Gokhale Memorial Girls' College

To whom it may concern

Subject: Completion of ENVS Project by PHSA and GEOA Gr. C students of Semester II in 2022

The undersigned hereby certifies that the students mentioned in the table given below have completed their AECC 2 - ENVS projects for the University of Calcutta B.A/B.Sc. Semester-II Examination, 2022. These students are mentioned in the modified template of Metric 1.3.2 (as DVV compliance) as ENVS-PHSA_GEOA Gr. Cwith pdf link of their projects stated alongside. The pdf link is also mentioned herewith.

SL.NO.	REGISTRATION NO.	COLLEGE ROLL NO.	NAME	SUBJECT
1	013-1211-0203-21	21/BSCH/0187	SREYA BANERJEE	PHSA
2	013-1211-0206-21	21/BSCH/0190	ANURADHA RAI	PHSA
3	013-1211-0217-21	21/BSCH/0203	EESHANI CHAKRABORTY	PHSA
4	013-1212-0145-21	21/BSCH/0067	INDIRA DAS	PHSA
5	013-1212-0201-21	21/BSCH/0185	MANASHI NASKAR	PHSA
6	013-1211-0140-21	21/BSCH/0055	ASTAMITA MAJUMDAR	GEOA
7	013-1211-0159-21	21/BSCH/0117	SWASTIKA SAHA	GEOA
8	013-1211-0170-21	21/BSCH/0148	SUDESHNA GANGULY	GEOA
9	013-1211-0182-21	21/BSCH/0162	AYESHA SULTANA	GEOA
10	013-1211-0189-21	21/BSCH/0173	DEBPARNA PAL	GEOA
11	013-1211-0208-21	21/BSCH/0192	SHREYA DE	GEOA
12	013-1211-0215-21	21/BSCH/0205	ANUSHKA NIYOGI	GEOA
13	013-1212-0166-21	21/BSCH/0140	SOUMI KAYAL	GEOA

Gokhale Memorial Girls' College Kolkata

Principal
Gokhale Memorial Girls' College

1/1 Harish Mukherjee Road, Kolkata - 700 020
Phones : 2223-2355, 2223-8287, 2223-0027 • E-mail-gokhalecollegekolkata@gmail.com
website - www.gokhalecollegekolkata.edu.in

Name : Sreya Banerjee

College Roll No.: 21/BSCH/0187

CU Exam Roll No.: 213013-11-0060

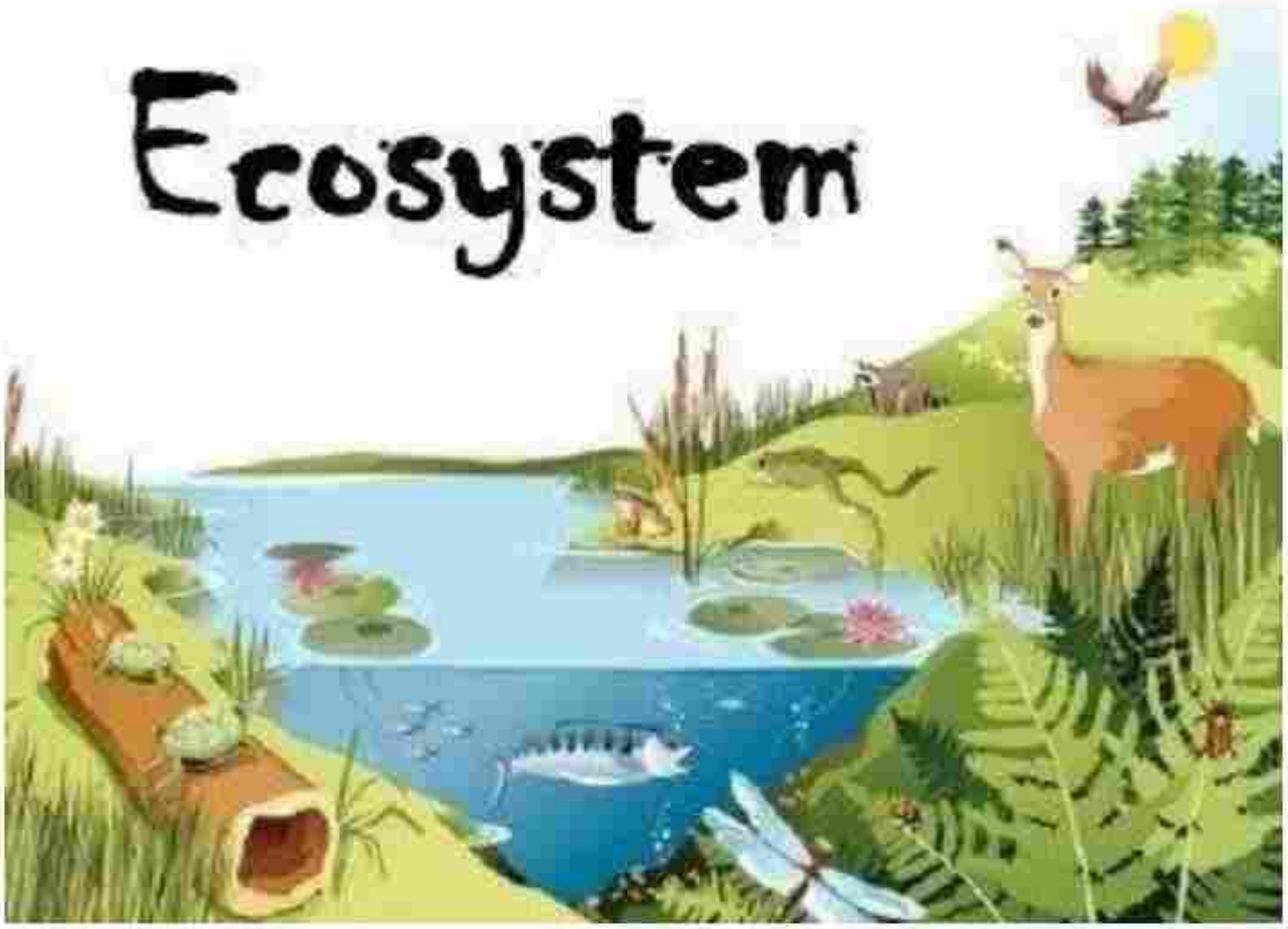
CU Reg. No.: 013-1211-0203-21

Semester : 2

Subject : Environmental Studies (ENVS)

Paper Code : AECC – 2

TOPIC: STUDY OF ECOSYSTEMS: POND, RIVER, WETLAND, FOREST, ESTUARY, AND AGRO ECOSYSTEM.



CONTENTS

ACKNOWLEDGEMENT

Firstly I would like to express my special thanks and gratitude to our Principal Ma'am Dr Atashi Karpha as well as to my professor Dr. Mahua Dutta who gave me this opportunity to do this assignment on the topic "STUDY OF ECOSYSTEM " which has helped me a lot in developing my knowledge. I am very much thankful to them.

Secondly, I would also like to thank my parents and friends who helped me a lot in finalising the project within the span of time.

Definition Of Ecosystem:

An ecosystem refers to a geographic area where plants,animals,and other organisms as well as weather and landscape work together to form a bubble of life. Ecosystem contains biotic as well as abiotic parts. It is a self-regulating group of biotic communities of species interacting with one another and with their non-living environment exchanging energy and matter. Now ecology is often defined as the 'study of ecosystems'.

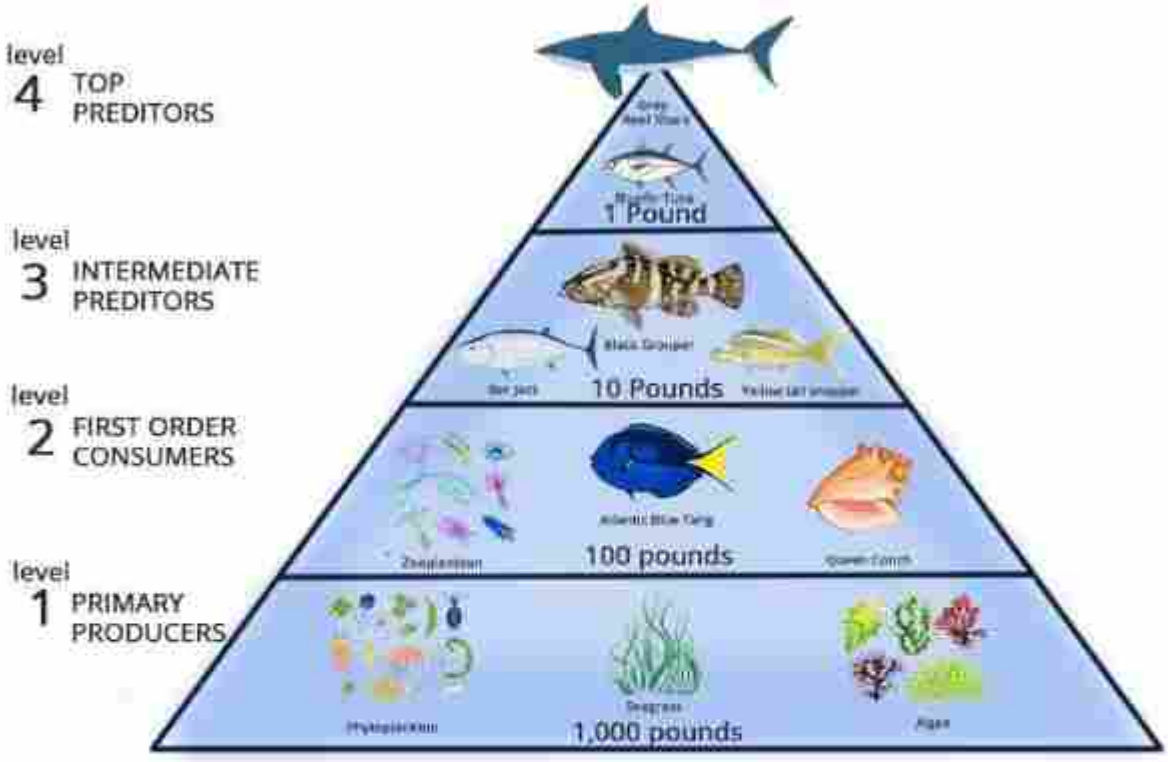
Eugene Odum, an American biologist, pioneered the concept of ecosystem-the holistic understanding of the environment as a system of interlocking biotic communities.

A Prussian botanist, geographer and naturalist **Alexander Von Humbolt** is considered the father of ecology. He was the first to study and present the relationship between organisms and their environment.

Tansley coined the term "ecosystem" to recognise the intercommunity and its physical environment ration of the biotic community and it's physical environment.

Energy flow in an ecosystem:

The energy flow is the amount of energy that moves along the food chain. This energy flow is also known as calorific flow.

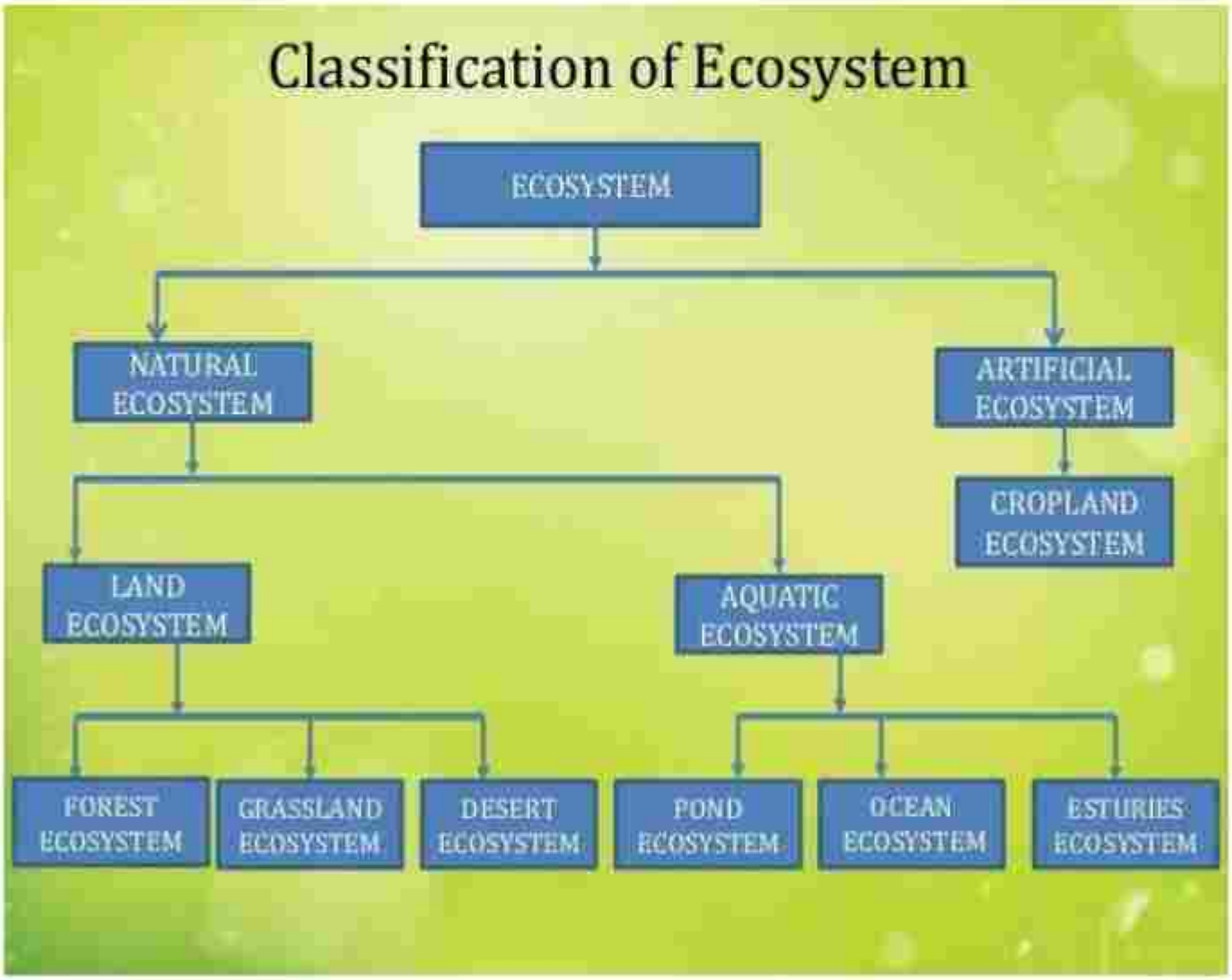


Importance of energy level in ecosystem:

- The energy flow in the ecosystem is important to maintain ecological balance. The producers synthesise food by the process of photosynthesis. A part of energy is stored within the plants. The remaining energy is utilised by the plants in their growth and development. This stored energy is transferred to the primary consumers when they feed on the producers. This energy is further passed on to the secondary consumers when they feed on primary consumers and so on.
- The flow of energy is unidirectional because some energy is lost in the form of heat when moving from one trophic level to the next for the maintenance of homeostasis of an organism.

