ecological role:

- i) These Doves are important **seed dispersers** and **pollinators**, especially in columnar cacti such as *Carnegia gigantea*.
- ii) The nest of these birds are a simple collection of twigs and dried pliable stems of climbers and grasses, therefore, they show the **nesting behaviour** in Ecology.
- iii) It is believed that the message of **love, hope and peace** is conveyed in the appearance of a Dove.

STUDY OF FIVE DIFFERENT KINDS OF ANIMALS:-

1) CAT:-

❖ Scientific name: *Felis catus*

❖ Characteristic features:

i) Skeleton: Cats have 7 cervical vertebrae, 13 thoracic vertebrae, 7 lumbar, 3 sacral vertebrae and a variable number of caudal vertebrae in the tail.

ii) Skull and claws: skull of the cats has very large eye sockets and powerful specialized jaw. Cats have protectable and retractable claws.

iii) Vision: Cats have excellent night vision. Hearing: the domestic cat's hearing is most acute in the range of 500 Hz to 32 KHz.

Smell: Cats have acute sense of smell due to well-developed olfactory bulb and a large surface of olfactory mucosa.



Figure: *Felis catus* (picture is collected from neighbour's house)

❖ Significance and ecological role:

i) Domestic cats, from owned pets to feral cats, impact biodiversity through **predation, competition, hybridization.**

ii) Cats have been used for millennia to **control rodents**, notably around grain stores and aboard ships.

iii) In ancient Egypt, Cat was regarded as **god.**

iv) There are several health benefits of having cats, such as, they **lower stress and anxiety level**, reduce the **feelings of loneliness** etc.

2) DOG:-

❖ Scientific name: *Canis familiaris*

❖ Characteristic features:

- i) The dog's **skeleton** is well adapted for **running**.
- ii) A dog's senses include **smell, taste, touch vision, hearing**, etc. They are very much sensitive because of their strong senses.
- iii) There are many different shapes for dog **tails**. One of the primary function of a dog's tail is to communicate their **emotional state**.

❖ Significance and ecological role:

- i) They help us to gain a sense of **responsibility**, so us unconditional love, and are always there when we need them.
- ii) Dogs have and acute **olfactory sense**, so they are used in **crime detection**.
- iii) Dogs not only interact with wildlife, but can attack and spread disease to other livestock and domestic animals.
- iv) Dogs are **omnivores**, therefore they feed on both carnivores and herbivores, thus, maintain the **ecological balance**.
- v) They are symbolically associated with **loyalty and vigilance**, often acting as guardian and protector.
- vi) In ecosystem, Dogs play both the role of **predator and competitor**.

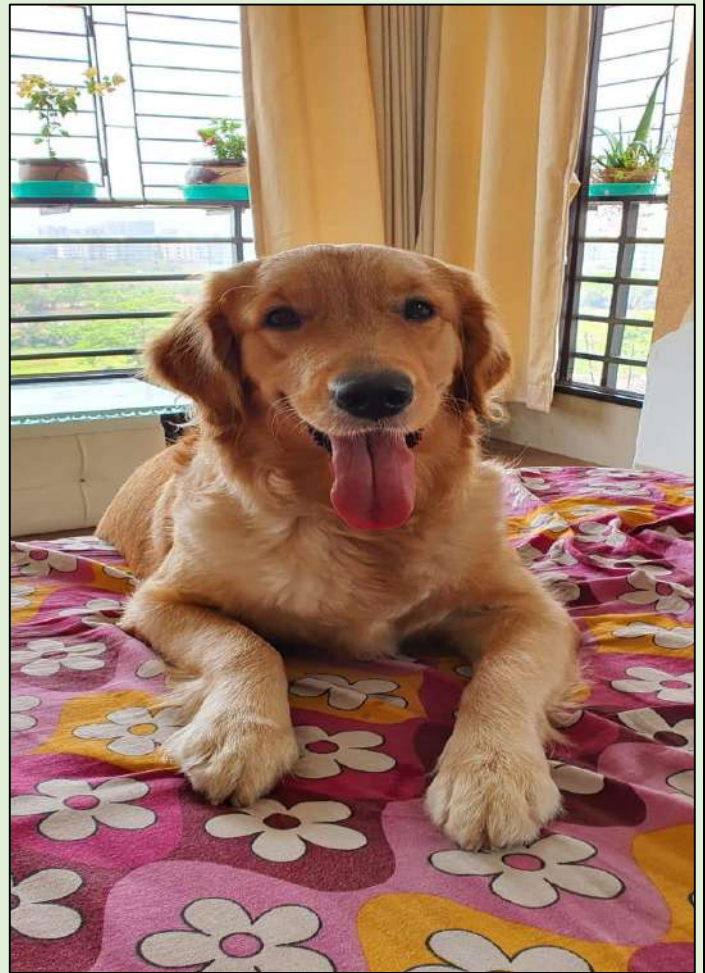


Figure: *Canis familiaris* (picture is collected from neighbour's house)

3) MOUSE:-

❖ Scientific name:

Mus musculus (House mouse)

❖ Characteristic features:

i) They have **short hair** and some, but not all, subspecies have a light belly.



Figure: *Mus musculus* (picture is downloaded from Google)

ii) The **tail**, has only a thin covering of hair as it is the main peripheral organ for heat loss in thermoregulation.

iii) Newborn males and females can be distinguished on close examination as the **anogenital distance** in males is double than that of female.

iv) From the age of 10 days, females have 5 pairs of **mammary glands** and nipples; males have no nipples.

❖ Harmful effects:

i) House mice can transmit **diseases, contaminate food**, and damage food packaging.

ii) Lymphocytic choriomeningitis (**LCMV**) can be transmitted by mice.

iii) In Central Europe, the Dobriva sequence of **Hantavirus** has been found in house mice. This is the most serious type of Hanta that can infect human.

❖ Biological importance:

Mice are most commonly used as mammalian laboratory animal, due to their close relationship, and association of high **homology with human**.

4) COW:-

❖ Scientific name:

Bos taurus

❖ Characteristic features:

i) The **head** is small relative to the body size; it has a long, straight **snout**.

ii) Each species has a **hump** over its shoulders.

iii) They are mainly **black, white, and brown** in colour.

iv) Their eyes are located on the sides of their heads, they have **monocular vision**.

❖ Significance and ecological role:

i) There are several **dairy products** including milk, cheese, yogurt, butter etc. we get from cows.

ii) They are herbivorous, feed on green plants, which act as the producers of ecosystem. Therefore, cows maintain the **ecological balance**.

iii) One Hindu **goddess**, Bhoomi, is usually shown in the form of a cow.

iv) They are used to **plough** the agricultural fields.

v) **Cow dung** is used as useful manure, an efficient fuel. It is also used to produce biogas and insect repellent.



Figure: *Bos taurus* (picture is downloaded from Google)

5) RABBIT:-

❖ Scientific name:

Oryctolagus cuniculus domesticus
(domesticated rabbit)

❖ Characteristic features:

i) Rabbits are small, furry mammals with long ears, short **fluffy tails**, and strong, **large hind legs**.

ii) They have two pairs of sharp **incisors**, one pair on top and one pair on bottom.

iii) Using their powerful hind legs, rabbits move by **hopping**.

iv) Rabbits vary in colour and size, ranging in weight from **2 to 16 pounds**.

❖ Significance and ecological role:

i) In their **natural habitats**, Rabbits serve the **two main functions** of keeping plant life in check and providing food for carnivorous predators.

ii) Rabbit **latrines** have a demonstrable effect on **soil fertility** and plant growth.

iii) Rabbit **burrows** provide nest sites and shelter for many invertebrates.

iv) Rabbits have been kept as **livestock** since ancient times for their meat, wool and fur.

v) As a domestic animal, they are the **good companions** of human.

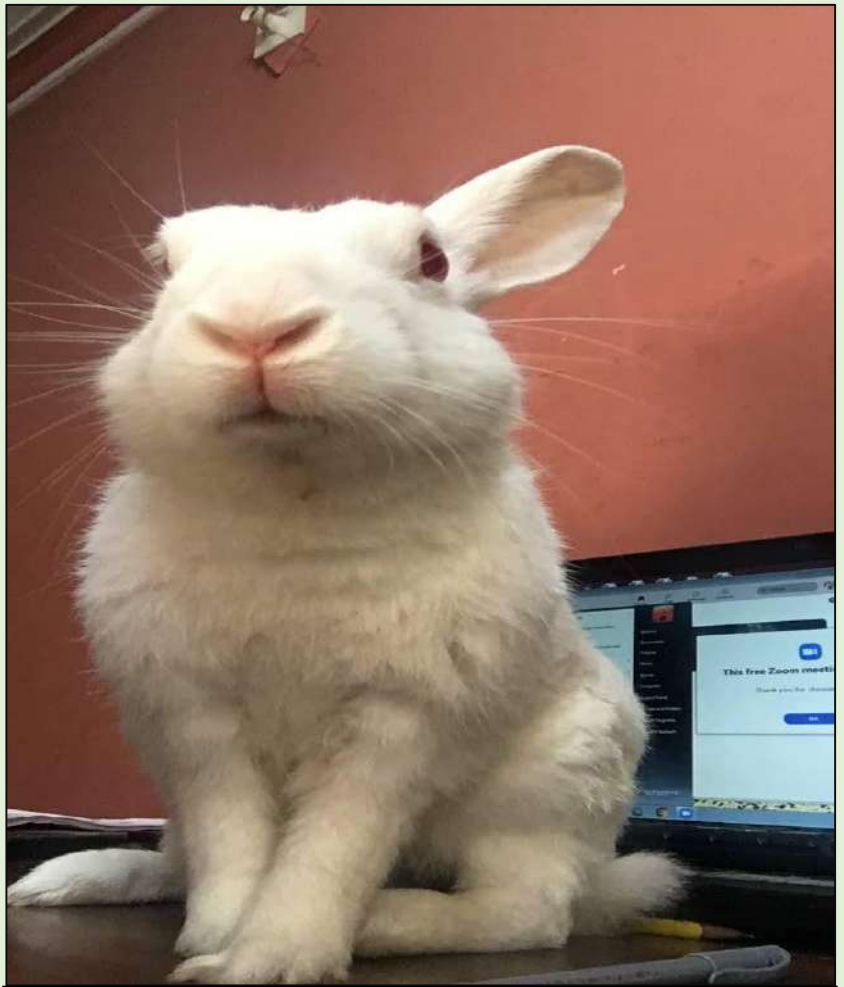


Figure: *Oryctolagus cuniculus domesticus* (picture is collected from neighbour's house)

STUDY OF FIVE DIFFERENT KINDS OF INSECTS:-

1) LADYBUG:-



Figure: *Coccinella septempunctata* (picture is collected from Google)

❖ Scientific name: *Coccinella septempunctata*

❖ Characteristics and significance:

i) They feed mainly on **aphids**, that's why, in North America it is used as **biological control agent** to reduce aphid numbers.

ii) They have total **seven black spots** over their **elytra**.

iii) Their distinctive spots and attractive colours apparently make them **unappealing to predators**.

iv) The seven-spot ladybug synthesizes the toxic alkaloids, **N-oxide coccinelline** and its free base **precoccinelline**.

2) BUTTERFLY:-



Figure: *Danaus genutia* (picture is collected near Parnasree lake)

- ❖ Scientific name: *Danaus genutia* (common tiger butterfly)

- ❖ Characteristics and significance:
 - i) They have **6 joined legs**, 3 body parts and a pair of **antennae**, **compound eyes**, and an **exoskeleton**.

 - ii) The three body parts are **head, thorax and abdomen**.

 - iii) The **scales**, which are arranged in colourful design unique to each species, are what gives the butterfly its beauty.

 - iv) Butterflies help in the process of **pollination**. The flowers, which are pollinated by butterflies are called **psychophilic flowers** such as milkweed, coneflower etc.

 - v) Butterflies maintain ecosystem by acting as pollinator, **prey**, **biological pest control**, **induce genetic variation in plants**, and enhance environmental beauty, reduce the level of carbon dioxide in air.

3) HOUSEFLY:



Figure: *Musca domestica* (picture is downloaded from Google)

❖ Scientific name: *Musca domestica*

❖ Characteristics and harmful effects:

i) Adult houseflies are usually **6-7 mm long**, the females tend to be **larger winged** than males, while males have relatively **longer legs**.

ii) The pair of large **compound eyes** almost touch in the males but are more widely separated in the females.

iii) The diseases that flies can transmit include **enteric infections** such as diarrhoea, typhoid, cholera and **eye infections** such as trachoma and epidemic conjunctivitis.

iv) Houseflies carry several **bacteria** on their bodies and are harmful to humans.

v) They have **superior vision**. That's why, they are not easy to kill.

4) MOSQUITO:-



Figure: *Aedes aegypti* (picture is collected from Google)

❖ Scientific name: *Aedes aegypti* (yellow fever mosquito)

❖ Characteristics and harmful effects:

i) As true flies, mosquitoes have one **pair of wings**, with distinct **scales** on the surface, their wings are long and narrow, as their **long, thin legs**.

ii) The **mosquito's saliva** is transferred to the host during one bite, and can cause an itchy rash.

iii) The mosquito **life cycle** consists of egg, larva, pupa, and adult stages.

iv) The **mosquito borne diseases** include malaria, dengue, yellow fever etc.

v) Some diseases lead to **disabling** and potentially **deadly** effects such as encephalitis, meningitis and microcephaly.

5) GRASSHOPPER:-



Figure: *Omocestus viridulus* (picture is downloaded from Google)

❖ Scientific name: *Omocestus viridulus*

❖ Characteristic features:

i) The body has **three regions**, three pairs of legs, one pair of **antennae**, **tracheal system** and usually two pairs of wings.

ii) Forewings **leathery**, hindwings **membranous** and chewing mouthparts can be observed.

❖ Ecological role: Grasshoppers are an important native component of **grassland ecosystem**, serving as a critical **food** supply for wildlife.

❖ Harmful effect: Grasshopper can **damage small grains**, defoliate wheat, clip the stems, causing entire heads to fall to the ground, thus, they are very **harmful for the maturing crops**.



CONCLUSION:-

The project on **auditing of flora and fauna in my locality** has made me concern about my surroundings, i.e., the environment of my locality. It is a **practical experience** of studying the characteristics of the common flora and fauna, much of which was new to me. The project helps me to observe about **every small details of my surroundings**. That's why, I have clearly understood the values of each and every **biotic and abiotic components** of the ecosystem, which maintain the **overall balance** of the environment.

Another significance of the project is, it has made me aware to protect my environment. I have vividly observed how **human activities exploit our mother environment** and leads the **endemic species** to become **endangered or extinct**. So, it's our responsibility to conserve the natural flora and fauna, by which, we can **protect our environment**.

ACKNOWLEDGEMENT:-

I would like to express my special thanks of gratitude to our **honourable Principal ma'am, Vice Principal sir and the professors of Microbiology department** for giving me the opportunity to do this project on “study of flora and fauna of my locality”. It helps me to observe the environment of my locality very minutely and it has made me aware to protect the environment.

I would also like to thank **my parents and friends** for helping me to finish the project within a short period of time.

-----THE END-----



ENVS Project Report

Study of Flora and Fauna in Barrackpore



Department : Microbiology

College Roll. No. : MSBA20M418

CU Roll. No. : 203223-21-0034

CU Registration No. : 223-1111-0265-20

Paper : CC2

Index

● Introduction

- Five types of trees.
 - Neem.
 - Mango.
 - Coconut.
 - Royal Poinciana.
 - Jackfruit.
- Five types of flowers.
 - Nayantara.
 - Gulancha.
 - Chaina rose.
 - Rose.
 - Marigold.
- Five types of insects.
 - Firefly.
 - Centipede.
 - Millipede.
 - Butterfly.
 - Dragonfly.
- Five types of animals.
 - Monkey.
 - Fox.
 - Pig.
 - Dog
 - Cat
- Five types of birds.
 - Eagle
 - King fisher
 - Sparrow
 - Common Manyana
 - Bat

● Conclusion

● Acknowledgement

INTRODUCTION

This project is about my observation and study of the Flora and Fauna in our area, Barrackpore.

Barrackpore has many flora and fauna to offer but I would like to list and share some of the most intriguing and wonderful, flora and fauna that I was lucky enough to study and observe.

Flora and faunas are the priceless and wondrous creatures that nature can offer and we , humans, being most evolved , it's our duty to conserve and preserve them.

Five types of trees :-



❖ Neem :-



- ✓ Scientific name: *Azadirachta indica*
- ✓ Higher classification: *Azadirachta*
- ✓ Family: Meliaceae
- ✓ Kingdom: Plantae
- ✓ Order: Sapindale

The tender shoots and flowers of the neem tree are eaten as a vegetable in India. A souplike dish called Veppampoo charu (Tamil) (translated as "neem flower rasam") made of the flower of neem is prepared in Tamil Nadu. In Bengal, young neem leaves are fried in oil with tiny pieces of eggplant (brinjal). The dish is called neem begun bhaja and is the first item during a Bengali meal that acts as an appetizer. It is eaten with rice.

Mango :-



- ✓ Scientific name: *Mangifera indica*
- ✓ Higher classification: Mangifera
- ✓ Family: Anacardiaceae
- ✓ Kingdom: Plantae
- ✓ Order: Sapindales

Coconut Tree :-



- ✓ Scientific name: *Cocos nucifera*
- ✓ Higher classification: Coconut palm
- ✓ Family: Arecaceae
- ✓ Kingdom: Plantae
- ✓ Subfamily: Arecoideae
- ✓ Order: Arecales

It is one of the most useful trees in the world and is often referred to as the "tree of life". It provides food, fuel, cosmetics, folk medicine and building materials, among many other uses. The inner flesh of the mature seed, as well as the coconut milk extracted from it, form a regular part of the diets of many people in the tropics and subtropics.

❖ Royal Poinciana :-



- ✓ Scientific name: *Delonix regia*
- ✓ Higher classification: Delonix
- ✓ Family: Fabaceae
- ✓ Kingdom: Plantae
- ✓ Order: Fabales

The flowers of *Delonix regia* are large, with four spreading scarlet or orange-red petals up to 8 cm (3 in) long, and a fifth upright petal called the standard, which is slightly larger and spotted with yellow and white. They appear in corymbs along and at the ends of branches. The naturally occurring variety *flavida* (Bengali: Radhachura) has yellow flowers. The pods are green and flaccid when young and turn dark-brown and woody.

❖ Jackfruit Tree : -



- ✓ Scientific name: *Artocarpus heterophyllus*
- ✓ Higher classification: Breadfruit
- ✓ Family: Moraceae
- ✓ Kingdom: Plantae
- ✓ Order: Rosales

The jack tree is well-suited to tropical lowlands, and is widely cultivated throughout tropical regions of the world. It bears the largest fruit of all trees, reaching as much as 55 kg (120 pounds) in weight, 90 cm (35 inches) in length, and 50 cm (20 inches) in diameter. A mature jack tree produces some 200 fruits per year, with older trees bearing up to 500 fruits in a year. The jackfruit is a multiple fruit composed of hundreds to thousands of individual flowers, and the fleshy petals (aril) of the unripe fruit are eaten. The ripe fruit is sweet (depending on variety) and is more often used for desserts. Canned green jackfruit has a mild taste and meat-like texture that lends itself to being called a "vegetable meat".