Classification of Ecosystem:

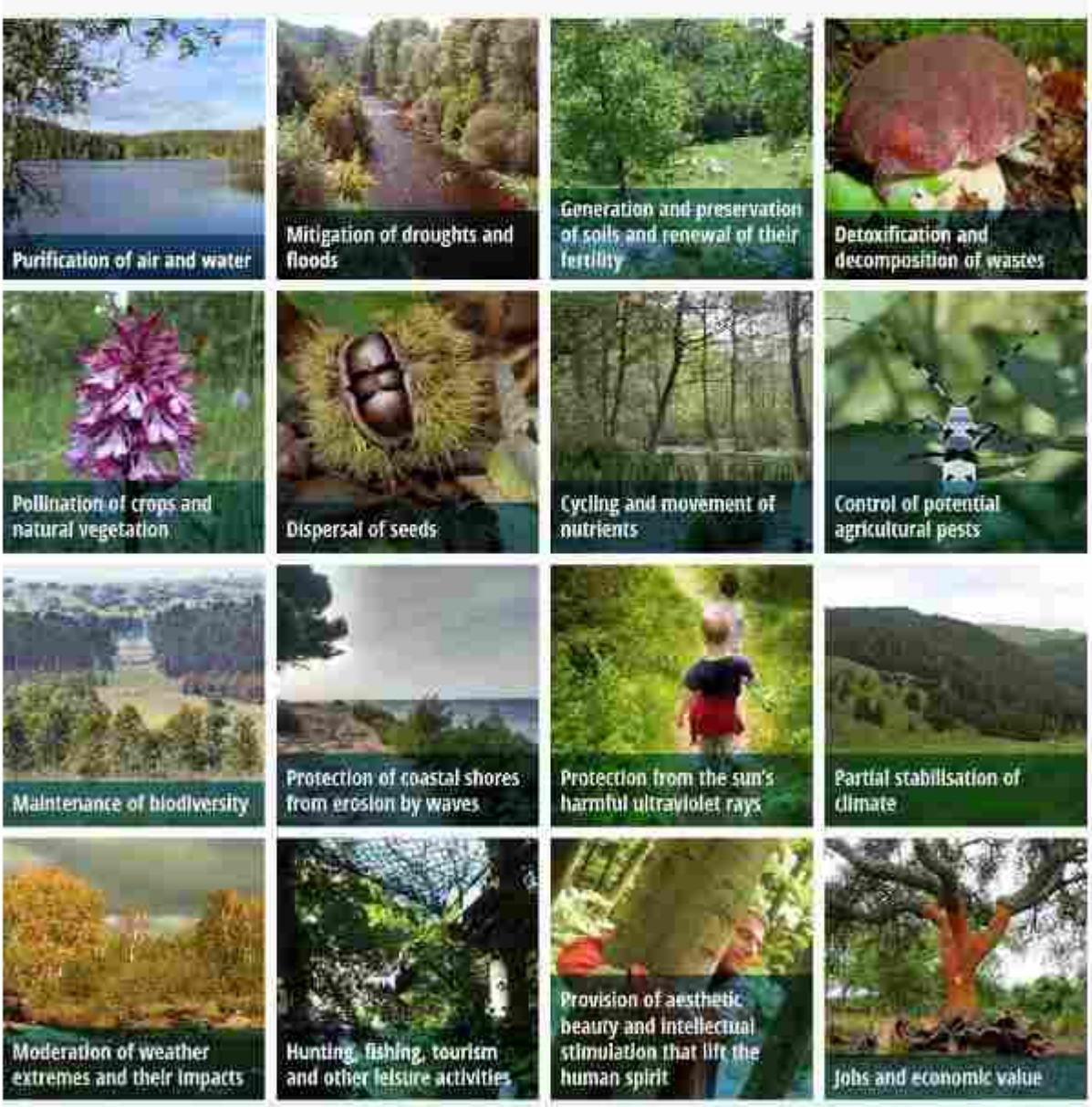
- Forest Ecosystem
- Grassland Ecosystem
- Desert Ecosystem
- Aquatic Ecosystem (ponds,streams,lakes,wetlands,rivers,oceans)



Forest Ecosystem:

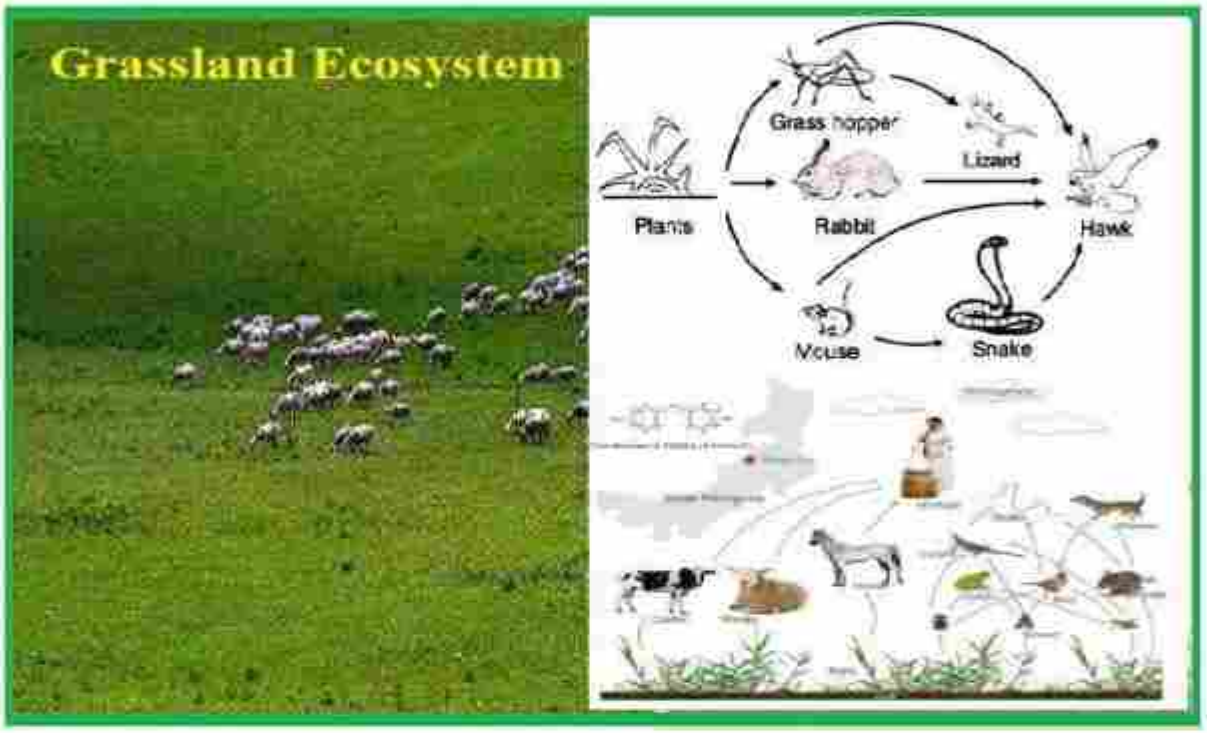
Forest ecosystems are the areas of landscape that are dominated by trees and consist of biologically integrated communities of plants, animals and microbes, together with the local soils and atmosphere with which they interact. The characteristics include **vegetation dominated by large tree species**. The functioning of forest ecosystem is characterised by energy and nutrient flow and cycling, biomass production and decomposition of dead organic matter.

Importance of forest Ecosystem:



Grassland Ecosystem:

Grasslands are areas where vegetation is dominated by grasses. However, sedge and rush can also be found along with variable proportions of legumes ,like clover and other herbs. Grasslands occur naturally on all continents except Antarctica and are found in most ecoregions of the earth.



Importance Of Grassland Ecosystem:

Grasslands provide important services and roles such as water catchments, biodiversity reserves, for cultural needs, and potentially a carbon sink to alleviate greenhouse gas emissions.

Desert Ecosystem:

A desert ecosystem is defined by interactions between organisms, the climate in which they live ,and any other non-living influences on the habitat.

Producers

Consumers

Characteristics of desert ecosystem:

- ☐ Little rainfall(less than 50 cm per year).
- ☐ Temperature variation between day and night.
- ☐ High evaporation rate.
- ☐ Coarse-textured soils.
- ☐ Drought-resistant vegetation.

Importance of desert ecosystem:

➢ The desert biome is one of the most important. There are 15 mineral deposit types in our planet and 13 of them are found in deserts. This makes the desert an important place for mineral resources and for the local and global economy.

Aquatic Ecosystem:

An aquatic ecosystem is an ecosystem in and surrounding a body of water. Aquatic ecosystem contains communities of organisms that are dependent on each other and on their

Features of Aquatic Ecosystem:

- They can be made of either freshwater or saltwater.
- Provide habitat for a variety of aquatic features.
- Algae and corals make the majority of the florals.
- Have a high level of biological diversity making them the world's richest and productive ecosystem.

Importance of Aquatic Ecosystem:

Aquatic ecosystems perform numerous valuable environmental functions such as:

- Recycling nutrients.
- Purifying water.
- Maintaining stream flow.
- Recharging ground water.
- Providing habitat for wildlife.

Agro- Ecosystem:

An agroecosystem is a cultivated ecosystem, generally corresponding to the spatial unit of a farm and whose ecosystem functions are valued by humans in the form of agricultural goods and services. It is thus co-produced by nature and humans.

Agroecosystems are ecosystems composed of both abiotic and biotic elements that interact with each other and the surrounding environment. Agroecosystem are always integrated in a social, economic and ecological environment, and are part of flows (energy, watter) and mechanisms (nutrient cycles, pests and diseases biological control, pollen transfer, etc.). Hence, they are characterized by a structural and dynamic complexity arising from interactions between socio-economic processes (interactions between social and economic factors) and ecological ones (functional links between organisms and their environment) in which hey are embedded.

Management of agroecosystems hence seeks for agricultural production systems that reproduce as much as possible natural mechanisms of ecosystems (such as ecological balance between pests and their natural enemies), so that they are moving forward towards agroecological transition.

Components of Agro ecosystem:

Primary producer: Crops and weeds of the field are the primary producer of agro ecosystem. e.g. In a Rice field, there are many producer like durba, mutha, syma etc also present with rice.

Consumer: Among consumer grasshoppers, aphids, bugs, ants, rats, birds, man etc are macro consumer and frog, snake, hack are micro consumer.

Properties of Agro ecosystem:

1. Productivity- It is net increment of values products per unit resources (land, labour, energy, capital) and is commonly measured as annual yield /hectare.

2. Stability-

It is the degree to which, productivity remain constant, inspite of normal small scale fl uctuation in environmental variables such as climate or in the economic condition in market.

3. Sustainability- It is defined as the ability of the system to maintain its productivity when subject to

stress or perturbation. A stress is defined as regular, sometimes continues, relatively sm all and predictable disturbance. e.g. Affect of growing soil salinity. A perturbation by contrast is an irregular, in frequent relatively long and unpredictable disturbance such as drought or flood or a new pest.

shutterstock.com · 2008128317

Difference between manipulated Agroecology and Natural Ecology

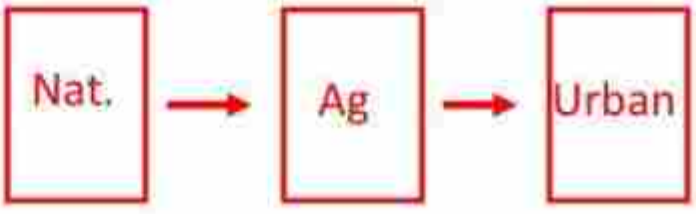
Six ways difference :

- Maintenance at an early succession state
- Monoculture
- Crops generally planted in rows
- Simplification of biodiversity
- Plough which exposes soil to erosion
- Use of genetically modified organisms and artificially selected crops

Interactions Among Ecosystems

– Destruction of ecosystems:

- Natural to agricultural to urban succession.
- Agricultural vs. natural – farmers concerned pests will come out of the woods (not true).
- Urban vs. natural – environmental losses
- Urban vs. agricultural – concerned about pesticide issues.



BIBLIOGRAPHY

I gathered information from:

- Wikipedia
- Environmental Science By Dr. Y. K. Singh
- Few journals on ecology

NAME:ANURADHA RAI

CU ROLL NO.:213013-11-0062

CU REG. NO.:013-1211-0206-21

CU TOPIC:STUDY OF COMMON PLANTS,INSECTS,FISHS,BIRDS, MAMMALS AND BASIC PRINCIPLES OF IDENTIFICATION

STUDY OF COMMON PLANTS, INSECTS, FISH,BIRDS, MAMMALSAND BASIC PRINCIPLES OF IDENTIFICATION

PLANTS

Plants are critical to other life because they form the basis of all food webs.

Most plants areautotrophic, creating their own food using water, carbon dioxide, and light through processcalled Photosynthesis.

Some of the earliest fossils founded have been. 3.8 billion years.

Thesefossil deposits show evidence of photosynthesis, so plants, or the plant like structureancestors of plants, have lived on the planet longer that most of other groups of organisms.

At one time, anything was green and wasn't an animal was considered to be a plant.

Now,plants are divided into several kingdoms: Protista, Fungi and Plantae. Most aquatic plantsoccur in the kingdom Plantae and Protista.

PETUNIA HYBRIDA

Classifications:

Kingdom: Plantae

Division: Tracheophyte (vascular plants)

Class: Magnoliopsida (flowering plants)

Genus: Petunia, Joss

Points of Identification:

1. Taproot and branched.
2. Stem green, harry, herbaceous and branched.
3. Exstipulate, reticulate venation.
4. Flowers pentamerous, regular, bisexual.
5. It is cultivated, annual ornamental plant. The plant is an herb, attaining a height of 2-

3 branched feet

PINUS

Classifications

Kingdom: plantae

Class: Gymnospermae (simple leaf, seeds naked, cones present, xylem lacks vessels)

Genus: Pinus species

Points of Identification:

1. It is an evergreen, perennial and woody plant.
2. Main plant body is sporophyte which is differentiated into root, stem and needle like leaves.
3. The stem is cylindrical, erect, covered with bark and branding is monopodial.
4. It produces different kind of spores.
5. Microsporophyll's bear microsporangia which produce microspores, that is, pollen grains. Pollen grains are light and winged. These are dispersed by the wind.

AGARICUS (MUSHROOM)

Classifications:

Kingdom: Fungi (non-green, heterotrophic organisms, possess hyphae)

Division: Eumycota (mycelium and fungal cellulose present)

Class: Basidiomycetes (bear basidiospores on basidium)

Genus: Agarics species

Points of Identification:

1. It is a fleshy, saprophytic fungus which grows on damp logs of wood, trunks of trees and on decaying organic matter.
2. The fungal body consists of two parts: (a) Somatic: Vegetative mycelium under the ground. (b) Reproductive: stratification or fruiting body above the ground.
3. Primary mycelium produced from basidiospore is septate, haploid, short lived and monokaryotic.
4. Secondary mycelium is dikaryotic and long-lived. A mass of hyphae is interwoven to form a rhizomorph.
5. Mushrooms' main body & umbrella-shaped called fruitification or fruiting body which is aerial, erect is called Basidiocarp.

CONCLUSION

Each plant is characterized by one of the three life histories: haploid (1n), diploid (2n), or themost common haploid-diploid.