Five types of Flowers :-



❖ Nayantara : -



- ✓ Scientific name: *Catharanthus roseus*
- ✓ Higher classification: Catharanthus
- ✓ Family: Apocynaceae
- ✓ Kingdom: Plantae
- ✓ Order: Gentianalesss

Vinblastine and vincristine , chemotherapy medications used to treat several types of cancers, are found in the plant and are biosynthesised from the coupling of the alkaloids catharanthine and vindoline. The newer semi-synthetic chemotherapeutic agent vinorelbine, used in the treatment of non-small-cell lung cancer, can be prepared either from vindoline and catharanthine or from the vinca alkaloid leurosine, in both cases via anhydrovinblastine. The insulin-stimulating vincoline has been isolated from the plant.

Gulancha :-



- ✓ Scientific name: *Tinospora cordifolia*
- ✓ Higher classification: Tinospora
- ✓ Family: Menispermaceae
- ✓ Kingdom: Plantae
- ✓ Order: Ranunculales

In Ayurveda, Tinospora has been used over centuries to treat various diseases. There is plenty of scientific evidence that it has many anti-disease effects, and is not approved by any regulatory agency as a prescription drug. It is a large, deciduous, extensively-spreading, climbing shrub with several elongated twining branches.

❖ Chains rose : -



- ✓ Scientific name: *Hibiscus rosa-sinensis*
- ✓ Family: Malvaceae
- ✓ Kingdom: Plantae
- ✓ Order: Malvales
- ✓ Tribe: Hibisceae

It is used to shine shoes in certain parts of India. It can also be used as a pH indicator. It is also used for the worship of Devi, and the red variety is especially prominent, having an important part in tantra. In the Bengal area of eastern India, the red variety of this flower is used to worship Kali. In several countries the flowers are dried to use in a beverage, usually tea.

Rose :-



- ❖ Scientific name: *Rosa chinensis*
- ❖ Higher classification: Rosoideae
- ❖ Rank: Genus
- ❖ Family: Rosaceae
- ❖ Kingdom: Plantae
- ❖ Order: Rosales

Roses have acquired cultural significance in many societies. Rose plants range in size from compact, miniature roses, to climbers that can reach seven meters in height. Different species hybridize easily, and this has been used in the development of the wide range of garden roses.

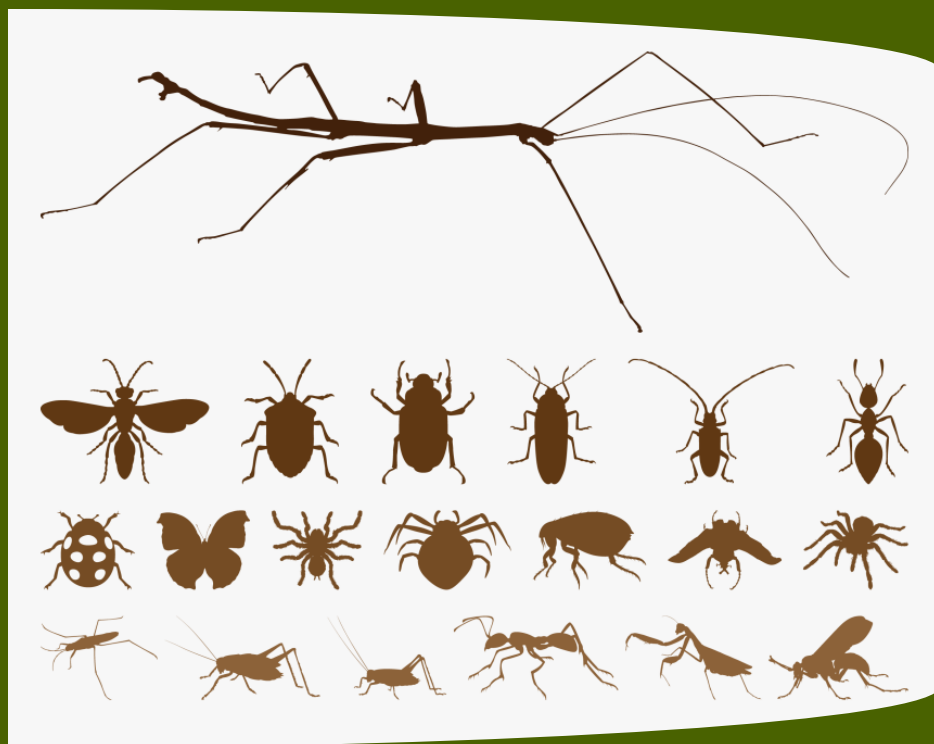
❖ Marigold : -



- ✓ Scientific name: *Tagetes patula*
- ✓ Higher classification: Daisy family
- ✓ Rank: Genus

Depending on the species, marigold foliage has a musky, pungent scent, though some varieties have been bred to be scentless. It is said to deter some common insect pests, as well as nematodes. *Tagetes* species, notably *T. patula* are hence often used in companion planting for tomato, eggplant, chili pepper, tobacco, and potato.

Five types of insects :-



❖ Fire fly : -



- ✓ Scientific name : *Lampyridae cyphonocerinae*
- ✓ Order: Coleoptera
- ✓ Family: Lampyridae; Latreille, 1817
- ✓ Kingdom: Animalia
- ✓ Phylum: Arthropoda
- ✓ Class: Insecta

They are soft-bodied beetles that are commonly called fireflies, glowworms, or lightning bugs for their conspicuous use of bioluminescence during twilight to attract mates or prey. Fireflies produce a "cold light", with no infrared or ultraviolet frequencies. This chemically produced light from the lower abdomen may be yellow, green, or pale red, with wavelengths from 510 to 670 nanometers. Fireflies are found in temperate and tropical climates.

❖ Centipede :-



- ❖ Scientific name: *Scolopendra subspinipes*
- ❖ Class: Chilopoda; Latreille, 1817
- ❖ Kingdom: Animalia
- ❖ Phylum: Arthropoda
- ❖ Subphylum: Myriapoda

Centipedes are elongated metameric creatures with one pair of legs per body segment. Most centipedes are generally venomous and can inflict painful bites, injecting their venom through pincer-like appendages known as forcipules. Despite the name, centipedes can have a varying number of legs, ranging from 30 to 354. Centipedes always have an odd number of pairs of legs. Therefore, no centipede has exactly 100 legs. Like spiders and scorpions, centipedes are predominantly carnivorous.

❖ Millipede :-



- ❖ Scientific name: *Diplopoda*
- ❖ Class: Diplopoda; Blainville in Gervais, 1844
- ❖ Kingdom: Animalia
- ❖ Phylum: Arthropoda
- ❖ Subphylum: Myriapoda

Most millipedes are slow-moving detritivores, eating decaying leaves and other dead plant matter. Some eat fungi or suck plant fluids, and a small minority are predatory. Millipedes are generally harmless to humans, although some can become household or garden pests. Millipedes can be unwanted especially in greenhouses where they can cause severe damage to emergent seedlings.

❖ Butterfly :-



- ✓ Scientific name: *Graphium doson*
- ✓ Higher classification: Ladies
- ✓ Rank: Species
- ✓ Family: Papilionidae
- ✓ Class: Insecta
- ✓ Kingdom: Animalia

Adult dragonflies are characterized by large, multifaceted eyes, two pairs of strong, transparent wings, sometimes with coloured patches, and an elongated body. Many dragonflies have brilliant iridescent or metallic colours produced by structural colouration, making them conspicuous in flight.

Dragonfly : -



- ✓ Scientific name : *Brachythemis contaminata*
- ✓ Family: Libellulidae
- ✓ Order: Odonata
- ✓ Kingdom: Animalia
- ✓ Phylum: Arthropoda
- ✓ Class: Insecta

Five types of animals :-



❖ Monkey :-



- ✓ Scientific name: *Trachypithecus geei*
- ✓ Conservation status: Endangered (Population decreasing) Encyclopedia of Life
- ✓ Family: Cercopithecidae
- ✓ Class: Mammalia
- ✓ Order: Primates
- ✓ Kingdom: Animalia

Gee's golden langur (*Trachypithecus geei*), also known as simply the golden langur, is an Old World monkey generally found in a small region of western Assam, India and in the neighboring foothills of the Black Mountains of Bhutan. It has a black face and a long tail up to 50 cm (19.69 in) in length.

❖ Fox :-



- ✓ Scientific name: *Vulpes bengalensis*
- ✓ Conservation status: Least Concern
(Population decreasing) Encyclopedi of Life
- ✓ Family: Canidae
- ✓ Order: Carnivora
- ✓ Phylum: Chordata
- ✓ Kingdom: Animalia

The Bengal fox is more daintily built than the red fox (*V. vulpes*), and can readily be recognized by its bushy, black-tipped tail, which is around 50–60% of the length of the head and body. Bengal foxes are omnivorous and opportunistic feeders.

❖ Pig :-



- ✓ Scientific name : *Sus scrofa cristatus*
- ✓ Family : Suidae
- ✓ Order: Artiodactyla
- ✓ Phylum : Chordata
- ✓ Kingdom : Animalia

The Indian boar (*Sus scrofa cristatus*), also known as the Andamanese pig or Moupin pig is a subspecies of wild boar native to India, Nepal, Burma, western Thailand and Sri Lanka. The Indian boar differs from its European counterpart by its large mane which runs in a crest along its back from its head to lower body, larger, more sharply featured and straighter skull, its smaller, sharper ears and overall lighter build.

❖ Dog :-



- ✓ Lifespan: 10 – 13 years
- ✓ Gestation period: 58 – 68 days
- ✓ Scientific name: *Canis lupus familiaris*
- ✓ Height: 15 – 110 cm (At Shoulder)
- ✓ Daily sleep: 12 – 14 hours (Adult)
- ✓ Order: Carnivora

The domestic dog (*Canis familiaris* or *Canis lupus familiaris*) is a domesticated descendant of the wolf. The dog derived from an ancient, extinct wolf, and the modern grey wolf is the dog's nearest living relative. The dog was the first species to be domesticated, by hunter–gatherers over 15,000 years ago, before the development of agriculture.

❖ Cats :-



- ✓ Lifespan: 2 – 16 years (In the wild)
- ✓ Gestation period: 58 – 67 days
- ✓ Scientific name: *Felis catus*
- ✓ Kingdom: Animalia
- ✓ Order: Carnivora
- ✓ Phylum: Chordata

The cat is similar in anatomy to the other felid species: it has a strong flexible body, quick reflexes, sharp teeth and retractable claws adapted to killing small prey. Its night vision and sense of smell are well developed.

Five types of birds : -



❖ Eagle :-



- ✓ Scientific name : *Clanga hastata*
- ✓ Kingdom: Animalia
- ✓ Phylum: Chordata
- ✓ Class: Aves
- ✓ Order: Accipitriformes
- ✓ Family: Accipitridae
- ✓ Genus: Clanga

The Indian spotted eagle is about 60 cm in length and has a wingspan of 150 cm. It is broad-headed, with the widest mouth of all spotted eagles.[2] This species has a lighter coloration overall compared to its relatives, with a darker iris that makes the eyes appear darker than the plumage.

❖ King fisher : -



- ✓ Scientific name : *Halcyon smyrnensis*
- ✓ Kingdom: Animalia
- ✓ Phylum: Chordata
- ✓ Class: Aves
- ✓ Order: Coraciiformes
- ✓ Family: Alcedinidae
- ✓ Subfamily: Halcyoninae
- ✓ Genus: *Halcyon*
- ✓ Species: *H. smyrnensis*

The white-throated kingfisher (*Halcyon smyrnensis*) also known as the white-breasted kingfisher is a tree kingfisher, widely distributed in Asia from the Sinai east through the Indian subcontinent to the Philippines. This kingfisher is a resident over much of its range, although some populations may make short distance movements.

❖ Sparrow : -



- ✓ Scientific name : *Passer domesticus*
- ✓ Kingdom: Animalia
- ✓ Phylum: Chordata
- ✓ Class: Aves
- ✓ Order: Passeriformes
- ✓ Family: Passeridae
- ✓ Genus: Passer

The house sparrow is strongly associated with human habitation, and can live in urban or rural settings. Though found in widely varied habitats and climates, it typically avoids extensive woodlands, grasslands, and deserts away from human development. It feeds mostly on the seeds of grains and weeds, but it is an opportunistic eater and commonly eats insects and many other foods.

❖ Common myna :-



- ✓ Scientific name : *Acridotheres tristis*
- ✓ Kingdom: Animalia
- ✓ Phylum: Chordata
- ✓ Class: Aves
- ✓ Order: Passeriformes
- ✓ Family: Sturnidae
- ✓ Genus: Acridotheres
- ✓ Species: A. tristis

The common myna is readily identified by the brown body, black hooded head and the bare yellow patch behind the eye. The bill and legs are bright yellow. There is a white patch on the outer primaries and the wing lining on the underside is white. The sexes are similar. The common myna obeys Gloger's rule in that the birds from northwestern India tend to be paler than their darker counterparts in southern India.

❖ Bat :-



- ✓ Scientific name : *Pteropus medius*
- ✓ Kingdom: Animalia
- ✓ Phylum: Chordata
- ✓ Class: Mammalia
- ✓ Order: Chiroptera
- ✓ Family: Pteropodidae
- ✓ Genus: Pteropus

The Indian flying fox is India's largest bat, and one of the largest bats in the world, weighing up to 1.6 kg (3.5 lb). males are generally larger than females. The Indian flying fox is frugivorous or nectarivorous, at dusk, it forages for ripe fruit. Like other fruit bats, the Indian flying fox may be a natural reservoir for diseases including certain henipaviruses and flaviviruses. These can prove fatal to humans and domestic animals. To some, the Indian flying fox is vermin because they believe that it "poaches" ripe fruit from orchards.

Conclusion

Here, I have come to the end of the project on the topic “Study of Flora and Fauna in Barrackpore”. I tried my best to include all the necessary points that are required related to the topic. Some of the information I wrote in the project were taken from the internet and I have also referred to some books. This project contains information of different types of floras and faunas, their physiological characteristics, and their nature, food sources, etc. I do hope that my project will be interesting and may be even knowledgeable.

Acknowledgement

I would like to express my special thanks of gratitude to our teachers, our principal ma'am and our vice-principal sir ,who gave me the golden opportunity to do this wonderful project on the topic "Study of Flora and Fauna in Barrackpore", which also helped me in doing a lot of Research and i came to know about so many new things I am really thankful to them.

Secondly i would also like to thank my parents and friends who helped me a lot in finalizing this project within the limited time frame.



STUDY OF FLORA AND
FAUNA IN OUR LOCALITY



NAME OF THE EXAMINATION :- B.
Sc Semester-2 (AECC-2)

PROJECT WORK(UNDER CBCS)

2021

UNIVERSITY OF CALCUTTA

SUBJECT:- ENVIRONMENTAL SCIENCE
AECC-2(ENVS)

DEPARTMRNT- Microbiology(MCBA)

CU Roll No.-203223-21-0060

CU Reg. No.-223-1111-0333-20

COLLEGE Roll. No.-MCBA20M429

CONTENT

INTRODUCTION

(MAIN CONTENT)

TREES

MANGO NEEM BANYAN BANANA COCONUT

FLOWERS

ROSE MARIGOLD CHINAROSE JASMINE
CHRYSANTHEMUM

INSECTS

BUTTERFLY MOSQUITO COCKROACH GRASS HOOPER
HOUSE FLY

BIRDS

SPARROW CROW HEN OWL WOOD PECKER

ANIMALS

CAT DOG COW RABBIT SQUIRREL

CONCLUSION

ACKNOWLEDGEMENT

INTRODUCTION

Ecology is the study of the relation and interaction between organisms and their environment. Of all the living organisms on the planet, the most commonly seen by us are the plant life and the animal life. Apart from these two, more forms of life around in the earth, but are harder to see with the naked eye. This is why the flora and fauna i.e. plant and wildlife of the earth are fascinating to observe and study.

. The term flora in Latin means “Goddess of the Flower.” Flora is a collective term for a group of plant life found in a particular region. The whole plant kingdom is represented by this name.

On the otherhand Fauna represents the animal life indigenous to a region. Animal kingdom comprises a variety of animal life forms. Hence, the classification of fauna is much more complex than the floral division. Therefore, for ease of classification.

Here myself Soumyadeep Das is presenting a small study of “Flora and Fauna” to distinguish different kinds of plant, flowers, insects, birds, animals in our locality Barasat.

TREES

(FIVE COMMON TREES)

1. MANGO TREE:

- **SCIENTIFIC NAME** :- Mangifera indica

- **SCIENTIFIC CLASSIFICATION** :-

- **KINGDOM**- Plantae
- **DIVISION**- Angiospermae
- **CLASS**-Dicotyledonae
- **ORDER**- Sapindales
- **FAMILY**- Anacardiaceae
- **GENUS**-Mangifera
- **SPECIES**- indica



- **IMPORTANCE**:-

- Mango Trees have an average life of 40 years, and for that period they bear some very delicious fruits.
- The leaves of Mango Tree are effective in curing low blood pressure, diabetes, and kidney stones.
- Branches of mango trees serve as the home for many birds.
- Mangoes coming from Mango Tree help reduce the higher cholesterol levels.
- Mango contains vitamin A,D,C, folate, zinc and vitamin B6. All these contribute greatly towards strengthening the immune system and boosting our immunity.

2. NEEM TREE:

- **SCIENTIFIC NAME :-** *Azadirachta indica*

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Plantae
- **DIVISION -**Magnoliophyta
- **CLASS -** Magnoliopsida
- **ORDER -** Sapindales
- **FAMILY -** Meliaceae
- **GENUS -** Azadirachta
- **SPECIES -** indica



- **IMPORTANCE :-**

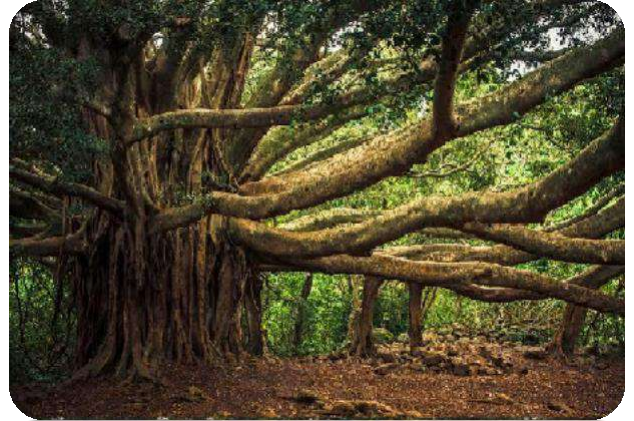
- Neem leaves are used for leprosy , intestinal worms, skin ulcer, heart diseases , cardiovascular diseases , diabetes , liver problems and also used for birth control and to cause abortions .
- The bark is used for malaria, stomach and intestinal ulcers, skin diseases, pain, and fever.
- The flower is used for reducing bile, controlling phlegm, and treating intestinal worms.
- The fruit is used for hemorrhoids, intestinal worms, urinary tract disorders, bloody nose, phlegm, eye disorders, diabetes, wounds, and leprosy.
- The fruit is used for hemorrhoids, intestinal worms, urinary tract disorders, bloody nose, phlegm, eye disorders, diabetes, wounds, and leprosy.

3. BANYAN TREE:

- **SCIENTIFIC NAME :-** Ficus benghalensis

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Plantae
- **DIVISION-** Magnoliophyta
- **CLASS-** Magnoliopsida
- **ORDER-** Urticales
- **FAMILY-** Moraceae
- **GENUS-** Ficus
- **SPECIES-** benghalensis



- **IMPORTANCE:-**

- Each and every part of this tree has its own unique medical uses.
- The bark and seeds can be used as a tonic to maintain body temperature and treat diabetes.
- The roots can be used to strengthen your teeth and gums by brushing with them.
- The sap treats external skin bruising and inflammation.
- Skin disease treatment is also possible with some properties of Banyan tree.
- Shellac has a large number of roles in making adhesive and surface finishes.
- Using the bark of the tree, paper can be created.
- Fiber can also be made from the bark of the tree in order to create ropes.

4. BANANA TREE:

- **SCIENTIFIC NAME :-** Musa acuminata
- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Plantae
- **DIVISION-** Magnoliophyta
- **CLASS-** Liliopsida
- **ORDER-** Zingiberales
- **FAMILY-** Musaceae
- **GENUS-** Musa
- **SPECIES-** acuminata



- **IMPORTANCE:-**

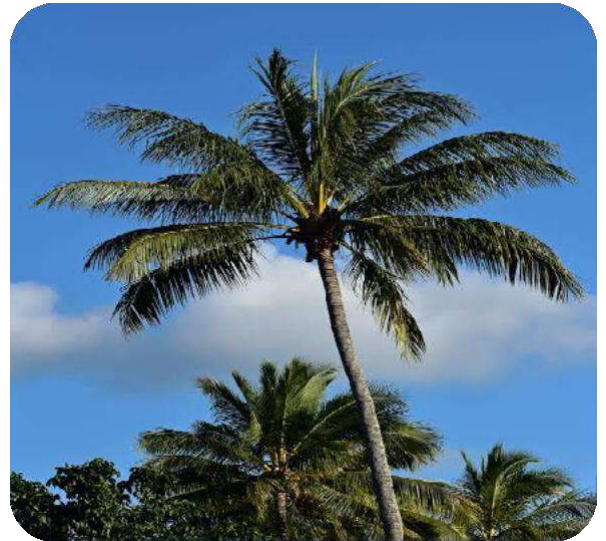
- High content of iron in bananas increases the production of hemoglobin in the blood, therefore, it is very good for anemia.
- Exceedingly good for students as the rich source of potassium will make a person very alert. In fact, this fruit is otherwise known as a brain tonic
- Bananas work well as a snack for people those who have high blood pressure as they are wholesome with low salt levels.
- It can eaten frequently to treat ulcers as they neutralize acidity in the stomach. This smooth and soft fruit cannot irritate the stomach walls.

5.COCONUT TREE:-

- **SCIENTIFIC NAME :-** Cocos nucifera

- **SCIENTIFIC CLASSIFICATION :-**

- **KINGDOM-** Plantae
- **DIVISION-** Liliopsida
- **CLASS-** Arecidae
- **ORDER-** Arecales
- **FAMILY-** Arecaceae
- **GENUS-** Cocos
- **SPECIES-** nucifera



- **IMPORTANCE:-**

- The Roots – were used to make dyes, used as a toothbrush, mouthwash, and has medicinal value.
- Coconut Leaves – were used in The Maldives as a roofing material for houses, and are used to wrap rice, for cooking, and for storage in The Philippines.
- They have been used to make toys in India, and they are used to make brooms and burnt to ash to make lime.
- Toothpicks and satay skewers have also been made out of the ribs on the leaves.
- Coconut Tree Trunk – used as timber to make houses and boats, in bridge building, furniture, drums, and canoes.

FLOWERS

(FIVE COMMON FLOWERS)

1. ROSE:-

- **SCIENTIFIC NAME :-** Rosa indica

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-** Plantae
- **DIVISION:-** Magnoliophyta
- **CLASS:-** Magnoliopsida
- **ORDER:-** Rosales
- **FAMILY:-** Rosaceae
- **GENUS:-** Rosa
- **SPECIES:-** indica



- **IMPORTANCE:-**

- Rose hips are occasionally made into jam, jelly, marmalade, and soup or are brewed for tea, primarily for their high vitamin C content.
- Rose perfumes are made from rose oil (also called attar of roses), which is a mixture of volatile essential oils obtained by steam distilling the crushed petals of roses.
- Some kind of roses are artificially coloured using dyed water, like rainbow roses
- The main constituents of attar of roses are the fragrant alcohols geraniol and L-citronellol and rose camphor, an odorless solid composed of alkanes, which separates from rose oil.

2.CHINA ROSE:-

- **SCIENTIFIC NAME:-** Hibiscus rosa-sinensis

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-**Plantae
- **DIVISION:-**Tracheophyta
- **CLASS:-**Magnoliopsida
- **ORDER:-**Malvales
- **FAMILY:-**Malvaceae
- **GENUS:-**Hibiscus
- **SPECIES:-**rosa sinensis



- **IMPORTANCE:-**

- The flowers and leaves of this plant can be made into teas and liquid extracts that can help treat a variety of conditions.
- hibiscus can help with weight loss and cancer,upset stomach,bacterial infectionsfever.
- hibiscus is popular for its potential to reduce high blood pressure.
- Hibiscus tea and extract can be purchased at health food stores as dietary supplements.
- Hibiscus tea is very tart and might be more so to sensitive tissues.

3. MARIGOLD:-

- **SCIENTIFIC NAME:-** *Calendula officinalis*

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-** Plantae
- **DIVISION:-** Tracheophyta
- **CLASS:-** Magnoliopsida
- **ORDER:-** Asterales
- **FAMILY:-** Asteraceae
- **GENUS:-** Calendula
- **SPECIES:-** officinalis



- **IMPORTANCE:-**
 - The roots and stems of marigolds emit a chemical that may suppress the population of root-knot nematodes, tiny soilborne worms that feed on the roots of ornamental plants and vegetables.
 - Marigolds attract ladybugs, parasitic wasps, hoverflies, and other beneficial insects that protect your plants from aphids and other harmful pests.
 - Marigold is also a good companion when planted near bush beans, squash, cucumbers, and eggplant.
 - Marigold flowers hold a special cultural significance in India since they form a staple in the 'puja' rituals of many temples

4. JASMINE:-

- **SCIENTIFIC NAME:-** *Jasminium sambac*

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-** Plantae
- **DIVISION:-** Tracheophyta
- **CLASS:-** Magnoliopsida
- **ORDER:-** Lamiales
- **FAMILY:-** Oleaceae
- **GENUS:-** *Jasminium*
- **SPECIES:-** *sambac*



- **IMPORTANCE:-**

- Jasmine has been used for liver disease (hepatitis), pain due to liver scarring (cirrhosis), and abdominal pain due to severe diarrhea (dysentery).
- Jasmine is used on the skin to reduce the amount of breast milk, for skin diseases, and to speed up wound healing.
- It is also used to prevent stroke, to cause relaxation (as a sedative), to heighten sexual desire (as an aphrodisiac), and in cancer treatment.
- Jasmine is inhaled to improve mood, reduce stress, and reduce food cravings.
- In foods, jasmine is used to flavor beverages, frozen dairy desserts, candy, baked goods, gelatins, and puddings

5. CHRYSANTHEMUM:-

- **SCIENTIFIC NAME:-**

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-**Plantae
- **DIVISION:-** Tracheophyta
- **CLASS:-**Magnoliopsida
- **ORDER:-**Asterales
- **FAMILY:-**Asteraceae
- **GENUS:-** Chrysanthemum
- **SPECIES:-**indicum

- **IMPORTANCE:-**

- Chrysanthemum is used to treat chest pain (angina), high blood pressure, type 2 diabetes, fever, cold, headache, dizziness, and swelling.
- In combination with other herbs, chrysanthemum is also used to treat prostate cancer.
- As a beverage, chrysanthemum is very popular as a summertime tea in southern China.
- Early research suggests that taking a combination of chrysanthemum, licorice, and Panax pseudoginseng (Hua-sheng-ping) might reverse the development of precancerous stomach sores in some people.



INSECTS

(FIVE COMMON NAMES)

1. BUTTER FLY:-

- **SCIENTIFIC NAME:-** *Danaus genutia*

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-**Animalia
- **PHYLUM:-**Arthropoda
- **CLASS:-**Insecta
- **ORDER:-**Lepidoptera
- **FAMILY:-**Nymphalidae
- **GENUS:-**Danaus
- **SPECIES:-**genutia

- **IMPORTANCE:-**

- Butterflies are central pollinators to many agricultural crops.
- their ecological function is also a food source to predators like birds, spiders, lizards and other animals.
- They have been widely used by ecologists as model organisms to study the impact of the loss of habitat and climate change.
- The bright colours dissuade some potential predators by suggesting bad taste.
- Some species also provide a natural form of pest control. For example, the harvester butterfly eats aphids while it is in its caterpillar form



2.MOSQUITO:-

- **SCIENTIFIC NAME:-Anopheles stephensi**

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-**Animalia
- **PHYLUM:-**Arthropoda
- **CLASS:-**Insecta
- **ORDER:-**Diptera
- **FAMILY:-**Culicidae
- **GENUS:-**Anopheles
- **SPECIES:-**stephensi



- **HARMFUL EFFECTS:-**

- Mosquito bites can cause skin irritation through an allergic reaction to the mosquito's saliva - this is what causes the red bump and itching.
- Not only can mosquitoes carry diseases that afflict humans, but they also can transmit several diseases and parasites that dogs and horses are very susceptible to.
- some mosquito bites may be transmission of serious diseases and viruses such as malaria, dengue virus, Zika and West Nile virus, which can lead to disabling and potentially deadly effects (such as encephalitis, meningitis and microcephaly).
- Zika — the mosquito-borne disease that impacts fetal brain development — has been shown to be sexually transmitted (making it the only known vector disease that can be transmitted sexually and via mosquitos).

3. COCKROACH:-

- **SCIENTIFIC NAME:-** *Periplaneta americana*

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-**Animalia
- **PHYLUM:-**Arthropoda
- **CLASS:-**Insecta
- **ORDER:-**Blattodea
- **FAMILY:-**Blattidae
- **GENUS:-**Periplaneta
- **SPECIES:-**americana



- **HARMFUL EFFECTS:-**

- Cockroach contaminate open food by defecating on it, leaving behind hair and dead skin and depositing empty egg shells in it.
- Some species of cockroaches have been found to bite humans. These cases are rare but if your home is heavily infested with these insects then you should be careful because they can nibble on fingernails, toes and soft parts of the skin causing wounds.
- There are several cases of cockroaches entering the ear and nose while sleeping.
- Cockroaches can cause allergies. Their saliva secretion and body parts contain hundreds of allergens that can trigger an undesirable reaction.
- Cockroaches can be the worst enemies of asthmatic people. Cockroach allergens can cause severe complications and can even be life-threatening.

4. HOUSE FLY:-

- **SCIENTIFIC NAME:-** *Musca domestica*

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-**Animalia
- **PHYLUM:-**Arthropoda
- **CLASS:-**Insecta
- **ORDER:-**Dipter
- **FAMILY:-**Muscidae
- **GENUS:-**Musca
- **SPECIES:-**domestica



- **HARMFUL EFFECTS:-**

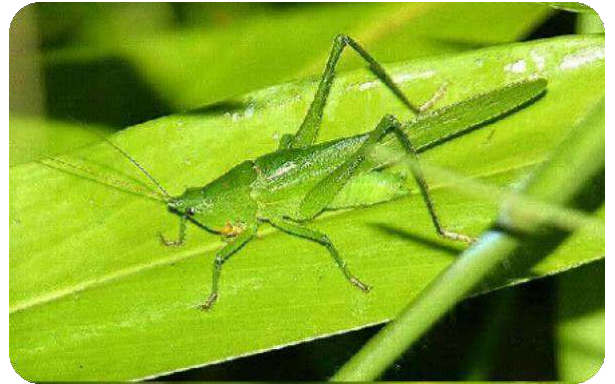
- According to the World Health Organization (WHO), houseflies are known to carry serious and life-threatening diseases, including: Cholera, Conjunctivitis, Dysentery, Gastroenteritis, Salmonellosis, Shigellosis, Tuberculosis, Typhoid fever.
- A study also proved that house flies can transmit foodborne pathogens and their associated toxin and resistance. House flies can spread diseases such as food poisoning and dysentery.
- Flies can inflict painful bites while feeding on the blood of humans and other animals, and some species transmit disease.

5. GRASS HOOPEER:-

- **SCIENTIFIC NAME:-** Poekilocerus pictus

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-**Animalia
- **PHYLUM:-**Arthropoda
- **CLASS:-**Insecta
- **ORDER:-**Orthoptera
- **FAMILY:-**Pyrgomorphidae
- **GENUS:-**Poekilocerus



- **SPECIES:-**pictus

- **IMPORTANCE:-**

- They play a critical role in the environment, making it a safer and more efficient place for plants and other animals to thrive.
- The grasshopper benefits humans and the ecosystem in general by facilitating plant decomposition and regrowth, creating a balance between the types of plants that thrive.
- Sometimes, when a grasshopper dies, microbes in the soil easily break down his nitrogen-rich body, enriching the soil and helping carbohydrate-rich plants to grow.
- he plays in the ecosystem, he is a vital source of food for predators in the wild.
- Grasshopper benefits the environment by feeding creatures like spiders, birds, lizards and more, allowing them to survive and fulfill their own roles in maintaining a healthy, vibrant ecosystem.

BIRDS

(FIVE COMMON NAMES)

1.SPARROW:-

- **SCIENTIFIC NAME:-** Passer domesticus

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-**Animalia
- **PHYLUM:-**Chordata
- **CLASS:-**Aves
- **ORDER:-**Passeriformes
- **FAMILY:-**Passeridae
- **GENUS:-**Passer
- **SPECIES:-**domesticus



- **COMMON FEATURES:-**

- Sparrows have beautiful voices and their chirping and singing can be heard all over.
- Other unique characteristics are their smooth, round heads, and rounded wings.
- Females and young birds are coloured pale brown and grey, and males have brighter black, white, and brown markings.
- Although sparrows do not belong to the group of water birds, they can swim very fast to escape from predators.
- Sparrow feeds mostly on the seeds of grains and weeds, but it is an opportunistic eater and commonly eats insects and many other foods.

2.CROW:-

- **SCIENTIFIC NAME:-Corvus splendens**

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-**Animalia
- **PHYLUM:-**Chordata
- **CLASS:-**Aves
- **ORDER:-**Passeriforms
- **FAMILY:-**Corvidae
- **GENUS:-**Corvus
- **SPECIES:-**splendens



- **COMMON FEATURES:-**

- Crows are large birds that have shiny black feathers. The tail and primary feathers are stiff.
- Crows flock together in large families.
- These birds are recognized by their loud voices and also, they are marked by their intelligence.
- Crows are very clever and curious birds who have a reputation as thieves and even pranksters.
- Like other common urban wild neighbors, they thrive in the habitat we create.

3. HEN:-

- **SCIENTIFIC NAME:-** Gallus gallus domesticus

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-**Animalia

- **PHYLUM:-**Chordata

- **CLASS:-**Aves

- **ORDER:-**Galliformes

- **FAMILY:-**Phasianidae

- **GENUS:-**Gallus

- **SPECIES:-**gallus

- **COMMON FEATURES:-**

- Chickens are social, inquisitive, intelligent birds, and many find their behaviour entertaining.

- The chicken (Gallus gallus domesticus), a subspecies of the red junglefowl, is a type of domesticated fowl, originally from Southeastern Asia.

- Rooster or cock is a term for an adult male bird, and younger male may be called a cockerel. A male that has been castrated is a capon. The adult female bird is called a hen and a sexually immature female is called a pullet.

- Chickens farmed for meat are called broilers.

- Chickens farmed primarily for eggs are called layer hens.



4. OWL:-

- **SCIENTIFIC NAME:-** *Bubo benghalensis*

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-** Animalia
- **PHYLUM:-** Chordata
- **CLASS:-** Aves
- **ORDER:-** Strigiformes
- **FAMILY:-** Strigidae
- **GENUS:-** Bubo
- **SPECIES:-** benghalensis



- **COMMON FEATURES:-**

- Owls have a flat face and a feathered facial disc around their eyes with Large forward-facing eyes, ear-holes, strong talons, sharp clutching claws.
- They feed mostly on small live mammals (i.e. rodents), fish, oscines (song birds) and insects.
They're mainly night hunters or appear at dawn and dusk (crepuscular hunters).
- They have very good hearing, communicate by call and a binocular vision.
- Owls generally nest in tree cavities but may also be found nesting in burrows, under rocky overhangs.

5. WOOD PECKER:-

- **SCIENTIFIC NAME:-** *Dinopium benghalensis*

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-** Animalia
- **PHYLUM:-** Chordata
- **CLASS:-** Aves
- **ORDER:-** Piciformes
- **FAMILY:-** Picidae
- **GENUS:-** *Dinopium*
- **SPECIES:-** *benghalensis*



- **COMMON FEATURES:-**

- Woodpeckers are often characterized as “chisel-billed” because they peck into living or dead wood to find grubs or build a nest.
- Woodpeckers have a unique form of communication , called drumming. They rapidly peck on a resonant object to create a pattern of sound.
- They have a translucent third eyelid (called a nictitating membrane), which can be drawn across the eye for protection, while maintaining visibility.
- Woodpeckers are all about their protein, whether from larvae, nuts or seeds. Suet — common in backyard feeders — can also be an important source of energy for woodpeckers.

ANIMALS

(FIVE COMMON NAMES)

1. CAT:-

➤ SCIENTIFIC NAME:- Felis catus

➤ SCIENTIFIC CLASSIFICATION:-

➤ KINGDOM:- Animalia

➤ PHYLUM:- Chordata

➤ CLASS:- Mammalia

➤ ORDER:- Carnivora

➤ FAMILY:- Felinae

➤ GENUS:- Felis

➤ SPECIES:- catus

● COMMON FEATURES:-

- Cats are among the most highly specialized of the flesh-eating mammals.
- Their brains are large and well developed.
- the cat is a relatively small animal, it can frighten enemies by arching its back, bristling, and hissing.
- The cat's body has great elasticity. Because the vertebrae of the spinal column are held together by muscles rather than by ligaments, as in humans, the cat can elongate or contract its back, curve it upward, or oscillate it along the vertebral line.
- Cats have no flat-crowned crushing teeth and therefore cannot chew their food; instead, they cut it up.
- Claws of cats are retracted or extended by pivoting the end bone of the toe, which bears the claw, over the tip of the next bone.



2. DOG:-

- **SCIENTIFIC NAME:-**Canis familiaris

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-**Animalia
- **PHYLUM:-**Chordata
- **CLASS:-**Mammalia
- **ORDER:-**Carnivora
- **FAMILY:-**Canidae
- **GENUS:-**Canis
- **SPECIES:-**familiaris



- **COMMON FEATURES:-**

- Dogs come in many shapes and sizes. Mixed-breed dogs include all size ranges.
- Dogs have a higher metabolism than people. They breathe faster, pump blood faster, mature faster, and have a higher normal body temperature.
- Dogs are generally much better at conserving heat than at cooling themselves.
- Dogs can see movement and light much better than people. In the retina of the eye, dogs have more of a specific type of cell called a rod, which is good at collecting dim light, so they have better night vision.
- The ear canal of the dog is much deeper than that of people and creates a better funnel to carry sound to the ear drum.