Within each of these three types, there are also variations.

Ofthe plants with haploid life cycles, most algae lack a dikaryotic phase, while most fungi havea dikaryotic phase.

There are also other algae and fungi that are characterized by diploid lifecycles.

Lastly, plants with a haploid-diploid life history undergo an alternation ofgenerations, either similar or dissimilar.

In all of these life cycles, asexual reproduction mayoccur, but it is sexual reproduction that is responsible for genetic diversity.

Due to variationsarising separately and at different rates, the evolution of land plants did not follow a linearsequence.

Before land plants, algae with mostly haploid life cycles existed, but land plantslater originated from a haploid-diploid ancestor.

INSECTS

Insects are generally considered the most successful group of living organisms on earth.

Insects are Pan crustacean hexapod invertebrates of the class Insecta.

They are the largestgroup within the arthropod phylum.

Insects have a chitinous exoskeleton, a three-part body(head, thorax and abdomen), three pairs of jointed legs, compound eyes and one pair ofantennae.

Insects are adaptable creatures that live in almost every habitat on earth whilesome insects do live in water but 97% of insects live on land.

BUTTERFLY

Butterflies are a large group of insects belonging to the Lepidoptera which means scalywings. They are characterized by their large often colorful wings and the plebian, which theyuse to suckflower nectar.

Kingdom – Animalia

Phylum - Arthropoda

Order - Lepidoptera

Class – Insecta

Scientific name - Rhopalocera

Life span - 15-29 days

Size - 1/8 inch to 12 inches

Color – White, Red, Green etc.

Family – Piedade, Riodinid etc.

Structure

Like other insects, butterflies have 6 legs and three main body parts - head, thorax andabdomen.

They also have two antennae and an exoskeleton.

Habitat

Butterflies lives in a diverse habitat including salt marshes, mangroves, sand dunes,lowlandforest, grasslands and mountain zones.

Primary Diet

Butterflies mostly eat nectar and water.

Each butterfly species prefers a specific plant butthey will feed wherever food is available.

Special Characteristics

Camouflage –

A productive coloring that enables butterflies to blend in with its environment,thus hiding from its predators.

GRASSHOPPER

Grasshopper is a plant eating insects with long hind legs which they use for producing achirping sound frequently found in grassy places and lows vegetation.

Kingdom – Animalia

Order - Orthoptera

Class - Insecta

Family - Acrididae

Scientific name - Caeli Tela

Color - Green

Size – 1 to 7 cm in length

Another physical feature - Ectothermic

Habitat

Most grasshoppers prefer dry open habitat with lots of grass and small plants.

They aregenerally found in temperate, tropical and terrestrial areas.

Primary Diet

Grasshoppers are primarily herbivores. They mostly eat leaves, flowers, stems etc.

Special Characteristics

Grasshoppers use their chirping ability to give them a boost into the air but most are prettystrong flies and make good use of their wings to escapepredators.

MAMMALS

Mammals are a group of vertebrates constituting the class Mammalia characterized by thepresence of mammary glands which in females produce milk for feeding (nursing) theiryoung, a neocortex (a region of the brain), fur or hair, and three middle ear bones.

Thesecharacteristics distinguish them from reptiles (including birds) from which they diverged inthe carboniferous, over 300 million years ago.

Around 6,400 extant species of mammalshave been described.

Most mammals are intelligent, with some possessing large brains,selfawareness, and tool use.

ROYAL BENGAL TIGER

The Bengal tiger is a population of the Panthera Tigrissubspecies.

It ranks among thebiggest wild cats alive today.

It is considered to belong to the world's charismatic megafauna.

The Bengal tiger's coat is yellow to light orange, with stripes ranging from dark brown toblack; the belly and the interior parts of the limbs are white, and the tail is orange with blackrings.

The white tiger is a recessive mutant, which is reported in the wild from time to time inAssam, Bengal & Bihar.

ONE HORNED RHINOCEROUS

The Indian rhinoceros, also called the Indian rhino, greater one-horned rhinoceros or greatIndian rhinoceros, is a rhinoceros species native to the Indian subcontinent.

As a result ofhabitat destruction and climatic changes its range has gradually been reduced so that by the19th century, it only survived in the Terai grasslands of southern Nepal, northern UttarPradesh, northern Bihar, northern West Bengal, and in the Brahmaputra Valley of Assam.

ASIATIC ELEPHANT

The Asian elephant, also known as the Asiatic elephant, is the only living species of the genusElephas and is distributed throughout the Indian subcontinent and Southeast Asia, fromIndia in the west, Nepal in the north, Sumatra in the south, and to Borneo in the east.

TheAsian elephant is the largest living land animal in Asia.

CONCLUSION

Mammals play a vital role in maintaining the atmosphere on the Earth.

Through theirreproduction pattern and gestation period they come to be together in controlling thepressure of eco-system in the Earth as a whole.

So, it can't be considered as a common orlight problem and should be taken a serious matter to have speculations in a group to cometo the state to protect the endangered species.

It's not that if the species from one place areextinct, it'll effect to that particular place only, but it can bring problem in the eco-system ofthe whole planet.

It can lead to unequal distribution of the species.

So, when any one countryis if suffering from such endangered problems the developed countries should take an actiontowards that and should launch some social programs and some rewarding state so thatpeople can get encouraged to preserve the environment and the whole Earth.

It is confirmedthat if this method can't be stopped it will lead to the extinction of all the species on theEarth, so we shouldn't hesitate to try our best to save their life.

ACKNOWLEDGEMENT

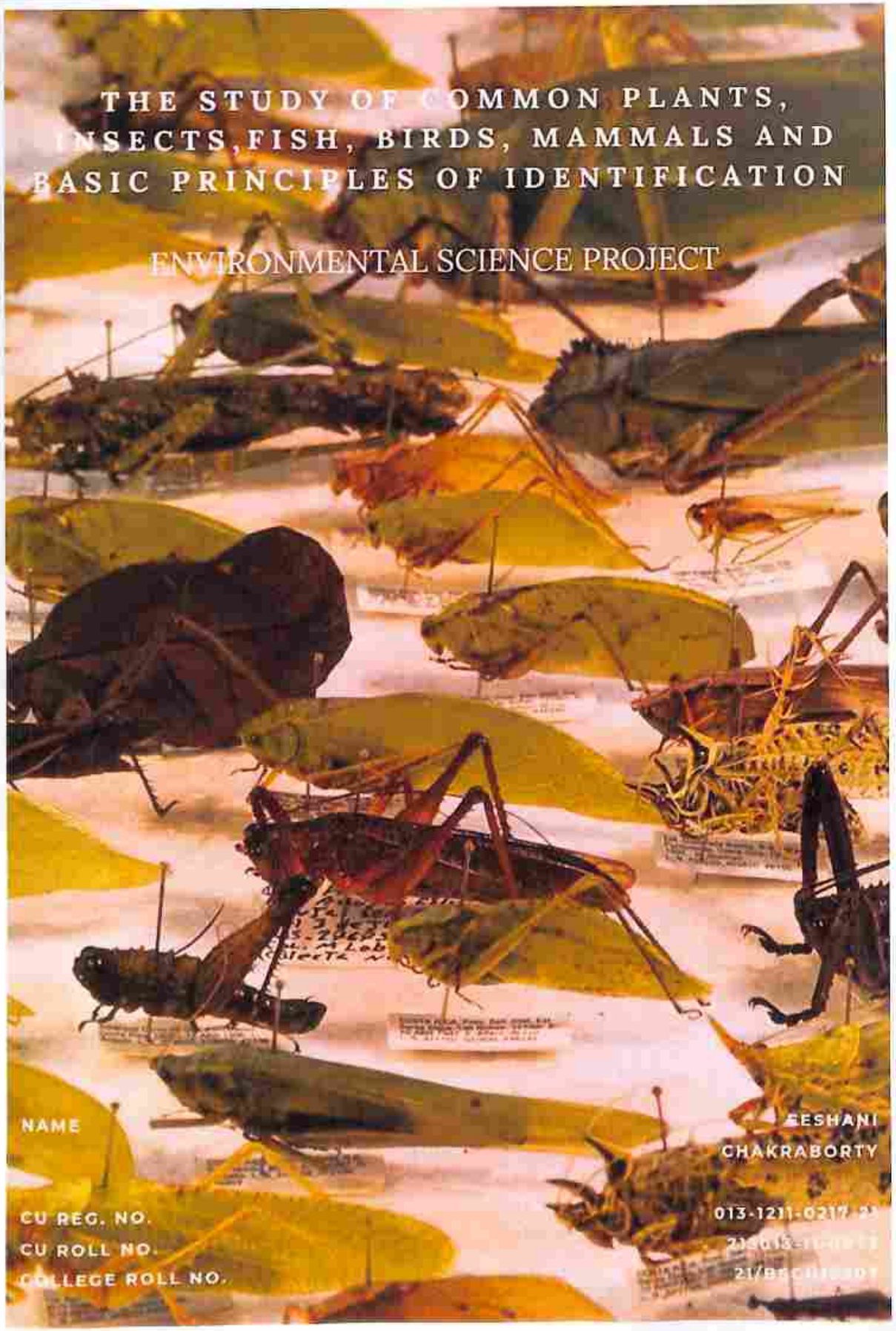
The success and final outcome of this assignment required a lot of guidance and assistance from many people and we are extremely fortunate to have got this all along the completion of our assignment work. Whatever we have done is only due to such guidance and assistance and we would not forget to thank them. I respect and thank Dr. Mahua Dutta Madam for giving us an opportunity to do this assignment work on the topic Study of common plants, insects, fish, birds, mammals and basic principles of identification and providing us all support and guidance which made us to complete the assignment on time. We are extremely grateful to her for providing such a nice support and guidance.

This assignment cannot be completed without the effort from our friends. Last but not least, we would like to express our gratitude to our classmates and respondents for support and willingness for this project.

BIBLIOGRAPHY

1. https://en.m.wikipedia.org/wiki/Bird
2. https://en.m.wikipedia.org/wiki/Fish
3. https://en.m.wikipedia.org/wiki/Insect
4. https://en.m.wikipedia.org/wiki/Mammal
5. https://en.m.wikipedia.org/wiki/Plant
6. Dr. Bala-Sujan Kumar- Environmental Studies, Model Field and Project Work
7. Kaushik Anubha, Kaushik C.P. New Age International Publishers
8. Singh Savindra- Environmental Geography- Allahabad, Pravalika

Examined 18/6



STUDY OF COMMON PLANTS, INSECTS, FISH, BIRDS, MAMMALS AND BASIC PRINCIPLES OF IDENTIFICATION

PLANTS

Plants are critical to other life because they form the basis of all food webs. Most plants are autotrophic, creating their own food using water, carbon dioxide, and light through process called Photosynthesis. Some of the earliest fossils founded have been. 3.8 billion years. These fossil deposits show evidence of photosynthesis, so plants, or the plant like structure ancestors of plants, have lived on the planet longer that most of other groups of organisms. At one time, anything was green and wasn't an animal was considered to be a plant. Now, plants are divided into several kingdoms: Protista, Fungi and Plantae. Most aquatic plants occur in the kingdom Plantae and Protista.

PETUNIA HYBRIDA

Classifications

Kingdom: Plantae

Division: Tracheophyte (vascular plants)

Class: Magnoliopsida (flowering plants)

Genus: Petunia, Joss

Points of Identification:

1. Taproot and branched.
2. Stem green, harry, herbaceous and branched.
3. Exstipulate, reticulate venation.
4. Flowers pentamerous, regular, bisexual.
5. It is cultivated, annual ornamental plant. The plant is an herb, attaining a height of 2-3 branched feet.

PINUS

Classifications

Kingdom: Plantae

Class: Gymnospermae (simple leaf, seeds naked, cones present, xylem lacks vessels)

Genus: Pinus species

Points of Identification:

1. It is an evergreen, perennial and woody plant.
2. Main plant body is sporophyte which is differentiated into root, stem and needle like leaves.
3. The stem is cylindrical, erect, covered with bark and branding is monopodial.
4. It produces different kind of spores.
5. Microsporophyll's bear microsporangia which produce microspores, that is, pollen grains. Pollen grains are light and winged. These are dispersed by the wind.

AGARICUS (MUSHROOM)

Classifications

Kingdom: Fungi (non-green, heterotrophic organisms, possess hyphae)

Division: Eumycota (mycelium and fungal cellulose present)

Class: Basidiomycetes (bear basidiospores on basidium)

Genus: Agarics species

Points of Identification:

1. It is a fleshy, saprophytic fungus which grows on damp logs of wood, trunks of trees and on decaying organic matter.
2. The fungal body consists of two parts: (a) Somatic: Vegetative mycelium under the ground. (b) Reproductive: stratification or fruiting body above the ground.
3. Primary mycelium produced from basidiospore is septate, haploid, short lived and monokaryotic.
4. Secondary mycelium is dikaryotic and long-lived. A mass of hyphae is interwoven to form a rhizomorph.
5. Mushrooms' main body & umbrella-shaped called fruitification or fruiting body which is aerial, erect is called Basidiocarp.

CONCLUSION:

Each plant is characterized by one of the three life histories: haploid (1n), diploid (2n), or the most common haploid-diploid. Within each of these three types, there are also variations. Of the plants with haploid life cycles, most algae lack a dikaryotic phase, while most fungi have a dikaryotic phase. There are also other algae and fungi that are characterized by diploid life cycles. Lastly, plants with a haploid-diploid life history undergo an alternation of generations, either similar or dissimilar. In all of these life cycles, asexual reproduction may occur, but it is sexual reproduction that is responsible for genetic diversity. Due to variations arising separately and at different rates, the evolution of land plants did not follow a linear sequence. Before land plants, algae with mostly haploid life cycles existed, but land plants later originated from a haploid-diploid ancestor.

INSECTS

Insects are generally considered the most successful group of living organisms on earth. Insects are *Pan crustacean hexapod invertebrates* of the class *Inseeta*. They are the largest group within the arthropod phylum. Insects have a chitinous exoskeleton, a three-part body (head, thorax and abdomen), three pairs of jointed legs, compound eyes and one pair of antennae. Insects are adaptable creatures that live in almost every habitat on earth while some insects do live in water but 97% of insects live on land.

BUTTERFLY

Butterflies are a large group of insects belonging to the Lepidoptera which means scaly wings. They are characterized by their large often colorful wings and the plebian, which they use to suck flower nectar.

Kingdom – Animalia

Phylum - Arthropoda

Order - Lepidoptera

Class – Insecta

Scientific name - Rhopalocera

Life span - 15-29 days

Size - 1/8 inch to 12 inches

Color – White, Red, Green etc.

Family – Piedade, Riodinid etc.

Structure

Like other insects, butterflies have 6 legs and three main body parts - head, thorax and abdomen. They also have two antennae and an exoskeleton.

Habitat

Butterflies lives in a diverse habitat including salt marshes, mangroves, sand dunes, lowland forest, grasslands and mountain zones.

Primary Diet

Butterflies mostly eat nectar and water. Each butterfly species prefers a specific plant but they will feed wherever food is available.

Special Characteristics

Camouflage - A productive coloring that enables butterflies to blend in with its environment, thus hiding from its predators.

GRASSHOPPER

Grasshopper is a plant eating insects with long hind legs which they use for producing a chirping sound frequently found in grassy places and lows vegetation.

Kingdom – Animalia

Order - Orthoptera

Class - Insecta

Family - Acrididae

Scientific name - Caeli Tela

Color - Green

Size – 1 to 7 cm in length

Another physical feature - Ectothermic

Habitat

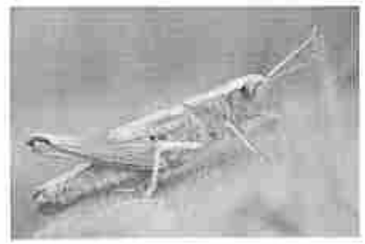
Most grasshoppers prefer dry open habitat with lots of grass and small plants. They are generally found in temperate, tropical and terrestrial areas.

Primary Diet

Grasshoppers are primarily herbivores. They mostly eat leaves, flowers, stems etc.

Special Characteristics

Grasshoppers use their chirping ability to give them a boost into the air but most are pretty strong flies and make good use of their wings to escape predators.



MOSQUITO

There are about 170 different kinds of mosquitoes in North America alone. These pests are part of the same family houseflies and fruit flies, because they all have two clear, veined wings. Best known as a summer pest, Mosquitoes can develop from egg to adult in 10 to 14 days.

Size: 1/4" to 3/8"

Shape: Narrow, oval

Color: Pale brown with whitish stripes across abdomen.

Legs: 6

Wings: Yes

Antenna: Yes

Common Name: Mosquito

Kingdom: Animalia

Phylum: Arthropoda

Class: Insecta

Order: Diptera

Family: Culicidae

Species: Varies

Diet

Female mosquitoes feed on plant nectar and blood. They need the protein to reproduce. To get to the blood, they pierce our skin with their "proboscis" and suck our blood. Male mosquitoes feed exclusively on plant nectars. Mosquitoes are busiest at night and will fly up to 14 miles for a blood meal. They hunt for food by detecting body heat and Carbon Dioxide, the gas we breathe out.

Habitat

Mosquitoes breed in soft, moist soil or stagnant water sources such as storm drains, old tires, children's wading pools and birdbaths.

Impact

Mosquitoes spread diseases such as West Nile Virus, malaria and dengue fever.

Prevention

1. Replace all stagnant water at least once a week.
2. Remove trash from around any standing water.
3. When sleeping outdoors or in areas where mosquito populations are heavy, surround your bed with "mosquito" netting.

CONCLUSION:

Insects play many important roles in nature. They aid bacteria, fungi, and other organisms in the decomposition of organic matter and in soil formation. The decay of carrion, for example, brought about mainly by bacteria, is accelerated by the maggots of flesh flies and blowflies. The activities of these larvae, which distribute and consume bacteria, are followed by those of moths and beetles, which break down hair and feathers. Insects and flowers have evolved together. Many plants depend on insects for pollination. Some insects are predators of others.

FISH

Fish or Fishes are an aquatic group of vertebrates which live in water and reprise with gills. They do not have limbs, like arms or legs and they do have digits (fingers and toes). This is a definition which does not quite work; some amphibia also time in water and have external gills, but they are not fish.

Fish ward to be a class of vertebrates, now the term covers fine classes of aquatic vertebrates:

(1) Jawless fish
(2) Armored Fish
(3) Cartilaginous Fish
(4) Ray-finned Fish
(5) Lobe-finned Fish

There are more fish than tetrapod's: there are 33,000 described as species of fish. Fish are usually, covered with scales. They have two sets of paired fins and several unpaired fins. Most, fish are cold-blooded. A fish takes in oxygen from the water using gills. There are many different kinds of fish. They live in fresh water in lakes and rivers, and in salt water in the ocean. Some fish are less than one centimeter long. The largest fish is the Whale Shark, which can be almost 15 meters long and weigh 15 tons. Most fish live in the water. A group of fish called the lungfish have developed lungs because they live in rivers and pools which dry up in certain parts of the year. They burrow into mud and aestivate until the water returns.

"FISH" is a paraphyletic term in cladistics because it lacks a monophyletic group of descendants. It does not include the land vertebrates or tetrapod's, which descended from fish.

Types Of Fish:

Agnetha: The Jawless fish. [Cambrian to Present day]

Pteropsida: The bead-shields

Anapsids: Gills opened as holes. [Silurian to end-Devonian]

Cephalopods: Early Jawless fish

Lampreys: Living ectoparasites

Osteocalcin: Bony-armored jawless fish

Gnathostomata: The jawed fish. Includes all types commonly called fish.

Placoderms: Heavily armored fish.

Chondrichthyes: Cartilaginous fish; sharks.

Acanthodei: Extinct spiny sharks.

Osteichthyes: Bony fish

Actinopterygii: sturgeons and some other early types.

Iniopterygian: First seen in the late Permian lighter and faster-moving than previous groups.

Hotei: The gars and bow fins.

Sarcopterygii: The lobe finned fish.

Dipnoid: The lung fish.

Coelacanths: Two species survive. They were probably a sister-group to the tetrapods.

Certain animals that have the words fish their name are not really fish: Crayfish are crustaceans and Jellyfish are Cnidarians. Some animals look like a fish but they are not. Wheels and Dolphins are mammals for example.

Body Shape:

The shape of the body of a fish is important to its swimming. This is because a streamlined body shape makes the water drag less. There are some common fish shapes:

The picture of a shark shows, its shape is called fusiform, and it is on avoid shape where both ends of the fish are pointy. This is the best shape for going through water quickly. Fishes with

fusiform shapes, can chase prey and escape predators quickly. Many live in the open ocean and swim constantly, like marlins, swordfish, and tuna.

Ichthyosaurs, porpoises, dolphins, killer whales all have similar shapes. This is an example of convergent evolution.

Freshwater Fish:

41% of all fish live in freshwater. There are also some important fish which breed in rivers, and the spend the rest of their life in seas. Examples are: Salmon, Trout, the sea Lamprey, and three spined stickle-back. Some other fish are born in salt water, but live most of their adult lines in fresh water, for example the eels. Species like these change their physiology to cope with the amount of salt in the water.

CONCLUSION:

Fish are a vital part of our ecosystem. Fish play an important role in nutrient cycles because they store a large proportion of ecosystem nutrients in their tissues, transport nutrients farther than other aquatic animals and excrete nutrients in dissolved forms that are readily available to primary producers. Although the influence of fish communities on food web structures, nutrient recycling, and productivity is well documented, little is known about the effects on the ecosystem of a reduction in the fish species richness. It is therefore of significant importance to evaluate the potential impacts of ongoing decreases in fish diversity.

BIRDS

Birds are ready visitors that visit frequently from place to place even from continent to continent. Birds are an organization of Aves-class, warm- blooded vertebrates characterized by wings, hard shelled egg laying, toothless baked jaws, an increased metabolic rate, a heard with four chambers and a powerful yet light skeleton. The bird's scientific name is Aves.

A good number of birds visit different sites due to change of environment particularly for their food and reproduction. They come to thrive there for a temporary period to hatch eggs and carry a good number of off-springs during back journey.

OBSERVATION:

SPARROW

Scientific name: Passalidae.

Bengali name: Charai

Common English name: Sparrow.

Characteristics: Sparrows have beautiful and voices and their chirping can be heard all over. Other unique characteristics are their smooth, round heads and rounded wings. Males have reddish feathers on their backs and females are brown and striped.

Distribution: It is native to Eurasia and North Africa, and was introduced to South Africa, North and South America, Australia, New Zealand, Middle East, India and Central Asia, where its population thrived under a variety of environmental and climatic conditions.

BAYA WEAVER

Scientific name: Ploceus philippinus

Bengali name- Babui Pakhi

Common English name: Baya Weaver

Characteristics: A widespread weaver that is known for its nest – a long hanging -nest with a bulbous chamber and a narrow tubular entrance. nest chamber. They have yellow foreheads and crown, a dark throat that contrasts with yellow underparts.

Distribution: The baya weaver is a weaver bird found across the Indian Subcontinent and Southeast Asia. Flocks of these birds are found in grassland areas.

COMMON MYNA

Scientific name- Acridotheres tristis

Bengali name: Shalik

Common English name: Common Myna.

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. The sexes are similar and birds are usually seen in pairs.

Distribution: It is found from Southern Kazakhstan, Turkmenistan and Eastern Iran to southern China, Indochina, the Malay Peninsula and Southern India. It has also been introduced to Hawaii and North America

CONCLUSION:

Birds' spatial distributions are directly affected by global warming and subsequently climate change. In general terms it has been stated by the scientific community that the distribution of species has been moving in a poleward trend. Within the realm of our study, we found no conclusive evidence to prove or disprove this statement. The evidence that we did find and cited leads us to the conclusion that the distribution of species is in fact being altered by climatic change, but we were unable to determine exactly what that change was. This project focused on bird species (as we found they were ideal indicators of species shifts due to the fact that their patterns of movement are already larger and more immediate than other organisms. This and the fact that bird movements and migrations are well documented are the reason we chose to focus our study on birds). Evidence found specifically from birds shows that there is a correlation between bird population characteristics and alterations in climatic factors such as temperature and precipitation. The change in population characteristics shows that some sort of shift or generally trended movement is occurring.

MAMMALS

Mammals are a group of vertebrates constituting the class Mammalia characterized by the presence of mammary glands which in females produce milk for feeding (nursing) their young, a neocortex (a region of the brain), fur or hair, and three middle ear bones. These characteristics distinguish them from reptiles (including birds) from which they diverged in the carboniferous, over 300 million years ago. Around 6,400 extant species of mammals have been described. Most mammals are intelligent, with some possessing large brains, self-awareness, and tool use.

ROYAL BENGAL TIGER

The Bengal tiger is a population of the Panthera Tigris Tigris subspecies. It ranks among the biggest wild cats alive today. It is considered to belong to the world's charismatic megafauna. The Bengal tiger's coat is yellow to light orange, with stripes ranging from dark brown to black; the belly and the interior parts of the limbs are white, and the tail is orange with black rings. The white tiger is a recessive mutant, which is reported in the wild from time to time in Assam, Bengal & Bihar.

ONE HORNED RHINOCEROUS

The Indian rhinoceros, also called the Indian rhino, greater one-horned rhinoceros or great Indian rhinoceros, is a rhinoceros species native to the Indian subcontinent. As a result of habitat destruction and climatic changes its range has gradually been reduced so that by the 19th century, it only survived in the Terai grasslands of southern Nepal, northern Uttar Pradesh, northern Bihar, northern West Bengal, and in the Brahmaputra Valley of Assam.

ASIATIC ELEPHANT

The Asian elephant, also known as the Asiatic elephant, is the only living species of the genus Elephas and is distributed throughout the Indian subcontinent and Southeast Asia, from India in the west, Nepal in the north, Sumatra in the south, and to Borneo in the east. The Asian elephant is the largest living land animal in Asia.

CONCLUSION:

Mammals play a vital role in maintaining the atmosphere on the Earth. Through their reproduction pattern and gestation period they come to be together in controlling the pressure of eco-system in the Earth as aa a whole. So, it can't be considered as a common or light problem and should be taken a serious matter to have speculations in a group to come to the state to protect the endangered species. It's not that if the species from one place are extinct, it'll effect to that particular place only, but it can bring problem in the eco-system of the whole planet. It can lead to unequal distribution of the species. So, when any one country is if suffering from such endangered problems the developed countries should take an action towards that and should launch some social programs and some rewarding state so that people can get encouraged to preserve the environment and the whole Earth. It is confirmed that if this method can't be stopped it will lead to the extinction of all the species on the Earth, so we shouldn't hesitate to try our best to save their life.

ACKNOWLEDGEMENT

The success and final outcome of this assignment required a lot of guidance and assistance from many people and we are extremely fortunate to have got this all along the completion of our assignment work. Whatever we have done is only due to such guidance and assistance and we would not forget to thank them. I respect and thank Dr. Mahua Dutta Madam for giving us an opportunity to do this assignment work on the topic Study of common plants, insects, fish, birds, mammals and basic principles of identification and providing us all support and guidance which made us to complete the assignment on time. We are extremely grateful to her for providing such a nice support and guidance.

This assignment cannot be completed without the effort from our friends. Last but not least, we would like to express our gratitude to our classmates and respondents for support and willingness for this project.

BIBLIOGRAPHY

1. https://en.m.wikipedia.org/wiki/Bird
2. https://en.m.wikipedia.org/wiki/Fish
3. https://en.m.wikipedia.org/wiki/Insect
4. https://en.m.wikipedia.org/wiki/Mammal
5. https://en.m.wikipedia.org/wiki/Plant
6. Dr. Bala-Sujan Kumar- Environmental Studies, Model Field and Project Work
7. Kaushik Anubha, Kaushik C.P. New Age International Publishers
8. Singh Savindra- Environmental Geography- Allahabad, Pravalika

Examined 2016

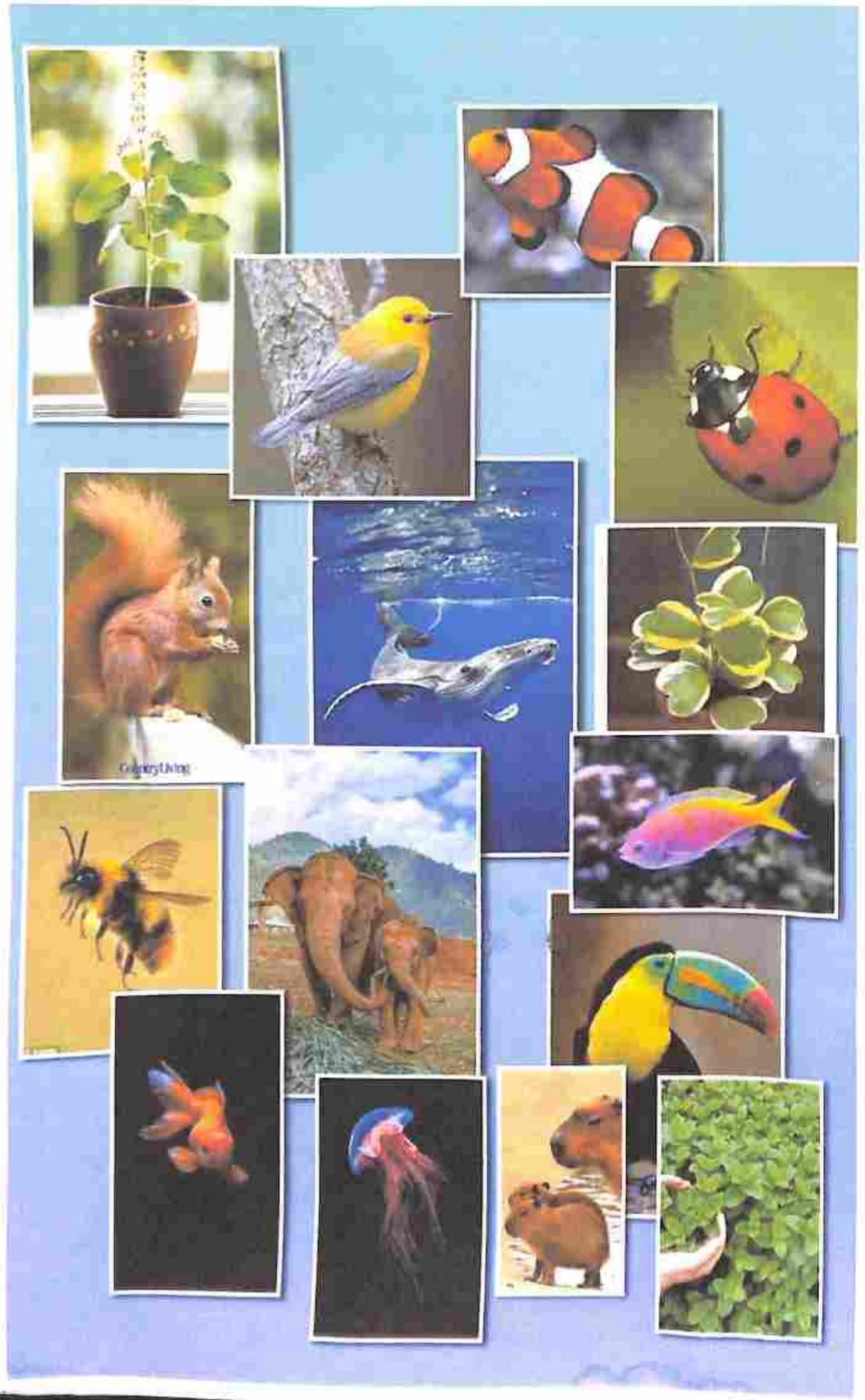
Gokhale Memorial Girls' College.