3.COW:-

- **SCIENTIFIC NAME:-Bos taurus**

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-**Animalia

- **PHYLUM:-**Chordata

- **CLASS:-**Mammalia

- **ORDER:-**Artiodactyla

- **FAMILY:-**Bovinae

- **GENUS :-**Bos

- **SPECIES:-**taurus



- **COMMOM FEATURES:-**

- Cows or cattle are the most useful domestic animals. They benefit the humans and the environment in many ways that we fail to recognize or appreciate.
- They are raised as dairy animals for milk and other dairy products and as draft animals.
- Cow dung is also used as fuel all over the country.
- From an environmental standpoint, cattle play an irreplaceable role in maintaining top soil, promoting biodiversity, protecting wildlife habitat, reducing the spread of wildfires, providing natural fertilizer and so much more.
- Cattle also provide us with many other by-products – parts of the cow that are used to make products for home, health, food and industry. Byproducts are value-added products other than beef that come from cattle.

4.RABBIT:-

● **SCIENTIFIC NAME:-***Oryctolagus cuniculus*

● **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-**Animalia
- **PHYLUM:-**Chordata
- **CLASS:-**Mammalia
- **ORDER:-**Lagomorpha
- **FAMILY:-**Leporidae
- **GENUS:-**Oryctolagus
- **SPECIES:-**cuniculus



● **COMMOM FEATURES:-**

- Rabbits are small mammals in the family Leporidae (along with the hare) of the order Lagomorpha (along with the pika).
- They are small mammals with fluffy, short tails, whiskers and distinctive long ears.
- Rabbits are prey animals and are therefore constantly aware of their surroundings.
- Rabbit habitats include meadows, woods, forests, grasslands, deserts and wetlands.
- Rabbits have been a source of environmental problems when introduced into the wild by humans. As a result of their appetites, and the rate at which they breed, feral rabbit depredation can be problematic for agriculture.
- The lifespan of wild rabbits is much shorter.

5.SQUIRREL:-

- **SCIENTIFIC NAME:-**Funumbulus palmarum

- **SCIENTIFIC CLASSIFICATION:-**

- **KINGDOM:-**Animalia
- **PHYLUM:-**Chordata
- **CLASS:-**Mammalia
- **ORDER:-**Rodentia
- **FAMILY:-**Sciuridae
- **GENUS:-**Funambulus
- **SPECIES:-**palmarum



- **COMMOM FEATURES:-**

- Squirrels are members of the family Sciuridae, a family that includes small or medium-size rodents.
- The squirrel family includes tree squirrels, ground squirrels, chipmunks, marmots (including groundhogs), flying squirrels, and prairie dogs amongst other rodents.
- Squirrels mate either once or twice a year and, following a gestation period of three to six weeks, give birth to a number of offspring that varies by species.
- The teeth of sciurids follow the typical rodent pattern, with large incisors (for gnawing) that grow throughout life, and cheek teeth (for grinding) that are set back behind a wide gap, or diastema.
- As their large eyes indicate, squirrels have an excellent sense of vision, which is especially important for the tree-dwelling species.

CONCLUSION

As a conclusion, fauna and flora constitute our environment. The human being is the main responsible of the destruction of fauna and flora. So, people can do many efforts to respect the law of protection of fauna and flora. It is important, because we must live in a health environment and to conserve our animal and tree species.

This project gives us idea about the advantages and disadvantages of various flora and fauna. Thus it helps me to do a detailed study of my surrounds in my locality.

ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my respectful teachers of Microbiology Department as well as our Principal and vice principal who gave me the golden opportunity to do this wonderful project on the topic “**Study of Flora and Fauna In Our Locality**”, which also helped me in doing a lot of Research and I came to know about so many things.

I am really thankful to them. Secondly I would like to thank my parents and friends who helped me a lot in finishing this project.



Flora & Fauna Auditing in DURGAPUR

SUBJECT: AECC-2 (ENVS)

CU ROLL NO: 203223-21-0066

CU REGISTRATION NO: 223-1111-0345-20

COLLEGE ROLL NO: MCBA20M430



INTRODUCTION

Our ecosystem is a complex interconnected network comprising of biotic and abiotic components that effect human lives. In this project entitled,

“Flora & Fauna Auditing in Durgapur”

mainly focuses on the environment in my locality of Bidhannagar in Durgapur.

Despite of being an Industrial hub, the city is rich in its diversity of flora and fauna which shall be discussed.

CONTENT

Species under FLORA:

- TREES: Mango, Sal, Banyan, Coconut, Neem
- FLOWERS: Hibiscus, Rose, Marigold, Sunflower, Bluebell Vine

Species under FAUNA:

- BIRDS: Sparrow, Pigeon, Crow, Parrot, Koyel
- INSECTS: Honeybee, Black garden Ant, Mosquito, Butterfly, Grasshopper
- ANIMALS: Dog, Cat, Mouse, Frog, Dog, Lizard

A close-up photograph of a cluster of plumeria flowers. The flowers are white with a bright yellow center and are surrounded by large, vibrant green leaves. The lighting is soft, highlighting the texture of the petals and the veins on the leaves.

FLORA

MANGO TREE

Scientific name: *Mangifera indica*



Description:

- Mango trees grow to 30–40 m tall.
- the Taproot descends to a depth of 6 m, with profuse, wide-spreading feeder roots and anchor roots penetrating deeply into the soil.
- The leaves are evergreen, alternate, simple
- The fruit takes four to five months from flowering to ripen
- The fruit has a single flat, oblong pit that can be fibrous or hairy on the surface, and does not separate easily from the pulp

Benefits:

- Prevents anemia: Mango is rich in iron. Consuming mango in adequate quantities helps in increasing iron levels. Also, the vitamin C present in mango increases the absorption of iron.
- Improves digestion: Disorders of the digestive system are a major cause of poor health. Being rich in fiber and polyphenols, consuming mango aids in decreasing constipation and inflammation of the bowels.
- Improves eyesight: It is due to the presence of an abundance of carotenoids which help in improving eyesight.

SAL TREE

Scientific name: *Shorea robusta*



Description:

- Sal is moderate to slow growing, and can attain heights of 30 to 35 m and a trunk diameter of up to 2-2.5 m.
- The leaves are 10–25 cm long and 5–15 cm broad.
- In wetter areas, Sal is evergreen; in drier areas, it is dry-season deciduous, shedding most of the leaves in between February to April, leafing out again in April and May.
- The wood is resinous and durable, and is sought-after for construction, although not well suited to planing and polishing.

Benefits:

- Sal is one of the most important sources of hardwood timber in India, with hard, coarse-grained wood that is light in colour when freshly cut, but becomes dark brown with exposure. The wood is especially suitable for constructing frames for doors and windows.
- The dry leaves of sal are a major source for the production of leaf plates
- Sal seeds and fruit are a source of lamp oil and vegetable fat. The seed oil is extracted from the seeds and used as cooking oil after refining.

BANYAN TREE

Scientific name: *Ficus benghalensis*



Description:

- The leaves of the banyan tree are large, leathery, glossy, green, and elliptical. Like most figs, the leaf bud is covered by two large scales.
- Older banyan trees are characterized by aerial prop roots that mature into thick, woody trunks, which can become indistinguishable from the primary trunk with age.
- In some species, the prop roots develop over a considerable area that resembles a grove of trees, with every trunk connected directly or indirectly to the primary trunk.

Benefits:

- The tree is considered sacred in India, and temples are often built nearby. Due to the large size of the tree's canopy, it provides useful shade in hot climates. It is the national tree of India.
- The bark and seeds can be used as a tonic to maintain body temperature and treat diabetes. The roots can be used to strengthen your teeth and gums by brushing with them. The sap treats external skin bruising and inflammation. Skin disease treatment is also possible with some properties of Banyan tree

COCONUT TREE

Scientific name: *Cocos nucifera*



Description:

- It is a large palm, growing up to 30 m (100 ft) tall, with pinnate leaves 4–6 m . Given proper care and growing conditions, coconut palms produce their first fruit in six to ten years.
- The coconut fruit is a drupe, not a true nut. Like other fruits, it has three layers: the exocarp, mesocarp, and endocarp.
- Unlike some other plants, the palm tree has neither a tap root nor root hairs, but has a fibrous root system.

Benefits:

- The coconut fruit has many uses in the field medicine and cosmetics. There are many products which can be obtained from coconut and can be used for various purposes such as domestic, commercial and industrial
- It can be eaten as food or **used** as medicine.
- **Coconut** is taken by mouth for bladder stones, diabetes, high cholesterol, and weight loss.
- In foods, **coconut** is **used** in various preparations.

NEEM TREE

Scientific name: *Azadirachta indica*



Description:

- It is deciduous, shedding many of its leaves during the dry winter months.
- The opposite, pinnate leaves are 20–40 cm long.
- Protrandous, bisexual flowers and male flowers exist on the same individual tree.
- The fruit is a smooth, olive-like drupe which varies in shape from elongate oval to nearly roundish

Benefits:

- The neem leaves are used to keep beneath the cloths in order to protect them from foul smell and any kind of microbes.
- Paste of neem is a good thing for beauty treatment
- The tender neem leaves is also cooked and stir-fried; and used as a curry.
- Many also prefers to chew neem leaves; it is a blood-purifier.
- Neem juice is a well know thing for overall health.

HIBISCUS

Scientific name: *Hibiscus rosa-sinensis*



Economic Importance:

The leaves, roots and flowers have various medicinal properties. The leaves and calyces have been used as food and the flowers steeped for tea.

Description:

- It is a bushy, evergreen shrub or small tree growing 2.5–5 m tall, with glossy leaves and solitary, brilliant red flowers in summer and autumn.
- The flowers are large, conspicuous, trumpet-shaped, with five petals and their colors can be white to pink, red, orange, peach, and yellow or purple that are 4–18 cm broad.
- The hibiscus has both male and female parts on the same flower.
- At the top of the pistil is known as the stigma, where pollen is collected, and in the middle is the style, which is the section that the pollen travels down to the ovary.
- The root is a branched tap root. The stem is aerial, erect, green, cylindrical and branched.

Uses & Benefits:

- The flower is additionally used in hair care as a preparation.
- It can also be used as a pH indicator.
- It is also used for the worship of Devi, and the red variety is especially prominent, having an important part in tantra.
- It has been shown to function as an anti-solar agent by absorbing ultraviolet radiation.
- It is considered to have a number of medical uses.

ROSE

Scientific name: *Rosa damascena*



Description:

- It is a woody perennial flowering plant of the genus *Rosa*, in the family Rosaceae, or the flower it bears.
- The leaves are borne alternately on the stem.
- The aggregate fruit of the rose is a berry-like structure called a rose hip.
- The sharp growths along a rose stem, though commonly called "thorns", are technically prickles, outgrowths of the epidermis (the outer layer of tissue of the stem), unlike true thorns, which are modified stems.

Significance & Uses:

- Mostly species roses are grown for attractive or scented foliage, ornamental thorns or for their showy fruit .
- Roses are a popular crop for both domestic and commercial cut flowers.
- Rose perfumes are made from rose oil , which is a mixture of volatile essential oils obtained by steam distilling the crushed petals of roses.
- Rose flowers are used as food, also usually as flavouring or to add their scent to food.

MARIGOLD

Scientific name: *Tagetes minuta*



Economic Importance:

- Extensively used for making garland, beautification and other general purposes like pigment and oil extraction.

Description:

- Vary in size from 0.1 to 2.2 m tall.
- Most species have pinnate green leaves.
- Blooms naturally occur in golden, orange, yellow, and white colors, often with maroon highlights.
- Floral heads are typically (1 to 4–6 cm) diameter, generally with both ray florets and disc florets.
- They have fibrous roots.
- Most horticultural selections grow best in soil with good drainage, and some cultivars are known to have good tolerance to drought.

Uses & Significance:

- Marigold is anti-bacterial, anti-inflammatory, an antioxidant, as well as a mild antiseptic.
- They attract beneficial bugs such as bees, butterflies and ladybugs to your garden while deterring garden pests like nematodes.
- Rich in flavanoids, antioxidants, and vitamin C-Marigolds can used in many dishes .
- The flower petals can be used as an inexpensive substitute for saffron and will color your dish and add some peppery flavor.

SUNFLOWER

Scientific name: *Helianthus annuus*



Economic Significance:

The common **sunflower** is valuable from an **economic** as well as from an ornamental point of view.

Description:

- Tall annual or perennial plants that in some species can grow to a height of 300 cm.
- They bear one or more wide, terminal capitula (flower heads), with bright yellow ray florets at the outside and yellow or maroon (also known as a brown/red) disc florets inside.
- During growth, sunflowers tilt during the day to face the sun but stop once they begin blooming. This tracking of the sun in young sunflower heads is called heliotropism.
- The rough and hairy stem is branched.

Uses & Significance:

- Sunflowers are used to make vegetable oil.
- The seeds of a sunflower plant are edible. They are a healthy and nutritious snack that can be eaten as part of a good, balanced diet.
- As garden plants, sunflowers can make for an amazing display.
- The colored petals of the sunflower plants can be used to make natural dyes which range in color shades from yellow to orange or a light tan.

BLUEBELL VINE

Scientific name: *Clitoria ternatea*



Description:

- It is a perennial herbaceous plant, with elliptic, obtuse leaves.
- It grows as a vine or creeper, doing well in moist, neutral soil.
- the color of its flowers, a vivid deep blue; solitary, with light yellow markings.
- The fruits are 5–7 cm long, flat pods with six to ten seeds in each pod.

Uses & Significance:

- The flower is used as a natural food colouring to colour glutinous rice and desserts like the Eurasian putugal.
- The flowers have more recently been used in a colour-changing gin.
- In traditional Ayurvedic medicine, it is ascribed various qualities including memory enhancing, nootropic, antistress, anxiolytic, antidepressant, anticonvulsant, tranquilizing, and sedative properties.
- In India, it is revered as a holy flower, used in daily puja rituals.

FAUNA



RING-NECKED PARAKEET

Scientific name: *Psittacula krameri*



Description:

- The most obvious physical characteristic is the strong, curved, broad bill.
- Parrots have strong zygodactyl feet with sharp, elongated claws, which are used for climbing and swinging
- Many parrots are vividly coloured, and some are multi-coloured.
- The most important components of most parrots' diets are seeds, fruits like nuts, buds and other plant material.
- Parrots are among the most intelligent birds and the ability of some species to make sounds like human voices enhances their popularity as pets.

Ecological Importance:

- The parrot plays an important role in its habitat by helping to propagate the forest. Because not all of the seeds consumed are digested, many are passed in the bird's guano over new areas of the forest.
- Some species eat nectar and are important in the pollination of many species of plants in the tropical forests.

Reasons for population decline:

The capture of wild parrots for the pet trade, as well as hunting, habitat loss and competition from invasive species, has diminished wild populations

CROW

Scientific name: *Corvus splendens*



Description:

- The forehead, crown, throat and upper breast are a richly glossed black, whilst the neck and breast are a lighter grey-brown in colour .
- The wings, tail and legs are black.
- The legs are strong and the tail is short and wedge-shaped .
- House crows feed largely on refuse around human habitations, small reptiles and mammals, they are omnivorous animal

Significance:

- Crows gather in large communal roosts These gatherings tend to happen near large food sources such as garbage dumps and shopping centers.
- At least some trees in the local environment seem to be necessary for successful breeding although house crows occasionally nest on telephone towers.
- The voice is a harsh kaaw-kaaw.

Ecological Importance:

- crows play a vital role in waste management.
- They consume tons of waste every year, preventing the spread of diseases and bad odor.
- They consume tons of waste every year, preventing the spread of diseases and bad odor.

PIGEON

Scientific name: *Columba livia domestica*



Description:

- The rock pigeon is the world's oldest domesticated bird.
- These are stout-bodied birds with short necks, and short slender bills that in some species feature fleshy ceres .
- The wings are large, and have eleven primary feathers;

Ecological Importance:

- Pigeons have made contributions of considerable importance to humanity, especially in times of war.
- In war the homing ability of pigeons has been put to use by making them messengers. So-called war pigeons have carried many vital messages and some have been decorated for their services.
- Pigeons are also kept by enthusiasts for the enjoyment of Flying/Sporting competitions.

Reasons for Decline:

- People ate passenger pigeons in huge amounts, but they were also killed because they were perceived as a threat to agriculture.
- The deforestation of land destroyed its habitat, and infectious diseases spread through the colonies

ASIAN KOEL

Scientific name: *Eudynamys scolopaceus*



Description:

- The Asian koel is a large and long-tailed cuckoo measuring 39–46 cm and weighing 190–327 g.
- The male of the nominate race is glossy bluish-black, with a pale greenish grey bill, the iris is crimson, and it has grey legs and feet. The female of the nominate race is brownish on the crown and has rufous streaks on the head.
- They are very vocal during the breeding season (March to August)

Ecological Importance:

Noted to be especially important in the dispersal of the sandalwood tree (*Santalum album*) in India. Large seeded fruits are sometimes quickly regurgitated near the parent tree while small seeded fruits are ingested and are likely to be deposited at greater distances from the parent tree.

Reasons for Population Decline:

The population of these birds whose habitats are specialised can decline if such habitats are degraded or lost.

HOUSE SPARROW

Scientific name: *Passer domesticus*



Description:

- The house sparrow is a compact bird with a full chest and a large, rounded head.
- The sexes exhibit strong dimorphism.
- It has black around its bill, on its throat, and on the spaces between its bill and eyes .
- The female has no black markings or grey crown.
- Juveniles are similar to the adult female, but deeper brown below and paler above.

Ecological Importance:

- Sparrow serves the ecosystem of the earth. Sparrows mostly prefer seeds of millet, thistle, weed and sunflower seed. However, they also eat fruits and berries.
- During this process, sparrows spread seeds to places away from the fruit tree.
- By spreading seeds, sparrows help the survival of many plants that are the producers in an ecosystem.

Reasons for Population Decline:

- Loss of habitat
- Loss of tree canopy
- Cell phone towers

BLACK GARDEN ANT

Scientific name: *Lacius niger*



Description:

- The queen has glossy black color but appears to have slight brown stripes on her abdomen .
- Ants have an exoskeleton .
- Their respiratory organ consists of spiracles .
- They have an open circulatory system.
- Ants attack and defend themselves by biting and, in many species, by stinging, often injecting or spraying chemicals, such as formic acid

Ecological Importance:

- Ants turn and aerate the soil, allowing water and oxygen to reach plant roots.
- Ants take seeds down into their tunnel to eat the nutritious elaiosomes that are part of the seed.
- Ants eat a wide variety of organic material and provide food for many different organisms.

Behaviour:

- In the early stages of founding can have two to three other queens in the nest. then it is most likely they will fight until one queen remains.
- Ants communicate with each other using pheromones, sounds, and Touch.

HONEYBEE

Scientific name: *Apis cerana*



Description:

- Honey bees are usually oval shaped creatures with golden yellow colors and brown bands.
- The body of the honey bee is segmented: stinger, legs, antenna three segments of thorax and six visible segments of abdomen.
- The eyes include the compound eye and the simple eye .

Ecological Importance:

- Biodiversity: As pollinators, bees play a part in every aspect of the ecosystem.
- Wildlife Habitats: Bees are known for their elaborate hives, but they also help build homes for millions of other insects and animals.
- Pollination: As bees move from flower to flower in search of nectar, they leave behind grains of pollen on the sticky surface, allowing plants to grow and produce food.