Name:- Indira Das
CU Registration no:- 013-1212-0145-21
CU Roll no:- 213013-11-0081
College Roll no:- 21/BSCH/0067
Department:- Physics
Semester:- II
Subject:- ENVS Project

196

SUBJECT

Study of common Plants, insects, fish, birds, mammals and basic principles of identification.



Introduction :-

- **Plants**

Plants are critical to other life on this planet because they form the basis of all food webs. Most plants are autotrophic, creating their own food using water, Carbone di-oxide, and light through a process called photosynthesis, So plants or the plant like ancestors of plants, have lived on this planet longer than most other groups of organisms. Some of the earliest fossils found have been aged at 3.8 billion years. These fossil deposits show evidence of photosynthesis. At one time, anything that was green and that wasn't an animal was considered to be a plant. Now, what were once considered "plants" are divided into several Kingdoms: Protista, Fungi and ~~—~~ Plantae? Most aquatic plants occur in the Kingdoms Plantae and Protista.

- **Insects**

Insects, are a class in the phylum Arthopoda. They are small terrestial invertebrates which have a hard exoskeleton. Insects are the largest group of animal on earth by far: about 926,455 different species have been described. They are more than half of all known living species. They may be over 90% of animal species on Earth. New species of insects are continually being found estimates of the total number of species range from 2 million to 30 million. Insects ~~are~~ have six legs; and most have wings. Insects were the first animals capable of flight. As they develop from eggs, insects undergo metamorphosis. Insects live all over the planet; almost all ~~are~~ are terrestial (live and land). Few insects live in the oceans or in very cold places, such as Antarctica. The most species live in tropical areas.

• Fish :-

Fish is a member of the paraphyletic group of organisms. This consists of gill-bearing aquatic craniates animals with limbs and digits. Most of the fishes are hagfish, cartilaginous, bonyfish and lampreys. Fishes are ectothermic, which means cold-blooded. Fish are abundant in most of the bodies of water. Fishes are an important resources for human worldwide, especially as food because it consists of a lot of minerals, vitamins, and proteins as it stays in water bodies. These are served as religious symbols.

• Birds :-

Birds are ready visitors that visit frequently from place to place even from continent to continent. As the site is not homogenous for their easy life period so they need movement from one place to other. A good example is Birds of migratory kind. ~~They A good example is Birds of~~ In our West Bengal, storkes and siberian cranes are common. They come to thrive there for a temporary period to hatch eggs and carry a good number of off springs during their back journey.

• Mammals :-

Earth has a large variety of animals living on it. Scientists clarify animals into groups based on common characteristics. Mammals are a group of animals (vertebrates) that have backbones and hair or fur. They are warm blooded (endothermic). and they have four-chambered hearts. They also feed their young with milk from the mother's body. The young of most mammals are born alive.

• Area of Study :-

The area in which Kolkata, South 24 Parganas district of West Bengal in India.

• Method of Study :-

Making these project we use internet to collect information about birds, insects and plants.

◇ OBSERVATION

• Plants

Five common Plants

1. Mangosa :-

Scientific Name :- Azadirachta indica Juss

Vernacular Name :- Neem, Kadu-limb

Sauce :- The leaves, bank, flowers, fruits and seeds are used as drug.

Family & Distribution :- Meliaceae, it is native of Burma but grown all over India. In Sangola taluk neem in found in large scale in rural and urban places. Some important places like Narala, Sangola, Spining mill, Halid wategaon, Andhalgaon, waste land of Sangola, it is recorded in garden, school and colleges, Akola and Mangewadi etc.

chemical composition :- The alkaloids are the main active principles. They are nimbin, nimbinin, nimbidine, nimbasterine and nimbectin etc. Fatty acid present in the plant and seed contain 40 to 45% fixed oil.

Uses :- The leaves are carminative, expectorant, anthelmintic, diuretic and insecticidal properties. Fresh leaf juice with salt given for intestinal worms, jaundice, skin disease and malarial fever. The leaves are applied for boils, chronic ulcers, swelling and wounds. Bark is used for liver complaint, remove round worms. Gum is stimulant, demulcent tonic and used in debility.

2. Aloe Vera

Scientific Name :- Aloe barbadenses Mills

Vernacular Name :- Korphad, Gritakumari

Sauce :- Thick fleshy leaves (pulp, dried, juice) are used as a drug.

Family & Distribution :- Liliaceae, it is native of west Indies or Mediterranean region. It grows wild in hot dry valleys of western Himalayas and Southern, Northern part of India. Sangola is the one of the drought region it is mainly distributed in every places in rural area some of the important places like Mauki, Mahud, Chindepir, Rajuri, Sangola, Tarala and Ghersi. It is xerophytic plant.

chemical composition :- The main active principle present in Aloe is cryta-line glucoside known as barbaloin, other constituent like resin and derivates like emodin, chrysophanic acid, anthroquinones, emocdin, also it contain glucose, galactose, mannase and galacturonic acid with protein. The plant contain aloesone and aloesin.

Uses :- Aloe is chiefly used as purgative, abortificient, blood purifier, cathartic, cooling, digestive and diuretic, information, pain-ful parts of the body. It is useful in burn, cold cough, jaundice, worms and piles. Aloe is used in preparation of vegetables, pickles, cosmetics, skin blemisans, help to grow new healthy tissue. It is used as hair tonic as it stimulates the growth of the hair.

3. Periwinkle :-

Scientific Name :- Catharanthus roseus Don

Vernacular Name :- Sadaphuli, Sadabahar

Source :- The dried leaves and roots of this plant used as a drug.

Family & Distribution :- Apocynaceae, that plant is probably indigenous to Madagascar. It is cultivated in South Africa, West Indies, Srilanka, India, U.S.A, Europ and Australia as an ornamental plant. It is also cultivated for its medicinal properties, in the garden. In India, it is grown in Nilgiri, Kanyakumari and Kottayam etc. In Sangola it is distributed each and every waste land, domestic places and garden. Plant is observed in rural area like Manichinchale, Medsingi, Walegon, Kadlas, Sangola and Andhalgaon.

Chemical composition :- Catherranthus mainly consists of glycosides and alkaloids. The alkaloids are present in entire plant but they are found in more propantion in leaves and root. Some important alkaloids are vinblastine, vincristine other alkloids present in the plant are ajmaleine, ~~Sepon~~ sepentine, lochnerine, tetrahydroalstonine, vindolinine and catheranthine.

Uses :- It is used in hypotensive, antidiabetic action, other dimer indole - indoline used for curing the anticancer activity. The alkaloids vincristine is highly active in treatment of childhood leukaemia. Vincristine proves effective in breast cancer and the leaves are used in diabetes.

4. Indian - Gooseberry :-

Scientific Name :- Emblica officinales Gaertn

Vernacular Name :- Avala, Dongri Avala, Amla

Source :- Fresh and dried fruit.

Family & Distribution :- Euphorbiaceae, emblica is a small genus of trees, native of India, Srilanka, Malaya and china. It is found in local area of Sangola like Hatamabare, Hadid, Kole, Methwade, Shining mill, campus of Sangola college and Nazare.

Chemical composition :- The fruit is the richest source of vitamin C. The other important constituents are gallic-acid, tannic acid, gum, sugar, fat, phyllemblin, minerals Fe, P, Ca, Bark contain tanin and seeds contain fixed oil and essential oil.

Uses :- Amla fruit which is acid, cooling, refrigerant, diuretic and mild laxative. Fresh fruit used in intestine worms, pulp of fruit used in to cure the jaundice, anaemia, dyspepsia and scurvy. From this fruit famous ayurvedic tonic 'chavanprash' and 'Triphala churn' is prepared. Dried fruit are used in haemorrhage (bleeding), diarrhea, dysentery, cough. It is used as laxative, headache, piles, liver. Seed applied in scabies and itching.

Mammals :-

[Three Common Mammals]

1. Monotremes:-

Monotremes are mammals that lay eggs. They only monotremes that are also alive today are the Spiny anteater, or echidna, and the platypus. They live in Australia, Tasmania, and New Guinea. These mammals are really different from other mammals. Their body temparature is lower than most warm blooded animals, a feature that has more in common with reptiles, Their name comes from the fact that they have only one body opening for both wastes and eggs to pass through. Echidnas have sharp spines scattered throughout their hair. They look like a spiky ball. They female anteater lays usually one leathery-shelled egg directly into the pouch on her belly. The egg hatches after only ten or eleven days. The newborn body is tiny. After the baby hatches, it stays in the pouch for several weeks and continues to develop.

2. Marsupial :-

Marsupial mammals gives birth to babies that are not completely developed. The babies are very tiny. The babies then crawl up the fur on the mother's belly into a pouch on the outside of the mother's abdomen. The babies drink milk from the mother and continue to develop inside the pouch. Koalas, Kangaroos, wallabies, and opossums are some of the better-known marsupials. Today marsupials are found mostly in Australia, New Guinea, and South American. The only marsupial in North America is the opossum. Opossums may give birth to as many as twenty-one babies at one time. However, the mother only has thirteen nipples in her pouch. The first thirteen babies to climb into her pouch and attach to her nipples are the only ones that survive.

3. Placental Mammal :-

A placental mammal develops inside its mother's body until its body systems can function on their own. The name of this group comes from the placenta, an organ in pregnant female mammals that pass materials between mother and developing baby. Food and oxygen, carried by blood, pass from the mother to the baby through the placenta. Waste pass from the baby to the mother through the placenta. Where they are eliminated by her body. Most mammals, including humans, are placental mammals.

CONCLUSION :-

1. Plants :-

Each plant is characterized by one of the three life histories; haploid (1n), diploid (2n), or the most common haploid - diploid. within each of these three types, there are also variations, of the plants with haploid life cycles, most algae lack a dikaryotic phase. There are also other algae and fungi that are characterized by diploid life cycles. Lastly, plants with a haploid - diploid life history undergo an alternation of generations, either similar or dissimilar. In all of these life cycles asexual reproduction may occur, but it is sexual reproduction that is responsible for genetic diversity. Due to variations arising separately and at different rates, the evolution of land plants did not follow a linear sequence. Before land plants, alga with haploid life cycles, but land plants later originated.

2. Insects :-

Insects play many important roles in nature. They aid bacteria, fungi and other organisms in the decomposition of organic matter and in soil formation. The decay of carrion, for example, brought about mainly by bacteria, is accelerated by the maggots of flesh flies and blow flies. Insects and flowers have evolved together. Many plants depend on insects for pollination. Some insects are predators of others.

3. Fishes :-

Fish has a closed-loop circulatory system. They are an omnivorous group because they feed on plants and other small sea animals of water bodies. Fishes excrete nitrogenous and ammonia. Fishes reproduce highly in the open water column only. The eggs have an average diameter of one millimetre only.

4. Birds :-

We conclude that species spatial distribution are directly effected by global warming and subsequently climate change. In general terms it has been stated by the scientific community that the distribution of species have been moving in a poleward trend. The evidence that we did find and cited leads us to the conclusion that the distribution of species is infact being altered by climate change, but we were unable to determine exactly what that change was. This project focused on bird species. Evidence found especially from birds shows that there is a connection between bird population characteristics and alteration in climatic factors such as temperature and precipation. The change in population characteristics shows that some sort of shift or generally trended movement is occuring.

5. Mammals :-

Mammals have about six thousand different species or kinds of animals in their group or class. Mammals can be divided into three more groups based on how their babies develop. These three groups are monotremes, marsupials and the largest group, placental mammals.

4. Birds :-

We conclude that species spatial distribution are directly effected by global warming and subsequently climate change. In general terms it has been stated by the scientific community that the distribution of species have been moving in a poleward trend. The evidence that we did find and cited leads us to the conclusion that the distribution of species is infact being altered by climate change, but we were unable to determine exactly what that change was. This project focused on bird species. Evidence found specially from birds shows that there is a connection between bird population characteristics and ~~alt~~ alteration in climatic factors such as temparature and precipation. The change in population characteristics shows that some sort of shift or generally trended movement is occuring.

5. Mammals :-

Mammals have about six thousand different species or kinds of animals in their group or class. Mammals can be divided into three more groups based on how their babies develop. These three groups are monotremes, marsupials and the largest group, placental mammals.

Acknowledgement :-

The success and final outcome of this assigment required a lot of guidence and assistance from many people and we are extremly fortunate to have got this all along the completion of our assigment work. Whatever we have done is only due to such guidence and assitance and we would not forget to thank them. I respect and thank Dr. Mahua Dutta Madam for giving us an opportunity to do this assignment work on the topic and providing us all support and guidence which made us to complete the assignment on time.

This assignment is cannot be completed without the effort from our friends. Last but not least, we would like to express our gratitude to our classmates and respondents for support and willingness for this project.