Behaviour:

- In the wild, honey bee hives are often located in the holes of trees and on rock crevices.
- The hive is made from wax from the special abdominal glands of worker honey bees
- Honey bees are social creatures and live-in colonies.

MOSQUITO

Scientific name: *Culex pipiens*



Description:

- Mosquitoes have one pair of wings, with distinct scales on the surface.
- Mosquitoes go through four stages in their life cycles: egg, larva, pupa, and adult or imago.
- Mosquitoes have a slender segmented body, one pair of wings, one pair of halteres, three pairs of long hair-like legs, and elongated mouthparts.

Ecological Importance:

- Larval mosquitoes contribute to aquatic food chains
- Only the females of some mosquito species need a meal of blood to get the proteins necessary to lay eggs.
- As adults, mosquitoes serve as equally nutritious meals for birds, bats, and spiders.

Harmful effects:

- *Culex*, a large group of mosquitoes also known as common house mosquitoes, are the principal vectors that spread the viruses that cause West Nile fever,
- It also causes St. Louis encephalitis, and Japanese encephalitis, as well as viral diseases of birds and horses

GRASSHOPPER

Scientific name: *Tettigonia viridissima*



Significance:

Grasshopper is the symbol of good luck all over the world.

Description:

- Probably the most ancient living group of chewing herbivorous insects.
- Grasshoppers have powerful hind legs which allow them to escape from threats by leaping vigorously.
- Grasshoppers are plant-eaters.
- Grasshoppers have had a long relationship with humans .
- Most grasshoppers are polyphagous, eating vegetation from multiple plant sources but some are omnivorous .
- Grasshoppers have a typical insect nervous system, and have an extensive set of external sense organs

Ecological Importance:

- They lie at the middle of a functioning ecosystem that is involved in cultivation like grassland ecosystem and hence cause economic benefits.
- They cause nutrient cycling by breaking down plants, fertilizing soils with their excreta and in turn facilitating plant growth.
- Preys upon smaller insect pests of plants.

BUTTERFLY

Scientific name: *Delias eucharis*



Description:

- A butterfly is a flying insect with a small body and large, often colorful wings.
- After hatching, they start as caterpillars, and eventually build a chrysalis, inside of which they transform into and emerge as a butterfly.
- Like all insects, they have six jointed legs, 3 body parts, a pair of antennae, compound eyes, and an exoskeleton.

Ecological Importance:

- Butterflies also provide assistance for genetic variation in the plant species that they collect nectar from.
- Butterflies also act as a lower member of the food chain.

Reasons for Population Decline:

Habit change and loss as well as climate change are the biggest threats to butterflies today. Monarch butterflies, in particular, are suffering from these threats.

INDIAN PARIJAH DOG

Scientific name: *Canis lupus familiaris*



Description:

- They have been bred by humans for a long time, and were the first animals ever to be domesticated.
- Dogs have four legs and make a "bark," "woof," or "arf" sound.
- Dogs can smell and hear better than humans, but cannot see well in color because they are color blind.
- Dogs are sometimes referred to as "man's best friend" because they are kept as domestic pets and are usually loyal and like being around humans.

Behaviour:

- Dogs can run, walk, and move about from one place to another.
- Dogs can smell and hear better than humans.
- Dogs cannot see well in color because they are color blind.

Ecological Importance:

Since the first dog was bred they have been used to assist people and make their lives easier or more fulfilling.

HOUSE MOUSE

Scientific name: *Mus musculus*



Description:

- They have a pointed snout, large rounded ears, and a long and hairy tail.
- In the wild they vary in color from grey and light brown to black .
- The voice is a high-pitched squeak

Behaviour:

- House mice usually run, walk, or stand on all fours, but when eating, fighting, or orienting themselves.
- Mice are mostly crepuscular or nocturnal; they are averse to bright lights.
- House mice primarily feed on plant matter, but are omnivorous.

Ecological Importance:

- Spread fungi: Plants soil fungi while the fungi help plants to germinate and grow.
- Aerate the soil: Some rodents including mice dig burrows and tunnels under the ground for hiding when they are not hunting.
- Spread seeds: According to biologists, mice that live in tropical forests play a significant role in the dispersion of wild seeds.

HOUSE LIZARD

Scientific name: *Hemidactylus turcicus*



Description:

- Most geckos are nocturnal, hiding during the day and foraging for insects at night.
- These small geckos are non venomous and not harmful to humans .
- May prey on insects and spiders, displacing other gecko species.

The voice is a high-pitched squeak.

Behaviour:

- . Captive-born ones are tamer and more docile, and tolerate handling and sometimes relax when being lightly stroked.
- They stand sideways to the threat, swallow air to increase their size, stand high off the ground to look bigger and lash at the threat with their tails

Ecological Importance:

- Lizards are important prey for many birds, snakes, and other animals, and they are important predators of insects
- Many lizards help in controlling insects that can destroy crops and can be quite annoying to humans such as mosquitos
- Most lizards eat insects, so they can help rid your home and garden of harmful critters

FROG

Scientific name: *Rana tigerina*



Description:

- The head of the frog immediately follows a broad trunk due to absence of neck.
- Frogs must be able to move quickly through their environment to catch prey and escape predators
- Skin may or maynot posses poison or glands.
- Body skin is moist due to mucus secretion.

Behaviour:

- *Rana tigrina* is mostly solitary and nocturnal in nature
- They inhabit holes and bushes near permanent water sources
- The frog does not stay in water for a long time; it spends most of its time hiding and feeding in surrounding vegetation.

Ecological Importance:

- Frogs possess an economic importance for having a well appreciated meat by man,
- Amphibians, especially anurans, are economically useful in reducing the number of insects that destroy crops or transmit diseases.
- frogs have an important place in the food chain as both predators and prey

DOMESTIC CAT

Scientific name: *Felis catus*



Description:

- Adult domestic cats typically weigh between 4 and 5 kg .
- Cats have two eyes, a tiny nose, two perky ears, four legs and a tail.
- They are very good at hunting rats and snakes.
- Cat has got very sharp canines and pointed nails.
- It's bright eyes help it in seeing long distances and also help during the dark.

Behaviour:

The most common cat behaviors include purring, grooming, kneading and climbing. But each cat will engage in these activities differently.

Ecological Importance:

Domestic cats are valued by humans for companionship and their ability to hunt rodents. ... The **cat** is similar in anatomy to the other felid species: it has a strong flexible body, quick reflexes, sharp teeth and retractable claws adapted to killing small prey. Its night vision and sense of smell are well developed.

CONCLUSION

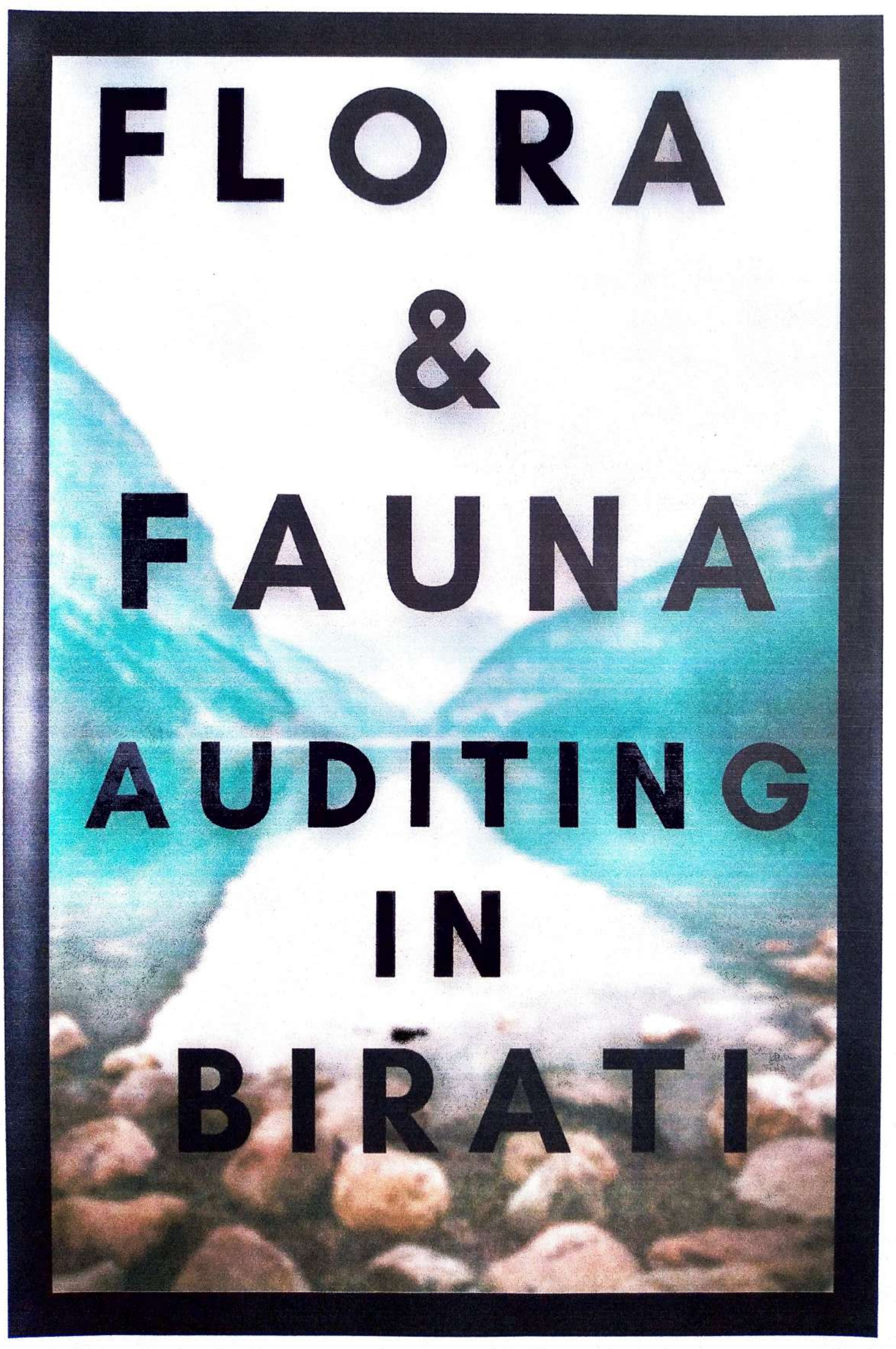
This project has made me aware of my surrounding environment while auditing the flora and fauna in my locality; much of which was unknown to me. It also made me aware how the different biotic and abiotic components of the ecosystem maintain the ecological balance.

Another aspect that I came to know while doing the project is that many local species are on the verge of extinction, and we need to work to conserve these species such that the ecological stability of the environment is maintained.

ACKNOWLEDGEMENT

I would like to express my heartfelt gratitude to our Honourable Principal Ma'am, our Vice Principal Sir and our professors of our department for giving me the golden opportunity to do this project on "Flora and Fauna Auditing in Durgapur"

I would also like to thank our professors of Microbiology Department who inspired us to do the research for the auditing. Lastly, I would also like to thank my parents and friends who helped me a lot in completing this project within a short span of time.

The background of the cover is a photograph of a river valley. The river flows through the center, surrounded by lush green hills. The foreground is filled with large, rounded, reddish-brown rocks. The overall scene is bright and natural.

F L O R A

&

F A U N A

A U D I T I N G

I N

B I R A T I

B.Sc. Semester - II, Paper : AECC 2
(Under CBCS)

Year : 2021

Department : Microbiology

ENVS PROJECT

CU Roll No. : 203223-21-0079

CU Registration No. :

223-1111-0367-20

Contents

<u>Subject</u>	<u>Page no.</u>
Introduction	01
Conclusion, acknowledgement	27
Flora (Trees)	
Neem tree	02
Mango tree	03
Banana tree	04
Papaya tree	05
coconut tree	06
Flora (Flowers)	
chaina rose	07
Blue Pea	08
Periwinkle	09
Rose	10
Marigold	11
Fauna (Animals)	
Dog	12
cow	13
Rat	14
squirrel	15
cat	16
Fauna (Insects)	
Cockroach	17
Butterfly	18
Ant	19
House fly	20
Mosquito	21
Fauna (birds)	
crow	22
Parrot	23
Duck	24
owl	25
Pigeon	26

Introduction

Pg no! - 01

Ecology is the study of the relation and the interaction between organisms and their environment. Of all the living organisms on the planet, the most commonly seen by us are the plant life and the animal life. Apart from these two, more forms of life abound in the earth, but are harder to see with the naked eye. This is why the flora and fauna, that is, plant and wildlife of the earth are fascinating to observe and study.

The term flora in Latin means, "Cradle of the flower." Flora is a collective term for a group of plant life found in a particular region. The whole plant kingdom is represented by this name.

On the other hand, Fauna represents the animal life indigenous to a region. Animal Kingdom comprises a variety of animal life forms. Hence, the classification of fauna is much more complex than the floral division. Therefore, for ease of classification.

Here myself Sapta Karmakar is presenting a small study of Flora and Fauna to distinguish different kinds of trees, flowers, animals, birds, insects in Birati, Kolkata.

Name: Neem tree

Scientific name: Azadirachta indica

Significance:

- Neem oil has been shown to avert termite attack as an eco-friendly and economical agent.
- Neem leaves are dried in India and placed in cupboards to prevent insects eating the clothes and also in bins where rice is stored.
- The tender shoots and flowers of the neem tree are eaten as a vegetable in India. In Bengal, young neem leaves are fried in oil with tiny pieces of eggplant.
- Products made from neem trees have been used in the traditional medicine of India for centuries although there is insufficient clinical evidence.
- Neem oil has the ability to cause some forms of toxic encephalopathy and ophthalmopathy if consumed in any quantity.

Picture:



Neem Tree

FLORA

Pg no: 03

Name: Mango tree

Scientific name: Mangifera indica

Scientific Significance:

- provides fruits, firewood, used in juice and pickles.
- It contains high vitamin C, thus maintains cholesterol level.
- It has anti-inflammatory and anti-cancer properties.
- Aids good digestion and a way to lose weight.
- High iron content present thus helping to cure the disease anaemia.
- Supports healthy skin and benefits our hair.
- Mango is one of the delicious juicy fruits exported to different countries.

Picture:



Mango Tree

FLORA

Pg no! 04

Name: Banana tree

Scientific name: Musa acuminata

Significance:

- In young children, cooked green bananas reduce symptoms of diarrhoea due to various causes.
- Banana fibre is used in the production of banana paper. The papers are usually hand made or by industrial process.
- Banana hearts are used as a vegetable in south asian and southeast asian cuisine, either raw or steamed with dips or cooked in soups, curries and fried foods.
- Banana leaves are large, flexible and waterproof. They are often used as ecologically friendly disposable food containers or as plates in south asia.
- Individuals with a latex allergy may experience a reaction to bananas.

Picture:



Banana Tree

Name: Papaya tree

Scientific name: Carica papaya

Significance:

- A previously exotic and rare plant, now grow in tropical climates, their sweet taste and medical values make them more popular.
- Prevents cancer and asthma.
- Papaya cures the diabetes and several heart diseases in human.
- It commonly aids good digestion.
- Papaya promotes skin and hair health.
- Papaya is the excellent source of vitamin C and also good source of vitamin A, magnesium, copper. It works as anti oxidant too.

Picture:



Papaya Tree

FLORA

pg no: 06

Name: Coconut tree

Scientific name: Cocos nucifera.

Significance:

- Coconut water serves as a suspension for the endospore of the coconut during its nuclear phase of development.
- Coconut oil is commonly used in cooking, it is also applied on hair to promote hair growth.
- Coconut is rich in copper and iron helping to form RBC.
- Coconut oil is also a biodiesel, used as diesel engine fuel.
- Coconut milk can be used as a substitute of milk as it has a much lower fat content.
- The edible white, fleshy part of the seed known as the coconut meat is jelly like & soft in immature fruits and can be eaten as is or used in salads, drinks, desserts etc.

Picture:



Coconut Tree

FLORA

Pg no: 07

Name : China rose

Scientific name : Hibiscus rosa-sinensis

Significance :

- It is known for its aesthetic beauty and traditional role in sacred ceremonies like the worship of Goddess Kali in Bengal.
- Drinking hibiscus tea might help in the management of menorrhagia, bleeding piles and diarrhoea.
- Hibiscus also has good aphrodisiac and laxative properties.
- Hibiscus heals swollen areas and other types of skin problems such as itching, burning, etc.
- Hibiscus is a traditional remedy for high blood pressure due to its diuretic action and blood-thinning properties.

Picture :



China Rose

FLORA

Pg no: 08

Name: Blue Pea (Aparajita)

Scientific name: Clitoria ternatea

Significance:

- The flower of aparajita is used as a natural food colourant to colour glutinous rice and dessert.
- It is useful for treating throat ailments and also improve ~~it~~ voice quality. It also helps to strengthen the heart.
- Aparajita is actively used in Ayurveda for diseases like mania, ~~and~~ schizophrenia and other neurological disorders.
- This herb also helps improve the process of spermatogenesis in males and is a useful for people suffering from infertility or impotence.
- Blue Pea extracts have natural anti-inflammatory properties which makes it effective against any inflammations in the body.

Picture:



Blue Pea

Name: Periwinkle

Scientific name: Catharanthus roseus

Significance:

- Periwinkle is used for brain health.
- The parts that grow above the ground and the root are used to make medicine.
- Some people apply madagascar periwinkle directly to the skin to stop bleeding; relieve
- It relieve insect bites, wasp stings and eye irritation and treat infections and swelling (inflammation).
- Periwinkle, an evergreen trailing groundcover, is a common invader throughout most of the united states.

Picture:



Periwinkle

Name : Rose

Scientific Name : Rosa chinensis

Significance :

- Conkand made by the mixture of Rose petals and white sugar in equal proportion acts as the tonic and laxative.
- Rose petals are used to make skin healthy and glowing. It cures dry and patchy skin.
- Roses are also used in the preparation of rose water and rose vinegar.
- Dried rose petals called Pankhuri are used during the hot weather for preparing cool drinks.
- Rose petals are used in cooking, which increases its flavour and make it even more delicious. They are used for making herbal tea, jam, jellies.

Picture :



Rose

Name: Marigold

Scientific name: Tagetes erecta

Significance:

- Marigolds are usually planted in gardens to repel bugs, add colour and give off a pleasant smell.
- The flowers of marigold are used as a mosquito repellent.
- In foods and beverages, is used as a flavour component.
- The oil extracted from the plant is used as a fragrance in perfumes.
- Marigold contains ingredients that might help decrease swelling and spasms.
- The juice of the leaves is put on the skin for treating eczema.

Picture:



Marigold

FAUNA

Pg no: 12

Name: Dog

Scientific name: Canis lupus familiaris

Significance:

- Dogs are bred for herding livestock, rodent control, hunting. They are also trained as service dogs to assist individuals with disabilities.
- Dogs provide companionship as pets. Dogs can decrease levels of human loneliness and give humans a sense of purpose as they care for their animal companions.
- Guide people who have lost their sight.
- Dogs can be a deadly menace to the wildlife, including threatened once dwindling in numbers.
- Dogs are the first animal to be domesticated.
- The numbers of dog bites and deaths due to dog attacks are increasing every year.
- Dogs employed by government agencies and police to ensure the public security.