Bibliography :-

1. https://en.m.wikipedia.org/wiki/Bird
2. https://en.m.wikipedia.org/wiki/Fish
3. https://en.m.wikipedia.org/wiki/Insect
4. https://en.m.wikipedia.org/wiki/Mammal
5. https://en.m.wikipedia.org/wiki/Plant
6. Dr Bala - Sujan Kumar - Environmental Studies, Model field and Project work.
7. Singh Savindra - Environmental Geography - Allahabad, Pravilika

Examined
18/6

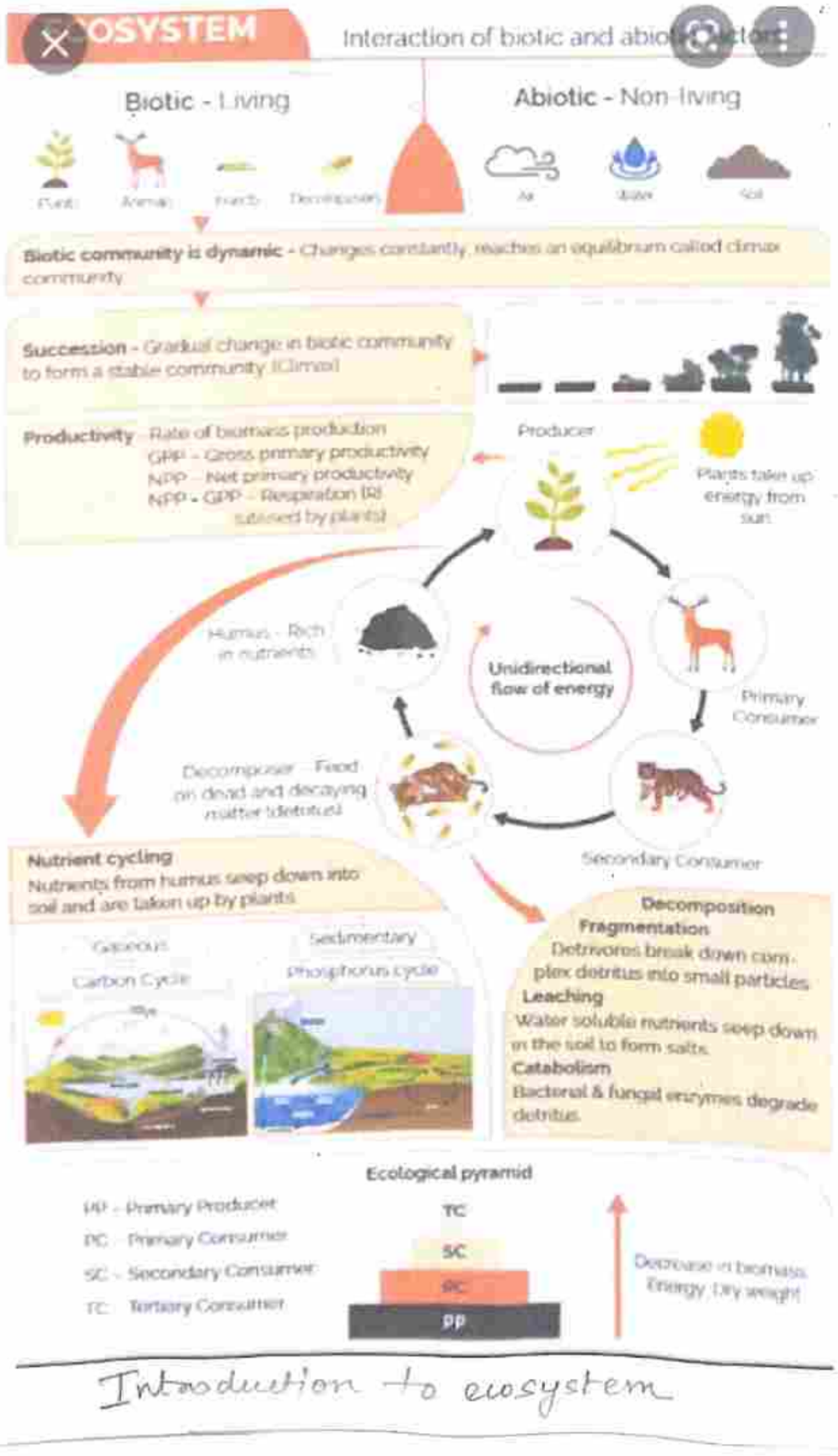
NAME → MANASHI NASKAR

CU ROLL NO. → 213013-11-0089

CU REG. NO. → 013-1212-0201-21

COLLEGE ROLL NO. → 21/BSCH/0185

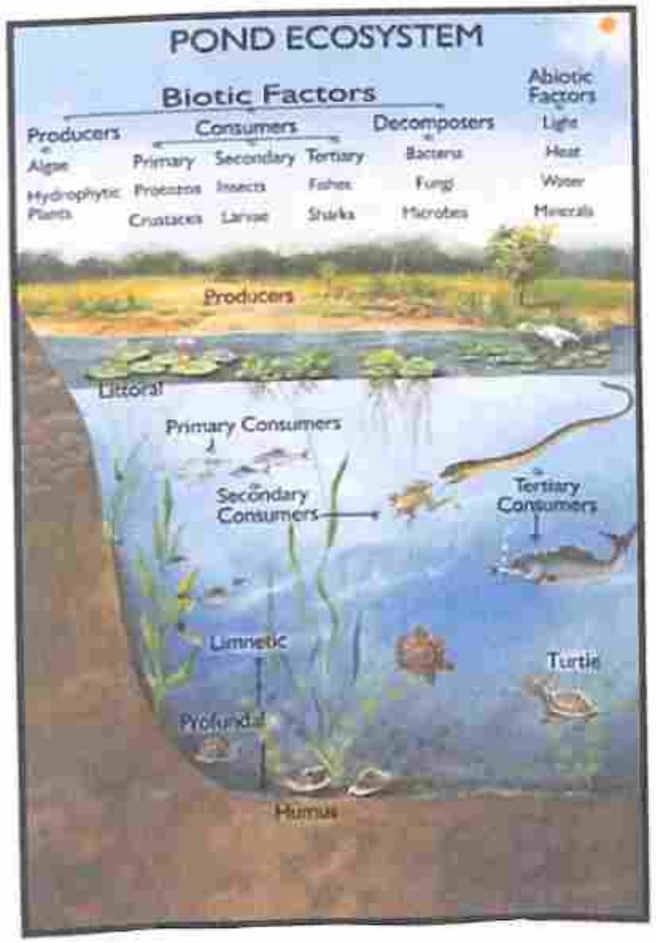
TOPIC :- Study of ecosystem- ponds, rivers, wetlands, forest, estuary, and agro ecosystem.



Introduction to ecosystem

INTRODUCTION

Ecosystems are classified into aquatic and terrestrial ecosystems. The aquatic ecosystems are water-borne and the terrestrial ecosystems are land-based. Based on the quality of water involved, the aquatic ecosystems are domestic, agricultural and industrial consumption. In addition to natural water bodies; artificial reservoirs and Dams are constructed to preserve the fresh water, without letting them into seas and natural lakes. Freshwater ecosystems deal with both running and standing water bodies and their life. Lentic ecosystems and lotic ecosystems are the names given to standing and flowing water bodies, respectively. Almost all ecological factors like temperature, light, pH, dissolved gases and salts of water, turbidity, alkalinity, salinity, depth and areal distribution play an active role in controlling the habitat of these ecosystems.



Pond ecosystems

1) PONDS AS AN ECOSYSTEM :-

Definition:- A pond ecosystem is a freshwater ecosystem that can either be temporary or permanent and consists of a wide variety of aquatic plants and animals interacting with each other and the surrounding aquatic conditions.

Types of pond ecosystem

- Garden pond ecosystem
- Salt pond ecosystem
- Freshwater pond ecosystem
- Veneral pond ecosystem
- Mountain pond ecosystem

Characteristics of pond ecosystem

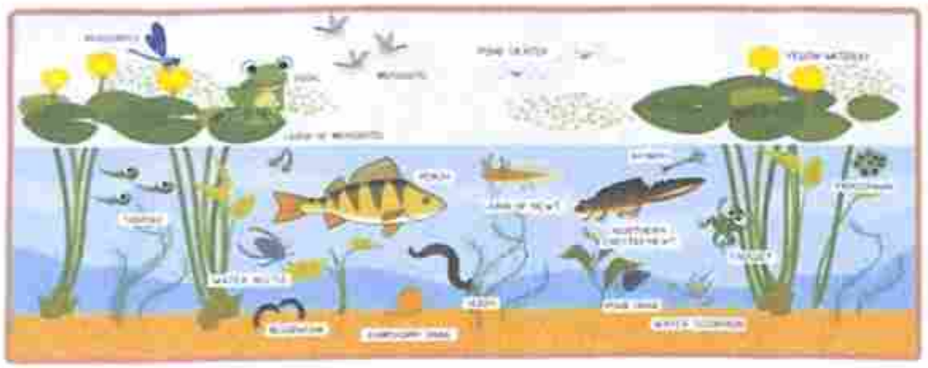
- The water in the pond ecosystem is stagnant.
- Either natural or artificial boundaries surround the pond ecosystem.
- Pond ecosystems show a wide variety range in their size.

Abiotic components of pond ecosystem.

- Light
- Temperature
- Dissolved oxygen

Biotic components of pond ecosystem.

- Producers
- Primary consumers
- Secondary consumers
- Decomposers



Various organisms present under pond ecosystem

Importance of pond ecosystem

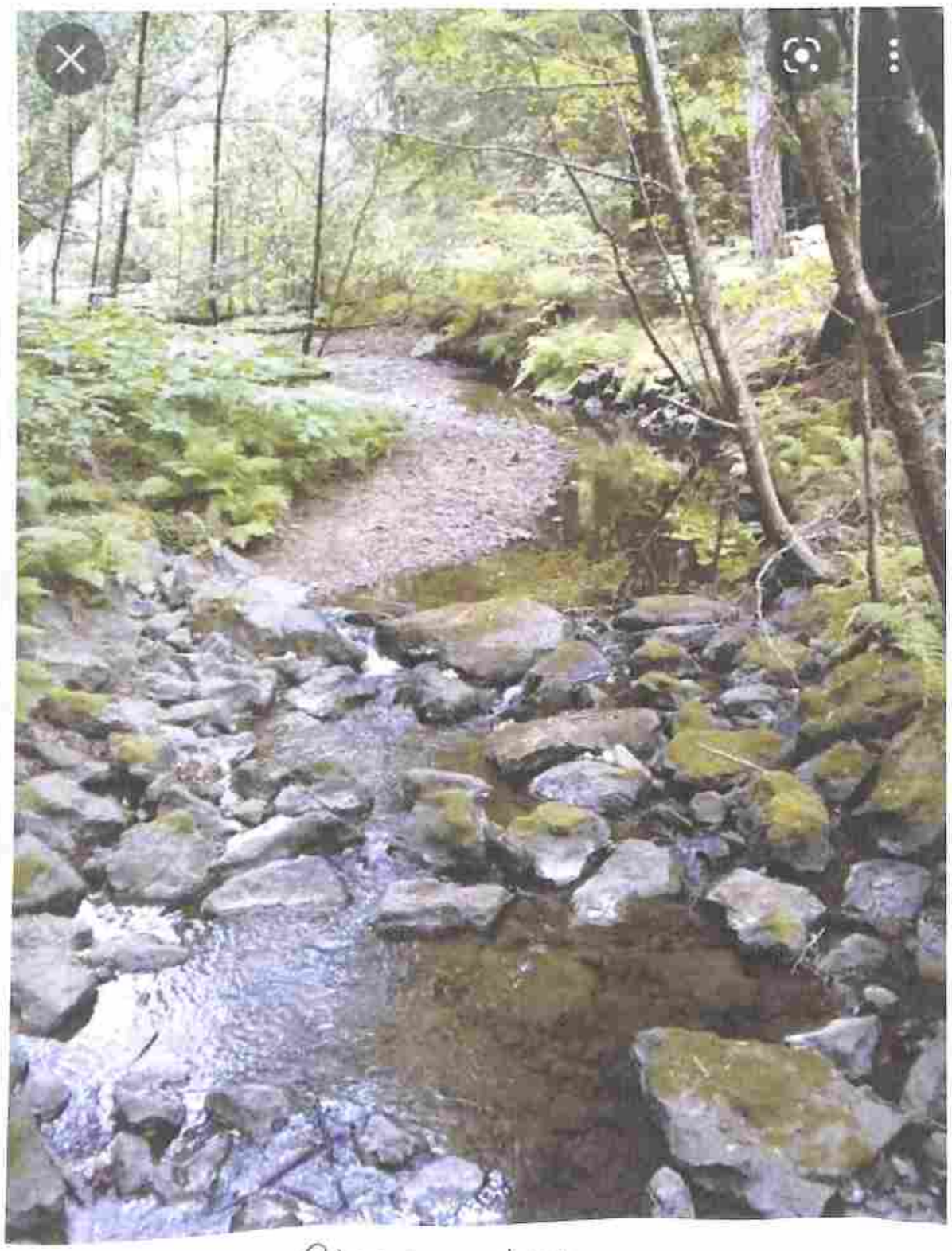
a) Some aquatic plants help to improve the water quality by absorbing pollutants and heavy metals.

b) The pond ecosystem also serves as a source of water for the species water that do not live in pond.

c) Pond ecosystem contribute to the beauty of nature as they accomodate a variety of ornamental flowering plants.

d) Stratification in the pond ecosystem determines the distribution of animal species in the pond. It reduces the competition among the species to some extent.

e) The pond ecosystem is one of the sites for the conservation of biodiversity as different types of plants and consumers occupy different strata in the pond and live together by interacting with each other. Ponds in mountain regions conserve the endangered species.



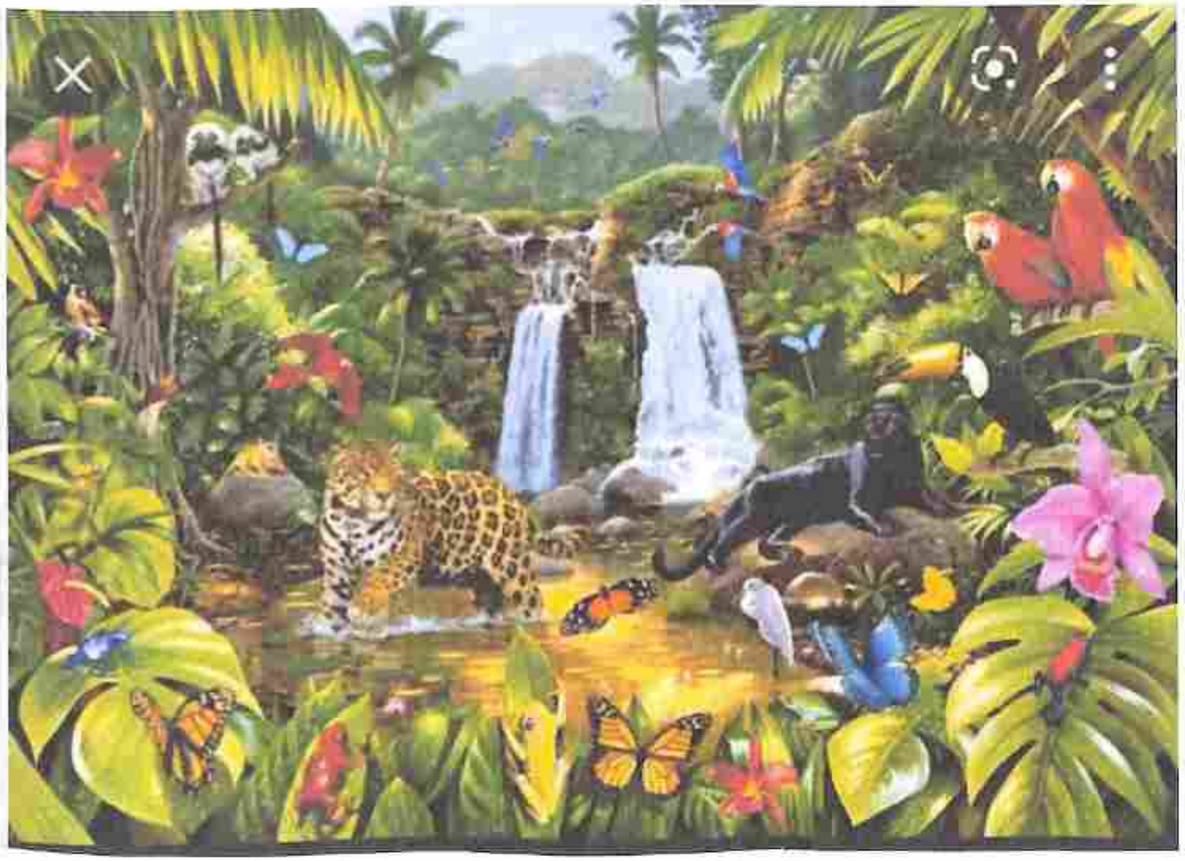
Rivrecosydem

2) RIVER AS AN ECOSYSTEM:-

Water is an essential component of life. Surface water resources are the mostly preferred locations for life settlements. Most of them were also originated near water courses, especially along the major rivers.