Picture:



Dog

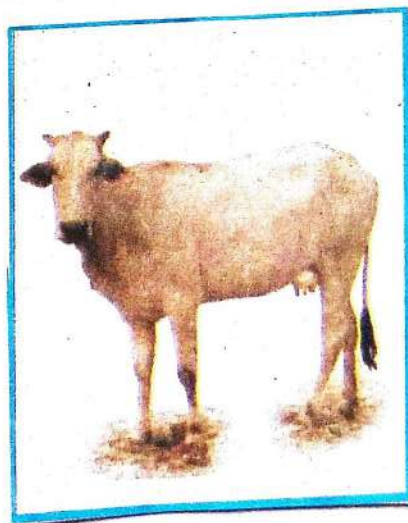
Name: Cow

Scientific name: Bos indicus

Importance:

- The most important thing cow gives us is milk. Milk has a lot of benefits like enhancing our immune system and manufacturing products like butter, curd, cheese, cream etc.
- Cow is also used as a source of meat. Although, in India, cow-slaughter is a controversial topic as cow is regarded as a sacred animal.
- Cow dung is used as an efficient source of fuel and biogas.
- Cows are worshipped as a sacred animal in our country, India, and cow urine, along with cow dung is also used in many religious ceremonies.
- Cow hides, used for leather to make shoes, couches and clothing are a widespread product.

Picture:



Cow

Name: Rat

Scientific name: Rattus noveboracicus

Harmful effects of rat:

- Black Plague - transmitted through fleas that come from the rats and bite humans.
- Fleas from rats also transmit bubonic plague, typhus and hantavirus.
- Human can get sick when rats contaminate food or run across counter tops where food is late prepared.
- Disease is caused if rats bite or scratch human and also by leaving their droppings and urine around home.

Picture:



Rat

Name: Squirrel

Scientific name: Sciurus carolinensis

Significance:

- The nuts and seeds that they forget about are able to sprout and become new trees or plants. In this way, squirrels help disperse plant seeds for future use.
- Squirrels also eat mushrooms - below and aboveground fungi.
- Squirrels have an important ecological role, their biggest contribution to the forest is in shaping plant composition.
- Help in forest regeneration in ecosystem.
- Squirrels help in seed disposal.

Picture:



Squirrel

FAUNA

pg no: 16

Name: Cat

Scientific name: Felis catus

Significance:

- Cat can be domesticated.
- It knows hunting and provide companionship.
- Studies have found that owning a cat can lower our stress, which will have a knock-on effect on our risk of cardiovascular disease.
- They pollinate plants, spread seeds, control insects and protect environment from the effects of climate change.
- They are leading human-influenced cause of dead birds.

Picture:



Cat

Name: Cockroach

Scientific name: Blatta orientalis,
Periplaneta americana

Harmful effects:

- The scary thing is these cockroaches carry a serious disease like Salmonella.
- Feed source for birds, reptiles, mammals, thus contributing to the ecosystem.
- It can sometimes act as carriers of intestinal diseases like dysentery, cholera, typhoid etc.
- Feed on decaying organic matter which traps huge nitrogen which ~~then~~ then gets into the soil, thus used by plants.

Picture:



Cockroach

Name: Butterfly

Scientific name: Graphium doson

Significance :

- They are the agents of pollination.
- They are important source of food for small animals like birds.
- Some species of butterfly provide a natural form of pest control. The harvester butterfly eats aphids while it is in its caterpillar stage.
- Their presence and absence can tell us a lot about the local environment.
- Play a number of roles in ecosystem.

Picture :



Butterfly

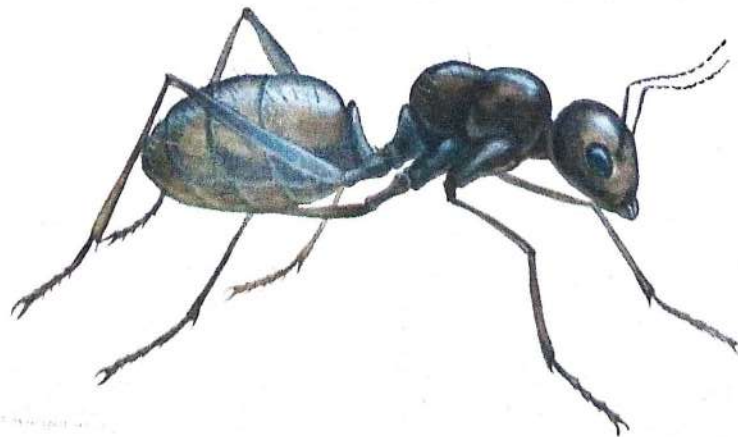
Name: Ant

Scientific name: Lasius niger

Significance:

- In areas of India, a paste of the green weaver ant is served as a condiment with curry.
- Some ant species are considered as pests, primarily those that occur in human habitations, where their presence is often problematic, like in hospitals or kitchens.
- Myrmecologists, study ants in the laboratory and in their natural conditions. Their complex and variable social structures have made ants ideal model organisms.
- Anthropomorphized ants have often been used in fables and children's stories.
- Some later commercial versions use transparent gel instead of soil, allowing greater visibility at the cost of stressing the ants with unnatural light.

Picture:



Ant

FAUNA

Pg no: 20

Name: House fly

Scientific name: Musca domestica

Significance:

- Houseflies carry a wide variety of organisms on their hairs, mouthparts, vomitus and feces. They act as vectors of pathogens such as those causing typhoid, cholera etc.
- The ease of culturing houseflies, and the relative ease of handling, have made them useful as model organism for use in laboratories.
- Houseflies have also found a place in literature like the fables.
- The ability of housefly larvae to feed and develop in a wide range of decaying organic matter is important for recycling of nutrients in nature. This could be exploited to combat ever-increasing amounts of waste.

Picture!



House Fly

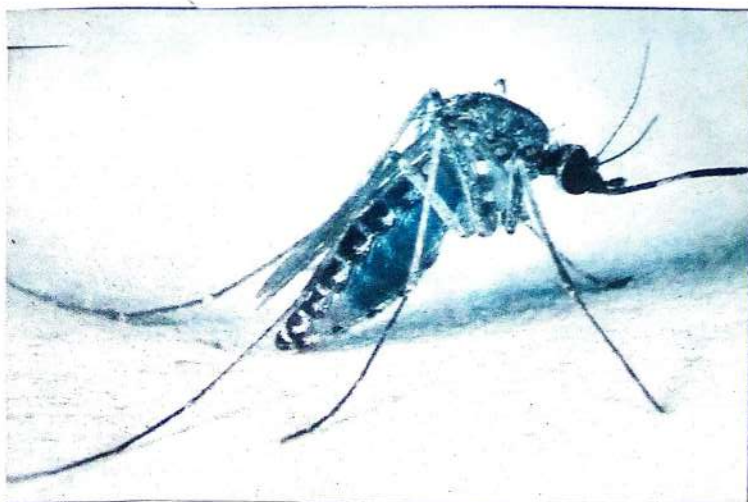
Name: Mosquito

Scientific name: Anopheles gambiae, Aedes aegypti

Harmful effects:

- Mosquitoes put 40% of the world at risk of Dengue. There is no medicine or vaccine for dengue.
- Mosquitoes spread yellow fever. However, there is an effective vaccine, one dose of which provides life-long immunity.
- Mosquitoes are behind the outbreaks of chikungunya which can sometimes lead to agonizing pain.
- Anopheles is one of the most effective Malaria vectors. Female anopheles mosquitoes transmit plasmodium parasites in their bites which cause high fever.
- Lymphatic filariasis, spread by mosquitoes, is a leading cause of permanent disability for people around the world.

Picture:-



Mosquito

FAUNA

Pg no! 22

• Name: Crow

Scientific name: Corvus splendens

Significance:

- Crows have been found to carry Cryptococcus neoformans, which can cause cryptococcosis in humans.
- Crow usually causes local declines of native avifauna as its population builds up, through intensive nest predation of small bird species.
- House crow is a pest of a wide range of crops - cereals, maize, sunflowers, peanuts, pulses and many fruits and nuts; it is responsible for serious economic losses to agricultural productivity.
- Crows predate young domestic fowl and hurt larger livestock.
- Outbreaks of newcastle disease in India were often preceded by mortality in crows.

Picture:



Crow

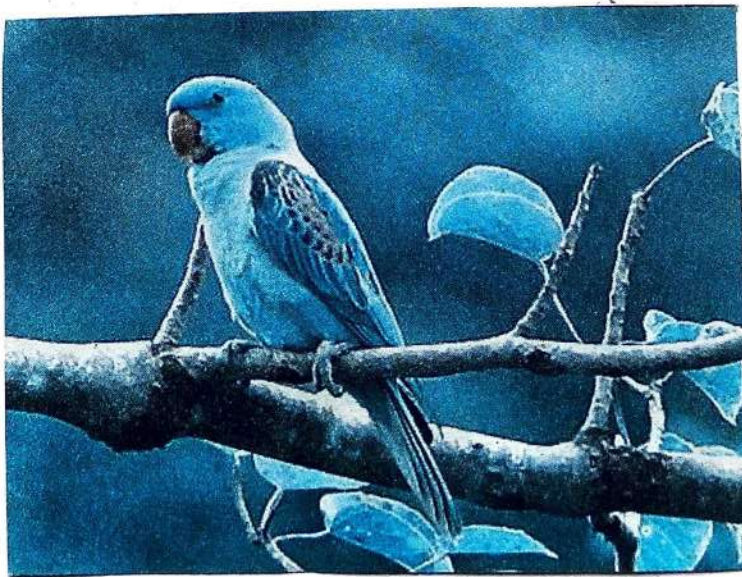
Name: Parrot

Scientific name: Psittacula eupatria

Significance:

- Parrot have been popular companion because they are intellegent, colourful and musical birds.
- It can imitate human speech.
- They help in seed disposal, thus assisting in pollination of other plants, trees.
- They promote growth of large varieties of plants.

Picture:



Parrot

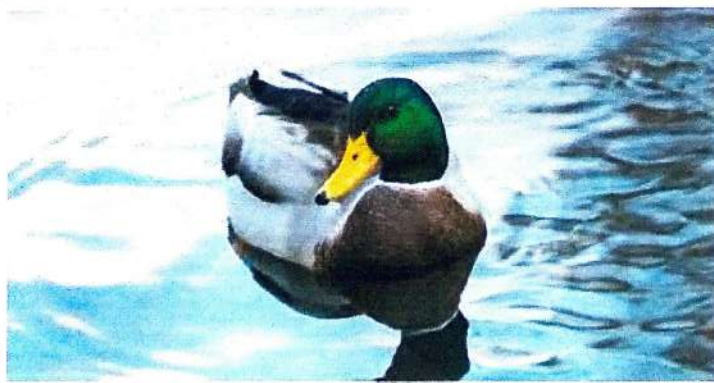
Name: Duck

Scientific name: Anas platyrhynchos domesticus

Significance:

- They are mainly kept as an egg laying duck breed. Indian Runner duck can outproduce any chicken in number of eggs laid per year.
- They are excellent foragers, probably the most active forager of all breeds are good for organic pest control.
- Since ancient times, the duck has been eaten as food. Only the breast and thigh meat are eaten.
- Duck feathers are sometimes used to stuff pillows and as decorations.
- Ducks have been domesticated as pets and farm animals for more than 500 years, and all domestic ducks are descended from either the mallard or the Muscovy duck.

Picture:



Duck

Name: Owl

Scientific name: Bubo bengalensis

Significance:

- Encouraging natural predators to control rodent population is a natural form a pest control. Owls hunt rodents thus helping keep the rodent population under control.
- Although humans and owls frequently live together in harmony, there have been incidents when owls have attacked humans.
- In Hinduism, an owl is the mount of the goddess Lakshmi, especially in eastern region of India. Owl is considered as a symbol of wealth, prosperity, wisdom, good luck and fortune.
- Owl pellets are regurgitated waste that owls cannot digest, and they often contain the bones of an animal - making them great for the study in the classroom. Educational pellets have been become a thriving business.

Picture:



Owl

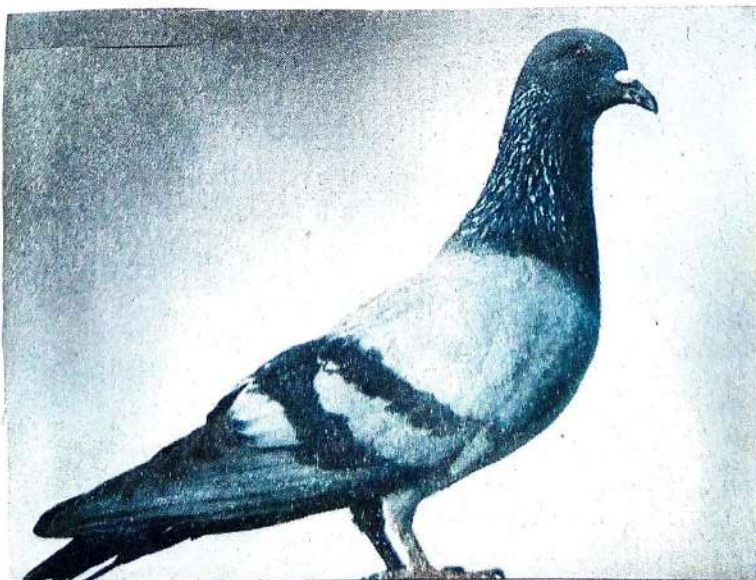
Name: Peg Pigeon

Scientific name: Columba livia

Significance:

- Rock doves have been domesticated for several thousand years, giving rise to the domestic pigeon. They may have been domesticated as long as 5000 years ago. Domesticated pigeons are used as homing pigeons as well as food and pets.
- They played significant roles during wartime, including delivering urgent medicines, helping save many human.
- Pigeons have notably been employed as medical imaging data sorters, and have been successfully trained under research conditions to examine data on a screen.
- Contact with pigeon droppings poses a minor risk of contracting histoplasmosis, cryptococcosis and long-term exposure to both droppings and feathers can induce an allergy known as bird fancier's lung.

Picture:



Pegion

● Conclusion :-

Pg no: 27

As a conclusion, fauna and flora constitute our environment. The human being is the main responsible for the destruction of fauna and flora. So, people can do many efforts to respect the law of protection of fauna and flora. It is important, because we must in a health environment and to conserve our animal and tree species.

This project 'The Study of Flora and Fauna' gives us all the details about the vegetation, animals and other surrounding present in my local area. It also gives us the information about the advantages and disadvantages of various flora and fauna. Thus, this project helped me to do a detailed study of my surroundings in my area.

● Acknowledgement :-

I would like to express my special thanks of gratitude to my all teachers of microbiology department, as well as our principal ma'am and vice principal sir, who gave me the golden opportunity to do this wonderful project on the study of flora and fauna in our area, which also help me in doing a lot of research and I came to know a lot of details about my local flora and fauna.

I would like to thank my parents and friends who helped me a lot in finishing this project within stipulated time.



**STUDY
OF
FLORA
&
FAUNA
in
HARIDVEVPUR**

CU ROLL NO. - 203223-21-0119

CU REGISTRATION NO. - 223-1111-0445-20

COLLEGE ROLL NO. - MCBA20M437

SEMESTER - 2

DEPARTMENT - MICROBIOLOGY

SUBJECT - ENVIRONMENTAL SCIENCE

(AECC 2)

INDEX

1. INTRODUCTION	1
2. STUDY OF FLORA	3
- DATE PALM	4
- GUAVA	7
- TULSI	10
- NEEM	12
- GREEN CHIRETTA	14
- CAPE JASMINE	16
- CRAPE JASMINE	18
- CHINE ROSE	20
- THE TUBEROSE	22
- ARABIAN JASMINE	24
3. STUDY OF FAUNA	26
- COMMON MYNA	27
- BLACK DRONGO	30
- COMMON KINGFISHER	32
- COMMON TAILORBIRD	34
- RED WHISKERED BULBUL	36
- FIRE FLY	38
- COCKROACH	40
- HOUSE FLY	42
- INDIAN HONEY BEE	44
- REDBREAST JEZEBEL	46
- DOG	48
- CAT	50
- MOUSE	52
- INDIAN FLYING FOX	54
- INDIAN PALM SQUIRREL	56
4. CONCLUSION	58
5. ACKNOWLEDGEMENT	59

INTRODUCTION

1

The ecosystem is a complex, interconnected network comprising biotic and abiotic elements. Biotic elements include all living organisms such as plants, animals and microorganisms. Abiotic components, on the other hand, include non-living entities that are vital for the survival of life and these include soil, water, climate, etc. Among all biotic elements, Flora and Fauna are the most fascinating ones.

FLORA - The word “flora” is used to designate plant life. The word “flora” is derived from the Latin name of Flora, the goddess of plants, flowers. In Roman mythology, Flora epitomised the goddess of flowers and of the season of spring. Flora was a symbol of nature and flowers and fertility in Roman mythology.

FAUNA - Fauna is all of the animal life. Fauna’s name derived from “to favour, nurture,” because it was believed by the ancient Roman religion that Fauna is the goddess who nurtures all that is useful to living creatures.

Flora and fauna mean plants and animals. These two forms of life along with other life forms constitute a biota.

The classification of flora and fauna depends on regions, climate, period, and environments. We can distinguish the plant life present on our earth in different ways. The simplest method used is to divide them depending on the basis of their respective regions.

Plants growing in the desert are quite different from those that grow in the mountains. The unique form of flora includes those plants, which have adapted them to live under deep waters.

Scientists also take interest in studying 'Fossil Flora'. It is a type of study, which involves ancient plant life, once existed on the earth.

As stated above, there is an indigenous and native flora of every area. For instance, the gum trees (eucalyptus) are abundant in Australia.

Similarly, English oak first grew in the United Kingdom. Plants grown by humans for a particular purpose are agricultural plants.

The flora and fauna in India are diverse with a variety of plants and animal varieties. The popular fauna of India includes 500 different varieties of mammals, 2000 species of birds, 30.000 types of insects and several varieties of fish, amphibians and reptiles. Elephants, Royal Bengal Tiger, rhinos, bison, lions are some common fauna found in the country.

India also contains a variety of flora that includes the Alpines, temperate forests, deciduous forests, evergreen forests, oaks, rhododendrons, pine, spruce, deodar, laurels, maples, bamboos and tall grasses.

STUDY OF FLORA



DATE PALM

Phoenix dactylifera

4



Date palm, is a flowering plant species in the palm family, *Arecaceae*, cultivated for its edible sweet fruit. The species is widely cultivated across Northern Africa, the Middle East and South Asia, and is naturalized in many tropical and subtropical regions worldwide. Date trees typically reach about 21–23 metres (69–75 ft) in height, growing singly or forming a clump with several stems from a single root system. Date fruits (dates) are oval-cylindrical, ranging from bright red to bright yellow in colour, depending on variety. Dates have been a staple food of the Middle East and the Indus Valley for thousands of year

4

SIGNIFICANCE

- 1. Improve Bone Health.** Dates are rich sources of copper, magnesium, selenium, and manganese. All these nutrients are important to keep your bones healthy and prevent bone-related conditions (like osteoporosis). Dates are also rich in vitamin K. The nutrient is a blood coagulant and helps metabolize your bones.
- 2. Rich in antioxidants.** Dates provide various antioxidants that have a number of health benefits to offer, including a reduced risk of several diseases.

Here's an overview of the three most potent antioxidants in dates:

Flavonoids: Flavonoids are powerful antioxidants that may help reduce inflammation and have been studied for their potential to reduce the risk of diabetes, Alzheimer's disease and certain types of cancer.

Carotenoids: Carotenoids are proven to promote heart health and may also reduce the risk of eye-related disorders, such as macular degeneration.

Phenolic acid: Known for its anti-inflammatory properties, phenolic acid may help lower the risk of cancer and heart disease.

- 3. Blood sugar control.** Dates have the potential to help with blood sugar regulation due to their low glycemic index, fiber and antioxidants. Thus, eating them may benefit diabetes management.
- 4. Promote Brain Health.** Eating dates may help improve brain function. Dates have been found to offer protection against oxidative stress and inflammation in the brain. Regular consumption of dates

has been linked to a lowered risk of neurodegenerative diseases and better cognitive performances in older individuals. Another animal study has concluded that supplementing with date fruits has the potential to slow down the progression of Alzheimer's. In another mouse study, long-term supplementation of dates was found to help prevent inflammation in the brain.

GUAVA

Psidium guajava

7



Guava is a common tropical fruit cultivated in many tropical and subtropical regions. The flowers are white, with five petals and numerous stamens. The fruits are many-seeded berries. Guava fruits are round or oval depending on the species.[2] They have a pronounced and typical fragrance, similar to lemon rind but less sharp. The outer skin may be rough, often with a bitter taste, or soft and sweet.

7

SIGNIFICANCE

1. **Menstrual cramps (dysmenorrhea).** Early research shows that taking guava leaf extract resulted in reduced pain intensity.
2. **Knee pain.** Early research shows that taking guava leaf extract may reduce pain and stiffness by a small amount in people with knee pain.
3. **A mild form of gum disease (gingivitis).** Rinsing the mouth with guava leaf extract might reduce gum disease in people with gingivitis. But it doesn't seem to reduce plaque.
4. **Boost Your Immunity.** Low levels of vitamin C are linked to an increased risk of infections and illness. Guavas are a fantastic way to get this nutrient, as they're one of the richest food sources of vitamin C. Vitamin C plays an important role in maintaining a healthy immune system. It's also linked to antimicrobial benefits. This means that it helps kill off bad bacteria and viruses that can lead to infections.
5. **High blood pressure.** The high levels of antioxidants and vitamins in guava leaves may help protect your heart from damage by free radicals. The higher levels of potassium and soluble fiber in guavas are also thought to contribute to improved heart health. Additionally, guava leaf extract has been linked to lower blood pressure, a decrease in "bad" LDL cholesterol, and a rise in "good" HDL cholesterol. Since high blood pressure and high levels of LDL cholesterol are linked to higher risks of heart disease and stroke, taking guava leaf extract could lead to valuable benefits. Early research shows that eating large amounts of guava daily in place of

high-fat foods for 12 weeks lowers blood pressure in people with high blood pressure.

TULSI

Ocimum tenuiflorum

10



Tulsi is an aromatic perennial plant in the family Lamiaceae. It is native to the Indian subcontinent and widespread as a cultivated plant throughout the Southeast Asian tropics. Tulsi is cultivated for religious and traditional medicine purposes, and also for its essential oil. It is widely used as a herbal tea, commonly used in Ayurveda, and has a place within the Vaishnava tradition of Hinduism, in which devotees perform worship involving holy basil plants or leaves. Holy basil is an erect, many-branched subshrub, 30–60 cm (12–24 in) tall with hairy stems. Leaves are green or purple; they are simple, petioled, with an ovate blade up to 5 cm (2 in) long, which usually has a slightly toothed margin; they are strongly

scented and have a decussate phyllotaxy. The purplish flowers are placed in close whorls on elongated racemes.

SIGNIFICANCE

- 1. Common cold.** Tulsi has antimicrobial, anti-allergic and anti-inflammatory properties, therefore prevents the inflammation of the nasal mucous membrane. It also prevents the regular recurrence of the common cold symptoms. Another study states that Tulsi helps gives relief from cough. Tulsi enhances the immune system of the body. Tulsi has an antipyretic and diaphoretic activity that helps to induce sweating and normalizes the elevated body temperature during fever.
- 2. Asthma.** Tulsi has immunomodulatory activity and prevents the regular recurrence of asthmatic symptoms. It also has anti-allergic and anti-inflammatory properties and reduces the inflammation of the mucous membrane of the bronchial tubes. Tulsi also acts as an expectorant that expels excess mucus from the lungs
- 3. Diabetes mellitus (Type 1 & Type 2).** Tulsi has hypoglycemic effect and decreases the elevated blood glucose levels by increasing insulin secretion and insulin sensitivity. Tulsi has antioxidant properties, protects the pancreatic cells and also reduces the risk of diabetic complications like impaired liver, kidney and cardiac functions.
- 4. Heart disease.** Eugenol and ursolic acid in Tulsi lowers the level of cortisol and helps to reduce stress and stress-related problems like heart diseases. Tulsi also has antioxidant property which prevents cardiac lipid peroxidation caused by free radicals. This lowers the risk of heart diseases and helps maintain a healthy heart.
- 5. Liver Disease.** It protects the liver cells from the damage caused by the virus and free radicals. Tulsi also helps restore the liver functions.

NEEM

Azadirachta indica

12



Neem is a tree in the mahogany family Meliaceae. It is one of two species in the genus *Azadirachta*, and is native to the Indian subcontinent and most of the countries in Africa. It is typically grown in tropical and semi-tropical regions. Neem trees also grow on islands in southern Iran. Its fruits and seeds are the source of neem oil.

SIGNIFICANCE

1. **Acne.** The application of neem oil may be helpful in the treatment of acne and other skin conditions due to its anti-inflammatory and antimicrobial properties. In laboratory studies, a proprietary

preparation of neem oil using solid lipid nanoparticle technology was found to have an antibacterial effect on acne-causing microbes. The study authors noted that the oil may be used successfully as a long-term acne treatment.

2. **Dandruff.** Anecdotal evidence suggests neem oil helps relieve dandruff, but the precise mechanism of action is unclear. Dandruff can be caused by dry skin, a fungal infection, contact dermatitis, or other skin conditions. Neem oil's natural antifungal and anti-inflammatory properties may help treat the underlying cause of a flaking scalp and relieve symptoms.
3. **Fertilizer.** Neem extract is added to fertilizers (urea) as a nitrification inhibitor.
4. **Pest and disease control.** Neem is a key ingredient in non-pesticidal management (NPM), providing a natural alternative to synthetic pesticides. Neem seeds are ground into powder that is soaked overnight in water and sprayed onto the crop. To be effective, it must be applied repeatedly, at least every ten days. Neem does not directly kill insects on the crop. It acts as an anti-feedant, repellent, and egg-laying deterrent and thus protect the crop from damage. The insects starve and die within a few days. Neem also suppresses the hatching of pest insects from their eggs. Neem-based fertilizers have been effective against the pest southern armyworm. Neem oil has been shown to avert termite attack as an eco friendly and economical agent.

GREEN CHIRETTA

Andrographis paniculata

14



Green chiretta, is an annual herbaceous plant in the family Acanthaceae, native to India and Sri Lanka. It is widely cultivated in Southern and Southeastern Asia, where it has been traditionally been believed to be a treatment for bacterial infections and some diseases. Mostly the leaves and roots were used for such purposes. The plant grows as an erect herb to a height of 30–110 cm (12–43 in) in moist, shady places. The slender stem is dark green, square in cross-section with longitudinal furrows and wings along the angles. The lance-shaped leaves have hairless blades. The small flowers are pink, solitary, arranged in lax spreading racemes or panicles. The fruit is a capsule around 2 cm (0.79 in) long

and a few millimeters wide. It contains many yellow-brown seeds. The seeds are subquadrate, rugose and glabrous. The flowering time is from September to December.

SIGNIFICANCE

- 1. Influenza.** Andrographolide in Kalmegh has antiviral and anti-inflammatory properties. It inhibits the replication of influenza virus. It also decreases the activity of inflammatory mediators responsible for inflammation of lungs.
- 2. Liver Disease.** It has antioxidant, anti-inflammatory and hepatoprotective properties. It prevents the damage of liver cells caused by the free radicals. It might also be effective against chronic hepatitis B viral infection.
- 3. Familial Mediterranean fever (Hereditary inflammatory disorder).** It is a genetic disorder. It involves episodes of recurrent fever and inflammation of the tissues lining the lungs, heart and the abdomen. Andrographolide in Kalmegh normalizes the level of nitric oxide and inflammatory mediators in blood. Thus, Kalmegh helps to reduce the severity and duration of these inflammatory episodes.
- 4. Inflammatory bowel disease.** It is a long-term disease that causes inflammation of the large intestine. It occurs because of the improper functioning of the immune system. Andrographolide in Kalmegh has good anti-inflammatory properties. It reduces inflammation associated with ulcerative colitis.
- 5. Stomach ulcers.** Kalmegh acts as a gastroprotective agent, it prevents the excess acid secretion in the stomach. It also fights against the free radicals and protects the gastric mucosal layer.
- 6.** Kalmegh might be good for diabetics as it is effective in lowering blood sugar levels by increasing insulin secretion.

CAPE JASMINE

Gardenia jasminoides

16



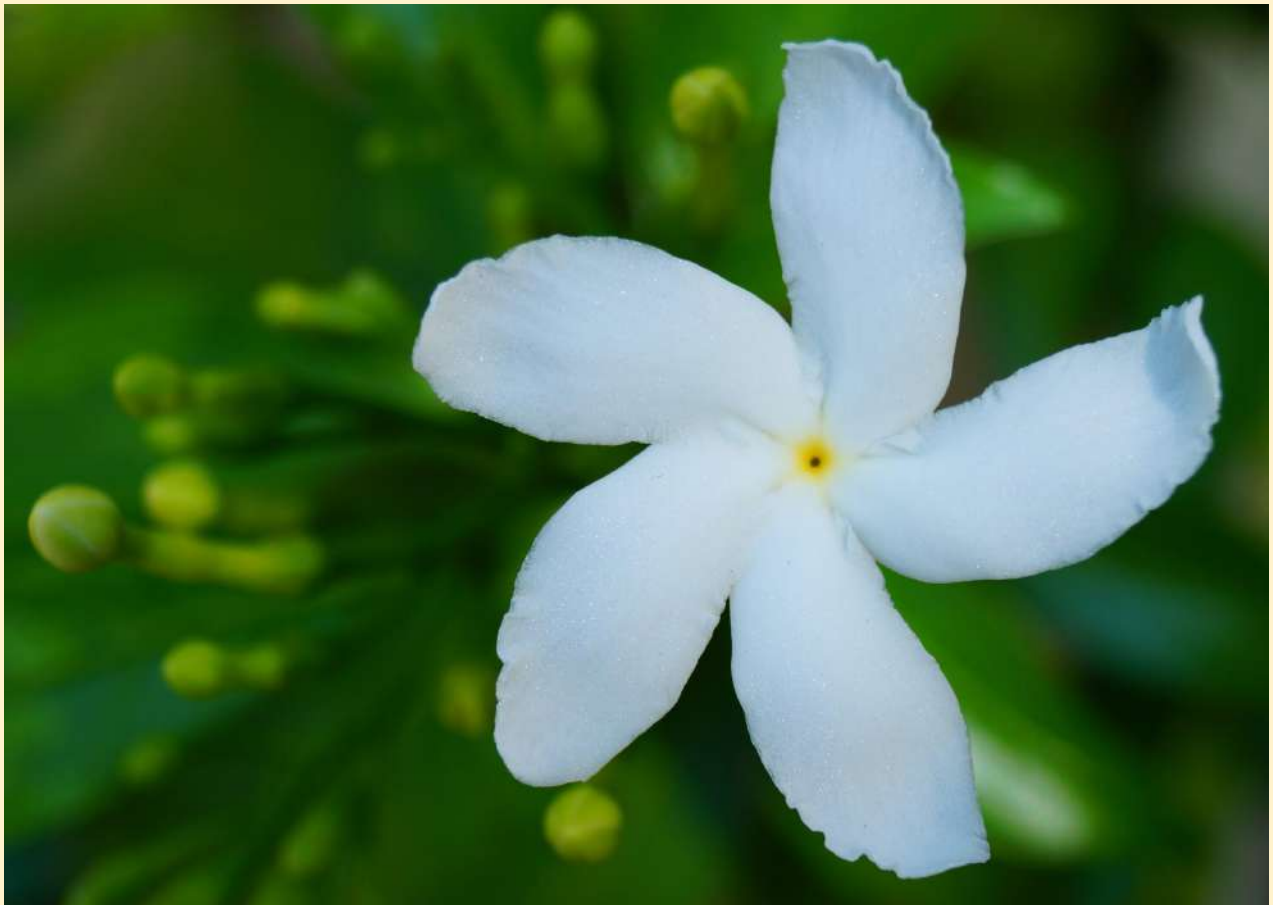
1. *Gardenia jasminoides*, commonly known as **gardenia**, is an evergreen flowering plant of the coffee family Rubiaceae. It originated in Asia and is most commonly found growing wild in Vietnam, Southern China, Korea, Taiwan, Japan, Myanmar, India and Bangladesh.
2. Wild plants range from 30 cm to 3 m high and have a rounded habit with very dense branches with opposite leaves, lanceolate-oblong, leathery or gathered in groups on the same node and by a dark green, shiny and slightly waxy surface and prominent veins.

3. With its shiny green leaves and heavily fragrant white summer flowers, it is widely used in gardens in warm temperate and subtropical climates, and as a houseplant in temperate regions. It has been in cultivation in China for at least a thousand years, and was introduced to English gardens in the mid-18th century. Many varieties have been bred for horticulture, with low-growing, and large, and long-flowering forms.
4. In China, the petals are used in tea for their aroma, while a yellow-red dye used in textiles and sweets has been extracted from the pulp of the fruit.
5. *Gardenia jasminoides fructus* (fruit) is used within traditional Chinese medicine to "drain fire" and treat certain febrile conditions, i.e. have an anti-inflammatory and antipyretic effect.
6. The iridoids genipin and geniposidic acid can be found in *G. jasminoides* fruit.
7. **Crocetin** (a chemical compound usually obtained from *Crocus sativus*) can also be obtained from the fruit of *G. jasminoides*. The fruit has crocin which is used as a yellow dye, which is used for clothes and food.

CRAPE JASMINE

Tabernaemontana divaricata

18



1. ***Tabernaemontana divaricata*** commonly called crape jasmine, East India rosebay and Nero's crown is an evergreen shrub native to South Asia and now cultivated throughout South East Asia and the warmer regions of continental Asia. In zones where it is not hardy it is grown as a house/glasshouse plant for its attractive flowers and foliage. The stem exudes a milky latex when broken, hence the name milk flower.
2. The plant generally grows to a height of 5–6 feet (1.5–1.8 m) and is dichotomously branched. The large shiny leaves are deep green and about 6 inches (15 cm) in length and 2 inches (5.1 cm) in width. The waxy

blossoms are found in small clusters on the stem tips. The (single) flowers have the characteristic 'pinwheel' shape also seen in other genera in the family Apocynaceae such as *Vinca* and *Nerium*. Both single and double-flowered forms are cultivated, the flowers of both forms being white. The plant blooms in spring but flowers appear sporadically all year. The flowers of the single form are unscented but the double-flowered form has a pleasing fragrance.

3. The species is known to produce many alkaloids including catharanthine, coronaridine, dregamine, ibogamine, tabersonine, voacamine and voacristine. More than 66 alkaloids are found in the shrub.

CHINA ROSE

Hibiscus rosa-sinensis

20



1. ***Hibiscus rosa-sinensis***, known colloquially as Chinese hibiscus, China rose, Hawaiian hibiscus, rose mallow and shoeblackplant, is a species of tropical hibiscus, a flowering plant in the Hibisceae tribe of the family Malvaceae. It is widely cultivated in tropical and subtropical regions, but is not known in the wild, so that its native distribution is uncertain. An origin in some part of tropical Asia is likely. It is widely grown as an ornamental plant in the tropics and subtropics.
2. *Hibiscus rosa-sinensis* is a bushy, evergreen shrub or small tree growing 2.5–5 m (8–16 ft) tall and 1.5–3 m (5–10 ft) wide, with glossy leaves and solitary, brilliant red flowers in summer and autumn. The 5-petaled

flowers are 10 cm (4 in) in diameter, with prominent orange-tipped red anthers.

The flowers are large, conspicuous, trumpet-shaped, with five petals and their colors can be white to pink, red, orange, peach, and yellow or purple that are 4–18 cm broad. The flowers from various cultivars and hybrids can be either a single flower or a double flower.

3. *Hibiscus rosa-sinensis* is considered to have a number of medical uses in Chinese herbology. Traditional uses in China have been to make a black shoe-polish from its flower petals, or to make a woman's black hair dye. The flowers are also used in parts of China to color various intoxicating liquors. The plant may have some potential in cosmetic skin care; for example, an extract from the flowers of *Hibiscus rosa-sinensis* has been shown to function as an anti-solar agent by absorbing ultraviolet radiation.
4. It can also be used as a pH indicator. When used, the flower turns acidic solutions to a dark pink or magenta color and basic solutions to green.

TUBEROSE

Agave amica

22



1. *Agave amica*, formerly *Polianthes tuberosa*, is a perennial plant in the family Asparagaceae, subfamily Agavoideae, extracts of which are used as a note in perfumery.
2. The tuberose is herbaceous, growing from underground tubers or tuberous roots. It produces offsets. The leaves are a dull green and about 1–1.5 ft (30–50 cm) long and up to 0.5 in (13 mm) wide at the base. They are slightly succulent. The inflorescence is a spike, reaching up to 3 ft (1 m) high, with pure white waxy flowers. The flowers are tubular, with a tube up to 2.5 in (6 cm) long, separating into six flaring segments (tepals) at the end, and are strongly fragrant. There are six stamens, inserted into the

tube of the flower, and a three-part stigma. The double-flowered cultivar 'The Pearl' has broader and darker leaves, and shorter flower spikes, usually reaching only 1.5–2 ft (50–60 cm).

3. Now widely grown as an ornamental plant, the species was originally native to Mexico. It is no longer found in the wild, probably as a result of being domesticated by the Aztecs. It is currently grown in many tropical and temperate countries.
4. The overwhelming fragrance of the tuberose has been distilled for use in perfumery since the 17th century, when the flower was first transported to Europe. French Queen Marie Antoinette used a perfume called *Sillage de la Reine*, also called *Parfum de Trianon*, containing tuberose, orange blossom, sandalwood, jasmine, iris and cedar. It remains a popular floral note for perfumes, either in stand-alone Tuberose fragrances or mixed floral scents, but it generally must be used in moderation because the essence is overpowering and can become sickly to the wearer.