A river is a large natural course of flowing water obtained from precipitation. The surface water moves down along the slopes due to the action of gravity. Streams, tributaries, brooks, creeks and springs are the different types of water courses classified based on their dimension and distribution.

- A river is also termed as a major, medium and minor based on its number and length of tributaries, stage of development, area of catchment and geomorphological conditions.
- Every major river must have a place of origin in the upstream side, which is called as the headwaters, and a point of confluence with the sea or water body at the doions tream end.
- A river is always on the move.
- Every river has its own longitudinal profile and different cross-sections.
- The longitudinal profile indicates the nature of slope existing at different places and levels.
- A river is a powerful geological agent. It has the capacity to erode, transport and deposit the sediments. These are called as rive alluvium.
- The alluvial deposits, clay and silt of a river are the materials preferred for different activities.



AGRO ECOSYSTEM

6) Agroecosystem

An agroecosystem is the basic unit of study in agroecology, and is somewhat arbitarily defined as a spatially and functionally coherent unit of agricultural activity, and includes the living and nonliving components involved in that unit as well as their interactions. An agroecosystem can be viewed as a subject of a conventional ecosystem. As the name implies, at the core of an agroecosystem lies the human activity of agriculture. However, an agroecoaystem is not restricted to the immediate site of agricultural activity (e.g. the farm), but rather includes the region that is impacted by this activity, usually by changes to the complexity of species assemblages and energy flows, as well as to the net nutrient balance.

Benefits of Agroecosystem

- Increases Efficiency :- Agroecology involves using efficient processes that reduces the inputs of industrial products and their adverse effects.
- Improved agricultural operations :- Agroecology seeks to change the input intensive and environmentally harmful practices and services to renewable, etc

BIBLIOGRAPHY

The sources of my AECC2 (ENVS) subject are :-

- ENVS BOOK OF ECOLOGY.
- GOOGLE CHROME.

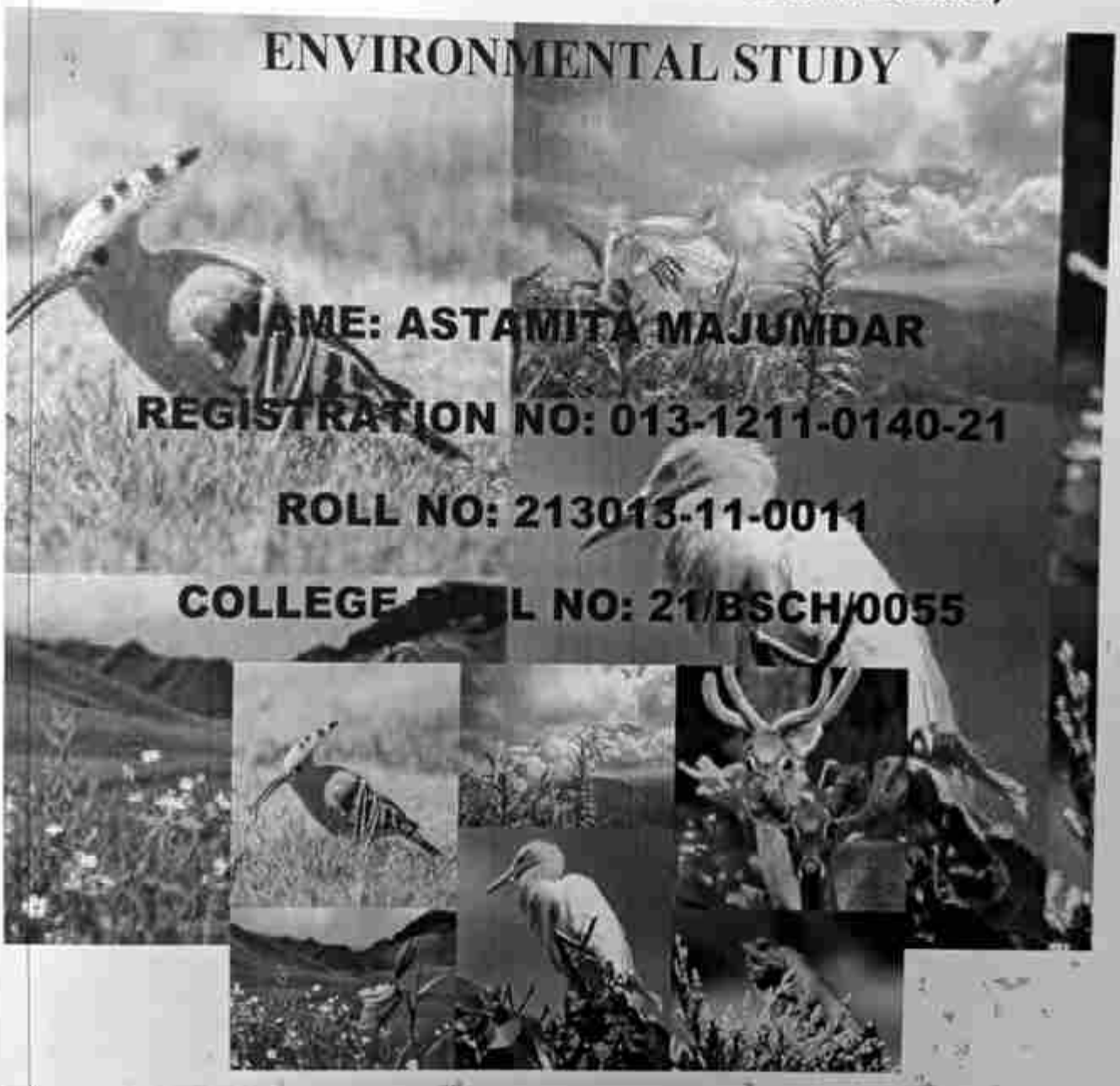
CONCLUSION

Environmental Studies helps us understand our environment and teaches us to use natural resources more efficiently. There is an ever demanding need for environmental studies because the environment is responsible for making our world beautiful and habitable. The environment sustains life. Man needs to know the importance of environment and help keep the environment as healthy and productive as much as possible. Environmental studies refer to a systematic study of human interaction with natural and built environment. It helps us to use natural resources more efficiently and embrace a sustainable way of living. Environmental studies is one of the most exciting and fastest growing fields.

Examined
25/6

PROJECT

(STUDY OF COMMON PLANTS, INSECTS, FISH BIRDS, MAMMALS AND BASIC PRINCIPLES OF IDENTIFICATION)

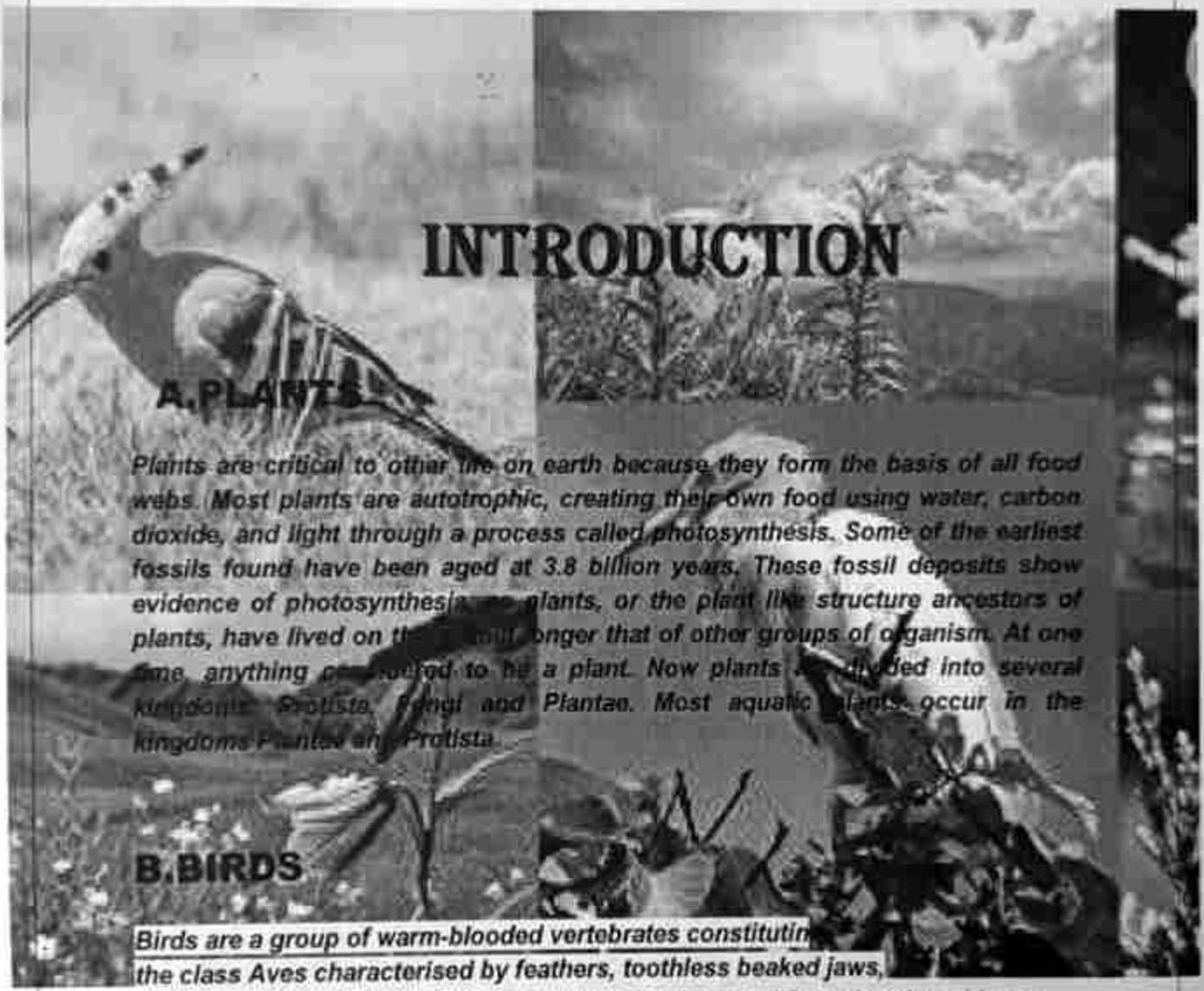


NAME: ASTAMITA MAJUMDAR

REGISTRATION NO: 013-1211-0140-21

ROLL NO: 213013-11-0011

COLLEGE ROLL NO: 21/BSCH/0055



INTRODUCTION

A.PLANTS

Plants are critical to other life on earth because they form the basis of all food webs. Most plants are autotrophic, creating their own food using water, carbon dioxide, and light through a process called photosynthesis. Some of the earliest fossils found have been aged at 3.8 billion years. These fossil deposits show evidence of photosynthesis in plants, or the plant like structure ancestors of plants, have lived on the earth longer that of other groups of organism. At one time, anything considered to be a plant. Now plants are divided into several kingdoms: Protista, Fungi and Plantae. Most aquatic plants occur in the kingdoms Plantae and Protista.

B.BIRDS

*Birds are a group of warm-blooded vertebrates constituting the class Aves characterised by feathers, toothless beaked jaws, the laying of hard-shelled eggs, a high metabolic rate, a four-chambered heart, and a strong yet lightweight skeleton. Birds live worldwide and range in size from the 5.5 cm (2.2 in) bee hummingbird to the 2.8 m (9 ft 2 in) ostrich. There are about ten thousand living species, more than half of which are passerine, or "perching" **birds**. Birds have wings whose development varies according to **species**; the only known groups without wings are the extinct moa and elephant*

birds. Wings, which evolved from forelimbs, gave birds the ability to fly, although further evolution has led to the birds including ratites, penguins, and diverse endemic island species. The digestive and respiratory systems of birds are also uniquely adapted for flight. Some bird species of aquatic environments, particularly seabirds and some waterbirds, have further evolved for swimming.

C.INSECTS

Insects are generally considered the most successful group of living organisms o n Earth. Insects are the largest group within the anthoped phylum. Insects have a chitinous exosheletion, a three point body, three points of jointed legs, compand eyes and are pain of antennae. Insects are adoptal creatures that live in almost every habitat on earth while some insects do live in water but 97% of insect habitat are on land.