ARABIAN JASMINE

Jasminum sambac

24



1. ***Jasminum sambac*** or Arabian jasmine is a species of jasmine native to tropical Asia, from the Indian subcontinent to Southeast Asia. It is cultivated in many places, especially across much of South and Southeast Asia. It is naturalised in many scattered locales: Mauritius, Madagascar, the Maldives, Christmas Island, Chiapas, Central America, southern Florida, the Bahamas, Cuba, Hispaniola, Jamaica, Puerto Rico, and the Lesser Antilles.
2. *Jasminum sambac* is an evergreen vine or shrub reaching up to 0.5 to 3 m (1.6 to 9.8 ft) tall. The species is highly variable, possibly a result of spontaneous mutation, natural hybridization, and autopolyploidy. Cultivated *Jasminum sambac* generally do not bear seeds and the plant is

reproduced solely by cuttings, layering, marcotting, and other methods of asexual propagation. The leaves are ovate, 4 to 12.5 cm (1.6 to 4.9 in) long and 2 to 7.5 cm (0.79 to 2.95 in) wide. The phyllotaxy is opposite or in whorls of three, simple (not pinnate, like most other jasmines). They are smooth (glabrous) except for a few hairs at the venation on the base of the leaf. The flowers bloom all throughout the year and are produced in clusters of 3 to 12 together at the ends of branches. They are strongly scented, with a white corolla 2 to 3 cm (0.79 to 1.18 in) in diameter with 5 to 9 lobes. The flowers open at night, and close in the morning, a span of 12 to 20 hours. The fruit is a purple to black berry in colour.

3. *Jasminum sambac* contains dotriacontanoic acid, dotriacontanol, oleanolic acid, daucosterol, hesperidin, and [+] -jasminoids A, B, C, D in its roots. Leaves contains flavonoids such as rutin, quercetin and isoquercetin, flavonoids rhamnoglycosides as well as α -amyrin and β -sitosterol. A novel plant cysteine-rich peptide family named jasmintides were isolated from this plant.
4. It's aroma is caused by a variety of compounds including benzyl alcohol, tetradecamethylcycloheptasiloxane, methyl benzoate, linalool, benzyl acetate, (-)-(R)-jasmine lactone, (E,E)- α -farnesene, (Z)-3-hexenyl benzoate, N-acetylmethylantranilate, dodecamethylcyclohexasiloxane, (E)-methyl jasmonate, benzyl benzoate and isophytol.
5. *Jasminum sambac* has been shown to have antifungal activity.

STUDY OF FAUNA



COMMON MYNA

Acridotheres tristis

27



1. The common myna or Indian myna, sometimes spelled mynah, is a member of the family Sturnidae (starlings and mynas) native to Asia. An omnivorous open woodland bird with a strong territorial instinct, the common myna has adapted extremely well to urban environments.
2. The common myna is readily identified by the brown body, black hooded head and the bare yellow patch behind the eye. The bill and legs are bright yellow. There is a white patch on the outer primaries and the wing lining on the underside is white. The sexes are similar and birds are usually seen in pairs. The calls include croaks, squawks, chirps, clicks, whistles and 'growls', and the bird often fluffs its feathers and bobs its head in singing.

3. The common myna is omnivorous. It feeds on insects, arachnids, crustaceans, reptiles, small mammals, seeds, grain and fruits and discarded waste from human habitation. It forages on the ground among grass for insects, and especially for grasshoppers, from which it gets the generic name *Acridotheres*, "grasshopper hunter". It, however, feeds on a wide range of insects, mostly picked from the ground. It is a cross-pollinator of flowers such as *Salmalia* and *Erythrina*. It walks on the ground with occasional hops and is an opportunistic feeder on the insects disturbed by grazing cattle as well as fired grass fields.
4. The common myna is a hollow-nesting species; that is, it nests and breeds in protected hollows found either naturally in trees or artificially on buildings (for example, recessed window sills or low eaves). Compared to native hollow-nesting species, the common myna is extremely aggressive, and breeding males will actively defend areas.
5. Common mynas can cause considerable damage to ripening fruit, particularly grapes, but also figs, apples, pears, strawberries, blueberries, guava, mangoes and breadfruit. Cereal crops such as maize, wheat and rice are susceptible where they occur near urban areas. Roosting and nesting commensal with humans create aesthetic and health concerns. Common mynas are known to carry avian malaria and exotic parasites such as the *Ornithonyssus bursia* mite, which can cause dermatitis in humans. The common myna can help spread agricultural weeds: for example, it spreads the seeds of *Lantana camara*, which has been classed as a Weed of National Significance because of its invasiveness. Common mynas are regularly observed to usurp nests and hollows, destroy the eggs and kill the young of native bird species, including seabirds and parrots.

BLACK DRONGO

Dicrurus macrocercus

29



1. The black drongo is a small Asian passerine bird of the drongo family Dicruridae. It is a common resident breeder in much of tropical southern Asia from southwest Iran through India, Bangladesh and Sri Lanka east to southern China and Indonesia and accidental visitors of Japan. It is an all black bird with a distinctive forked tail and measures 28 cm (11 in) in length.
2. This bird is glossy black with a wide fork to the tail. Adults usually have a small white spot at the base of the gape. The iris is dark brown (not crimson as in the similar ashy drongo). The sexes cannot be told apart in the field. Juveniles are brownish and may have some white barring or

speckling towards the belly and vent, and can be mistaken for the white-bellied drongo. First-year birds have white tips to the feathers of the belly, while second-years have these white-tipped feathers restricted to the vent.

3. They are aggressive and fearless birds, and although only 28 cm (11 in) in length, they will attack much larger species that enter their nesting territory, including crows and birds of prey. They fly with strong flaps of the wing and are capable of fast manoeuvres that enable them to capture flying insects. With short legs, they sit upright on thorny bushes, bare perches or electricity wires. They may also perch on grazing animals.
4. They are capable of producing a wide range of calls but a common call is a two note tee-hee call resembling that of the shikra (*Accipiter badius*).
5. They feed mainly on insects such as grasshoppers, cicadas, termites, wasps, bees, ants, moths, beetles and dragonflies. They congregate in fields being ploughed, picking up exposed caterpillars and beetle grubs. They are also attracted to fires in scrub and grassland habitats where insects are disturbed. They appear to avoid flies. They associate with common mynas, cattle egrets and other birds that share a similar diet and habitat.

COMMON KINGFISHER

Alcedo atthis

31



1. The common kingfisher, is a small kingfisher with seven subspecies recognized within its wide distribution across Eurasia and North Africa. It is resident in much of its range, but migrates from areas where rivers freeze in winter.
2. This species has the typical short-tailed, dumpy-bodied, large-headed, and long-billed kingfisher shape. The adult male of the western European subspecies, *A. a. ispida* has green-blue upperparts with pale azure-blue back and rump, a rufous patch by the bill base, and a rufous ear-patch. It has a green-blue neck stripe, white neck blaze and throat, rufous underparts, and a black bill with some red at the base. The legs and feet are

bright red. It is about 16 centimetres (6.3 in) long with a wingspan of 25 cm (9.8 in), and weighs 34–46 grams (1.2–1.6 oz). The female is identical in appearance to the male except that her lower mandible is orange-red with a black tip. The juvenile is similar to the adult, but with duller and greener upperparts and paler underparts. Its bill is black, and the legs are also initially black. Feathers are moulted gradually between July and November with the main flight feathers taking 90–100 days to moult and regrow. Some that moult late may suspend their moult during cold winter weather.

3. The food is mainly fish up to 12.5 cm (4.9 in) long, but the average size is 2.3 cm (0.91 in). Minnows, sticklebacks, small roach and trout are typical prey. This kingfisher also catches aquatic insects such as dragonfly larvae and water beetles, and, in winter, crustaceans including freshwater shrimps. However, fish represented 99.9% of the diet. Common kingfishers have also been observed to catch lamprey.

COMMON TAILORBIRD

Orthotomus sutorius

33



1. The common tailorbird is a songbird found across tropical Asia. Popular for its nest made of leaves "sewn" together. It is a common resident in urban gardens. Although shy birds that are usually hidden within vegetation, their loud calls are familiar and give away their presence. They are distinctive in having a long upright tail, greenish upper body plumage and rust coloured forehead and crown. This passerine bird is typically found in open farmland, scrub, forest edges and gardens. Tailorbirds get their name from the way their nest is constructed. The edges of a large leaf are pierced and sewn together with plant fibre or spider silk to make a cradle in which the actual nest is built.

2. The common tailorbird is a brightly coloured bird, with bright green upperparts and creamy underparts. They range in size from 10 to 14 centimetres (3.9 to 5.5 in) and weigh 6 to 10 grams (0.21 to 0.35 oz). They have short rounded wings, a long tail, strong legs and a sharp bill with curved tip to the upper mandible. They are wren-like with a long upright tail that is often moved around. The crown is rufous and the upperparts are predominantly olive green. The underside is creamy white. The sexes are identical, except that the male has long central tail feathers in the breeding season.
3. The common tailorbird is insectivorous, they forage for insects and have been known to feed on a range of beetles and bugs. They are attracted to insects and flowers and are known to favour the inflorescences of mango.

RED WHISKERED BULBUL

Pycnonotus jocosus

35



1. The red-whiskered bulbul (*Pycnonotus jocosus*), or crested bulbul, is a passerine bird native to Asia. It is a member of the bulbul family. It is a resident frugivore found mainly in tropical Asia. It has been introduced in many tropical areas of the world where populations have established themselves. It is common in hill forests and urban gardens.
2. The red-whiskered bulbul is about 20 centimetres (7.9 in) in length. It has brown upper-parts and whitish underparts with buff flanks and a dark spur running onto the breast at shoulder level. It has a tall pointed black crest, red face patch and thin black moustachial line. The tail is long and brown with white terminal feather tips, but the vent area is red. Juveniles

lack the red patch behind the eye, and the vent area is rufous-orange. The loud and evocative call is a sharp kink-a-joo (also transcribed as pettigrew or kick-pettigrew or pleased to meet you) and the song is a scolding chatter. They are more often heard than seen, but will often perch conspicuously especially in the mornings when they call from the tops of trees. The life span is about 11 years.

3. They feed on fruits and berries of as many as 24 exotic plants including loquat (*Eriobotrya japonica*), Lantana spp., Brazilian pepper (*Schinus terebinthifolius*) and figs (*Ficus*). In Mauritius they aid the dispersal of *Ligustrum robustum* and *Clidemia hirta*. Seeds that pass through their gut germinate better. They also feed on nectar and insects.

FIRE FLY

Lampyris noctiluca

37



1. They are soft-bodied beetles that are commonly called fireflies, glowworms, or lightning bugs for their conspicuous use of bioluminescence during twilight to attract mates or prey. Diet type, Omnivore (larvae, pollen, nectar). They're about 0.2-1 inch in length.
2. Fireflies produce a "cold light", without infrared or ultraviolet frequencies. This chemically produced light from the lower abdomen may be yellow, green, or pale red, with wavelengths from 510 to 670 nanometers. In some species of firefly, the females are flightless.
3. Males that do glow use their flash to attract females. Each species has its own pattern of light flashing. In some species of firefly, the females are flightless.

4. Light production in fireflies is due to a type of chemical reaction called bioluminescence. This process occurs in specialized light-emitting organs, usually on a firefly's lower abdomen.

COCKROACH

Periplaneta americana

39



1. Cockroaches are insects of the order Blattodea, which also includes termites. About 30 cockroach species out of 4,600 are associated with human habitats. Some species are well-known as pests.
2. They have a flattened oval body, long threadlike antennae, and a shining black or brown leathery integument. They have a life span of 1 year. They're Omnivore (Bread, Fruit, Dead insects)
3. They can withstand extremely cold temperatures, allowing them to live in the Arctic. Some species are capable of surviving temperatures of -188°F (-122°C) by manufacturing an antifreeze made out of glycerol.
4. A Cockroach can live for week without its head due to their open circulatory system.

5. They transfer bacteria and viruses from their legs to food, dishes, utensils, and countertops and are known to spread dysentery, *E. coli*, *Salmonella*, and food poisoning.

HOUSE FLY

Musca domestica

41



1. The most common fly species is found in the house with four dark, longitudinal lines on the thorax, slightly hairy bodies, and a single pair of membranous wings. They're about 0.2-0.3 inch in length with a wingspan of 0.5-0.6 inch.
 2. The female housefly usually mates only once and stores the sperm for later use. Each female housefly can lay up to 500 eggs in her lifetime, in several batches of about 75 to 150.
 3. Houseflies process visual information around seven times more quickly than humans, enabling them to identify and avoid attempts to catch or swat them.
 4. They effectively see the human's movements in slow motion with their higher flicker fusion rate.
-

5. Houseflies are often seen cleaning their legs by rubbing them together, enabling the chemoreceptors to taste afresh whatever they walk on next.

INDIAN HONEY BEE

Apis cerana indica

43



1. Indian honey bee, is a subspecies of Asiatic honey bee. It is one of the predominant bees found and domesticated in India, Pakistan, Nepal, Myanmar, Bangladesh, Sri Lanka, Thailand and mainland Asia. Relatively non-aggressive and rarely exhibiting swarming behavior, it is ideal for beekeeping.
2. They usually build multiple combed nests in tree hollows and man-made structures. These bees can adapt to living in purpose-made hives and cavities. Their nesting habit means that they can potentially colonize temperate or mountain areas with prolonged winters or cold temperatures.
3. Worker bees cooperate to find food and use a pattern of "dancing" (known as the bee dance or waggle dance) to communicate information regarding resources with each other.

4. It is one of the important pollinators for coconut palms.

REDBREAST JEZEBEL

Delias acalis

45



1. The Redbreast Jezebel, is a medium-sized butterfly of the family Pieridae, that is, the yellows and whites.
2. Butterflies have a lifespan of 40 days. They're herbivores (nectar, pollen, honey).
3. Their wings are actually clear, and the colors and patterns we see are made by the reflection of the tiny scales covering them.
4. They don't have noses and lungs. Adult butterflies and caterpillars breathe through a series of tiny openings along the sides of their bodies called spiracles.
5. Butterflies are the third most populous pollinator behind bees/wasps and flies. The world's food supply depends on pollinators. Areas rich in butterflies and moths are rich in other invertebrates. These collectively

provide a wide range of environmental benefits, including pollination and natural pest control.

DOG

Canis familiaris

47



1. The domestic dog is a domesticated descendant of the wolf. The dog derived from an ancient, extinct wolf, and the modern grey wolf is the dog's nearest living relative. The dog was the first species to be domesticated, by hunter-gatherers over 15,000 years ago, before the development of agriculture.
2. They have an average life span of 10-13 years. They're Omnivores. Dogs can also run with an average speed of 24-32 kph.
3. They can locate the source of a sound in 6/100ths of a second, by using their swivelling ears like radar dishes.

4. They can see ultraviolet light, and don't need a compass for direction because they can sense the earth's magnetic fields.

CAT

Felis catus

49



1. The cat (*Felis catus*) is a domestic species of small carnivorous mammal. It is the only domesticated species in the family Felidae and is often referred to as the domestic cat to distinguish it from the wild members of the family. Only domesticated species in the family Felidae and is often referred to as the domestic cat to distinguish it from the wild members of the family.
 2. Cats average about 18 inch in head-to-body length and 9–10 inch in height, with about 12 inch long tails. Males are larger than females. Adult domestic cats typically weigh between 4 and 5 kg .
 3. The ridged pattern on a cat's nose is as unique as a human fingerprint.
 4. Cats spend between 30 to 50 percent of their day grooming themselves.
-

5. Cats sleep for 70% of their lives.

MOUSE

Mus musculus

51



1. A small rodent with a pointed snout, small rounded ears and a body-length scaly tail. They have a lifespan of 2-5 years and grow at an average length of 5.7-7.9 inch. They're herbivores , consuming any kind of fruit or grain from plants.
 2. Researchers have confirmed that mice have a range of facial expressions familiar to human emotions like pleasure, disgust, nausea, pain, and fear. While communicating with each other, mice make ultrasonic sounds as well as regular ones.
 3. Mice are common experimental animals in laboratory research of biology and psychology fields primarily because they are mammals, and also
-

because they share a high degree of homology with humans. They are the most commonly used mammalian model organism, more common than rats. The mouse genome has been sequenced, and virtually all mouse genes have human homologs. Reasons for common selection of mice are that they are small and inexpensive, have a widely varied diet, are easily maintained, and can reproduce quickly. Several generations of mice can be observed in a relatively short time.

INDIAN FLYING FOX

Pteropus medius

53



1. The Indian flying fox, also known as the greater Indian fruit bat, is a species of flying fox found in the Indian subcontinent. It is one of the largest bats in the world. The Indian flying fox is found across the Indian Subcontinent, including in Bangladesh, Bhutan, India, Tibet, Maldives, Myanmar, Nepal, Pakistan and Sri Lanka.
2. The Indian flying fox is India's largest bat, and one of the largest bats in the world, weighing up to 1.6 kg . Its body mass ranges from 0.6–1.6 kg, and males are generally larger than females. The wingspan ranges from 3 ft 11 in–4 ft 11 in and body length averages 6.1–8.7 in.

3. The Indian flying fox is frugivorous or nectarivorous, i.e., they eat fruits or drink nectar from flowers. At dusk, it forages for ripe fruit. It is a primarily generalist feeder, and eats any available fruits. Seeds from ingested fruits are scarified in its digestive tract and dispersed through its waste.
4. The Indian flying fox is vermin because they believe that it "poaches" ripe fruit from orchards. A study in India found that of all orchard crops, Indian flying foxes did the most damage to mango and guava crops.
5. The Indian flying fox may be a natural reservoir for diseases including certain henipaviruses and flaviviruses. These can prove fatal to humans and domestic animals. Indian flying foxes in India and Bangladesh have tested positive for Nipah virus, a type of henipavirus. Due to human encroachment into their habitats, there is a high risk of spillover infection of Nipah virus from Indian flying foxes to humans. Indian flying foxes have also tested positive for GBV-D, a type of flavivirus, it is unclear whether this virus occurs in humans or if it could be transmitted by Indian flying foxes.

INDIAN PALM SQUIRREL

Funambulus palmarum

55



1. The Indian palm squirrel is a species of rodent in the family Sciuridae found naturally in India and Sri Lanka. In the late 19th century, the palm squirrel was introduced to Madagascar, Réunion, Mayotte, Comoro Islands, Mauritius, Seychelles and Australia, where it has since become a minor pest.
2. The palm squirrel is about the size of a large chipmunk, with a bushy tail slightly shorter than its body. The back is a grizzled, grey-brown colour with three conspicuous white stripes which run from head to tail. The two outer stripes run from the forelegs to the hind legs only. They're herbivores and only eat nuts and fruits. They have a lifespan of 5-10 years.

CONCLUSION

56

Every living creature plays its distinctive role to support life on earth. So, flora and fauna serve as an integral part of our ecosystem. They are crucial for most life on our earth. Flora and fauna interact in a complex system. Without flora there would be no fauna and vice versa. Flora and fauna include a huge variety of species which are estimated to range from 7,000,000 to over 11,000,000 species worldwide.

Maintaining a natural balance is essential for the sustenance of the ecosystem. Human habitation and increasing urbanisation with industrialization have led to irreversible transformation in the landscape and resulted in colossal loss of biodiversity in the entire region. Many of the flora and fauna which were abundant have now become endangered and even extinct.

Since flora and fauna are crucial for human life, we have to make sure that we protect them accordingly. Hence, we need to reconsider our attitude towards nature for the survival of life on earth.

ACKNOWLEDGEMENT

57

I would like to express my special thanks of gratitude to my respectful teachers of Microbiology department as well as our Principal and Vice-Principal, who gave me the golden opportunity to do this wonderful project on the topic, “ **THE STUDY OF FLORA AND FAUNA IN OUR LOCALITY**”, which helped me to learn a lot about my surrounding environment and the different type of organism present, through research.

Lastly, I would like to thank my parents and friends for their invaluable support and help to complete this project within the limited time frame.