D.FISH

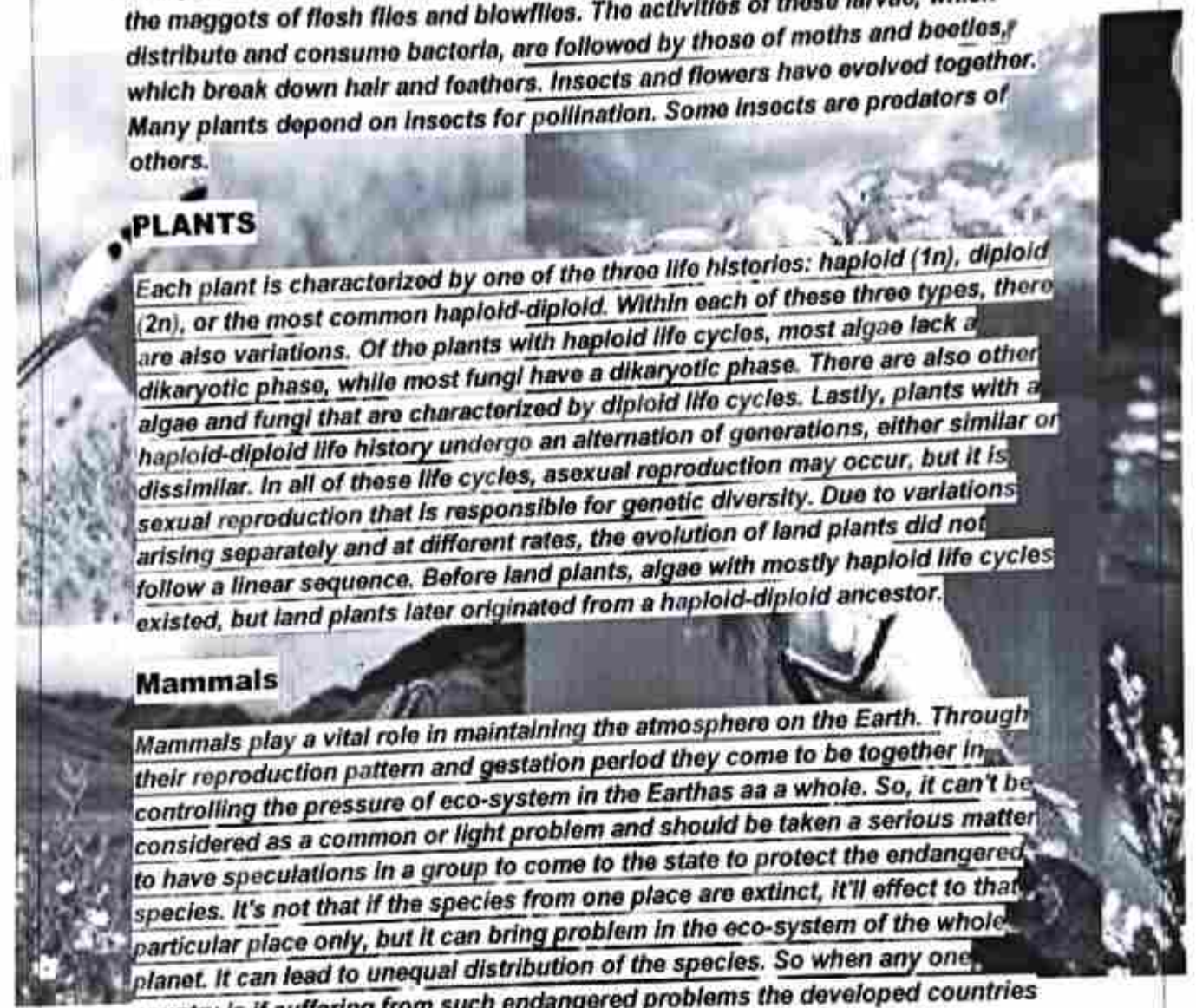
Fish (plural: fish or fishes) are an aquatic group of vertebrates which live in water and respire (get oxygen) with gills. They do not have limbs, like arms or legs, and they do have digits (fingers or toes). This is a definition which does not quite work: some amphibia [illegible] water and have external gills, but they are not fish.

E.MAMMALS

Mammals are a group of vertebrates constituting the class Mammalia characterized by the presence of mammary glands which in females produce milk for feeding (suckling) their young, [illegible] of the brain), fur or hair, and three middle ear bones. These characteristics distinguish them from reptiles (including [illegible]) from which they evolved in the carboniferous, over 300 million years ago. Around 6,400 extant species of mammals have been described. Most mammals are intelligent, with some possessing large brains, self-awareness, and tool use.

INSECT

Insects play many important roles in nature. They aid bacteria, fungi, and other organisms in the decomposition of organic matter and in soil formation. The decay of carrion, for example, brought about mainly by bacteria, is accelerated by the maggots of flesh flies and blowflies. The activities of these larvae, which distribute and consume bacteria, are followed by those of moths and beetles, which break down hair and feathers. Insects and flowers have evolved together. Many plants depend on insects for pollination. Some insects are predators of others.



PLANTS

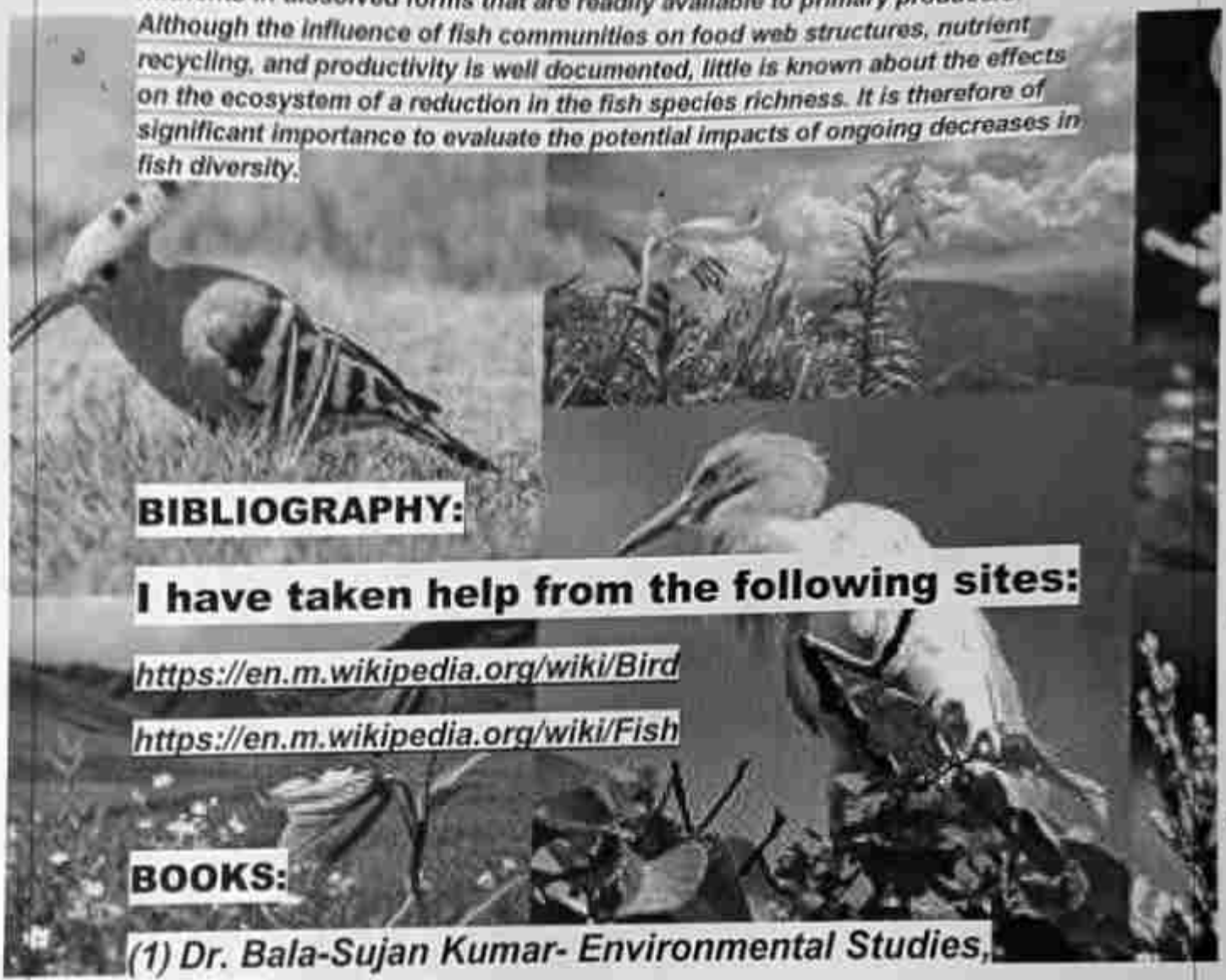
Each plant is characterized by one of the three life histories: haploid (1n), diploid (2n), or the most common haploid-diploid. Within each of these three types, there are also variations. Of the plants with haploid life cycles, most algae lack a dikaryotic phase, while most fungi have a dikaryotic phase. There are also other algae and fungi that are characterized by diploid life cycles. Lastly, plants with a haploid-diploid life history undergo an alternation of generations, either similar or dissimilar. In all of these life cycles, asexual reproduction may occur, but it is sexual reproduction that is responsible for genetic diversity. Due to variations arising separately and at different rates, the evolution of land plants did not follow a linear sequence. Before land plants, algae with mostly haploid life cycles existed, but land plants later originated from a haploid-diploid ancestor.

Mammals

Mammals play a vital role in maintaining the atmosphere on the Earth. Through their reproduction pattern and gestation period they come to be together in controlling the pressure of eco-system in the Earthas aa a whole. So, it can't be considered as a common or light problem and should be taken a serious matter to have speculations in a group to come to the state to protect the endangered species. It's not that if the species from one place are extinct, it'll effect to that particular place only, but it can bring problem in the eco-system of the whole planet. It can lead to unequal distribution of the species. So when any one country is if suffering from such endangered problems the developed countries should take an action towards that and should launch some social programs and some rewarding state so that people can get encouraged to preserve the environment and the whole Earth. It is confirmed that if this method can't be stopped it will lead to the extinction of all the species on the Earth, so we shouldn't hesitate to try our best to save their life.

Fish

Fish are a vital part of our ecosystem. Fish play an important role in nutrient cycles because they store a large proportion of ecosystem nutrients in their tissues, transport nutrients farther than other aquatic animals and excrete nutrients in dissolved forms that are readily available to primary producers. Although the influence of fish communities on food web structures, nutrient recycling, and productivity is well documented, little is known about the effects on the ecosystem of a reduction in the fish species richness. It is therefore of significant importance to evaluate the potential impacts of ongoing decreases in fish diversity.



BIBLIOGRAPHY:

I have taken help from the following sites:

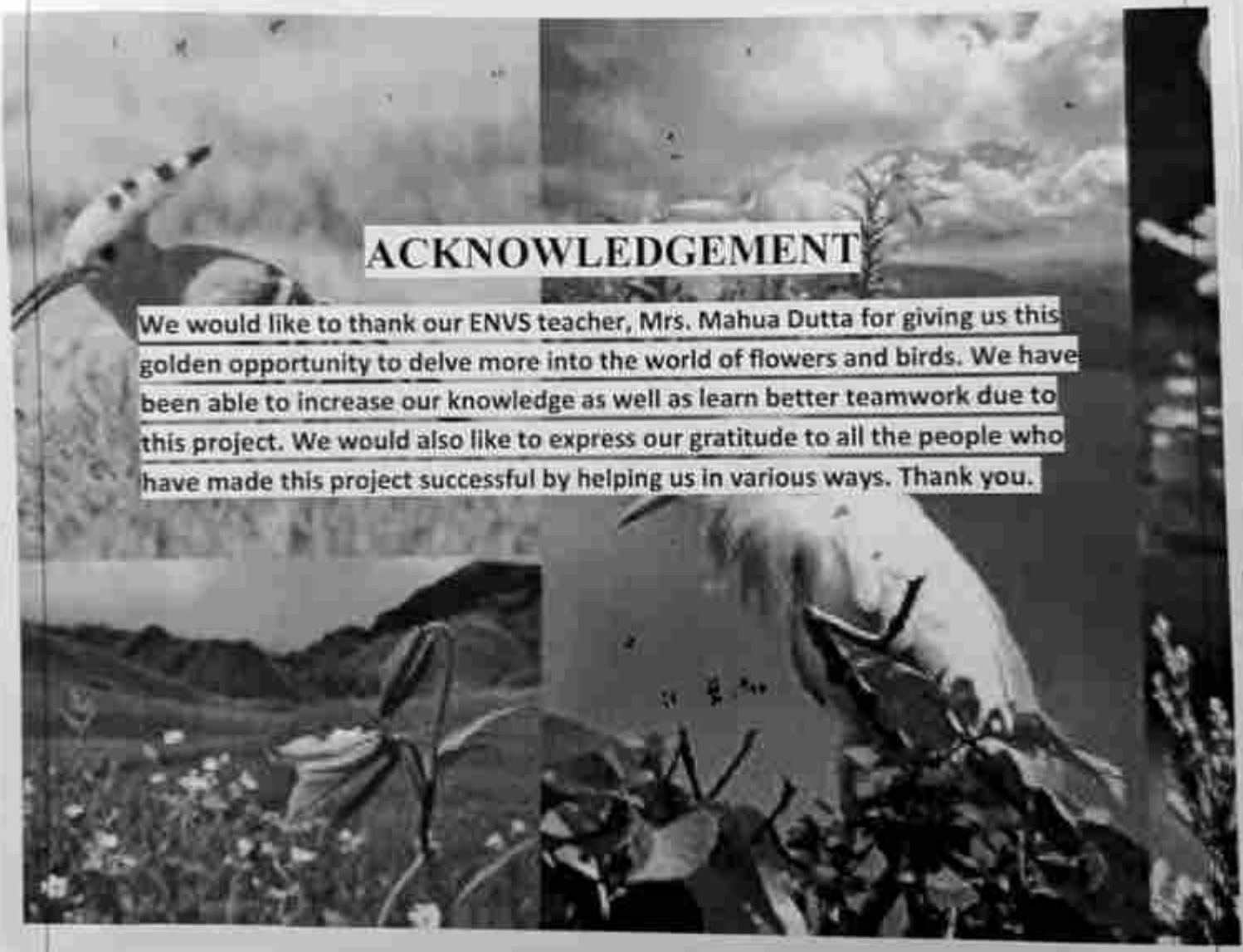
https://en.m.wikipedia.org/wiki/Bird

https://en.m.wikipedia.org/wiki/Fish

BOOKS:

(1) Dr. Bala-Sujan Kumar- Environmental Studies, Model Field and Project Work.

(2) Kaushik Anubha, Kaushik C.P. New Age International Publishers.



ACKNOWLEDGEMENT

We would like to thank our ENVS teacher, Mrs. Mahua Dutta for giving us this golden opportunity to delve more into the world of flowers and birds. We have been able to increase our knowledge as well as learn better teamwork due to this project. We would also like to express our gratitude to all the people who have made this project successful by helping us in various ways. Thank you.

ENVIRONMENTAL STUDY PROJECT

(STUDY OF COMMON PLANTS, INSECTS, FISH BIRDS, MAMMALS AND BASIC PRINCIPLES OF IDENTIFICATION)

NAME: SWASTIKA SAHA

REGISTRATION NUMBER: 013-1211-0159-21

ROLL NUMBER:213013-11-0026

COLLEGE ROLL NUMBER: 21/BSCH/ 0117

COURSE : B.SC

HONOURS PAPER: GEOGRAPHY

INTRODUCTION

A.BIRDS

Birds are a group of warm-blooded vertebrates constitutin the class Aves characterised by feathers, toothless beaked jaws, the laying of hard-shelled eggs, a high metabolic rate, a four-chambered heart, and a strong yet lightweight skeleton. Birds live worldwide and range in size from the 5.5 cm (2.2 in) bee hummingbird to the 2.8 m (9 ft 2 in) ostrich. There are about ten thousand living species, more than half of which are passerine, or "perching" birds. Birds have wings whose development varies according to species; the only known groups without wings are the extinct moa and elephant birds. Wings, which evolved from forelimbs, gave birds the ability to fly, although further evolution has led to the birds including ratites, penguins, and diverse endemic island species. The digestive and respiratory systems of birds are also uniquely adapted for flight. Some bird species of aquatic environments, particularly seabirds and some waterbirds, have further evolved for swimming.

B.INSECTS

Insects are generally considered the most successful group of living organisms o n Earth. Insects are the largest group within the anthoped phylum. Insects have a chitinous exosheletion, a three point body, three points of jointed legs, compand eyes and are pain of antennae. Insects are adoptal creatures that live in almost every habitat on earth while some insects do live in water but 97% of insect habitat are on land.

C.PLANTS

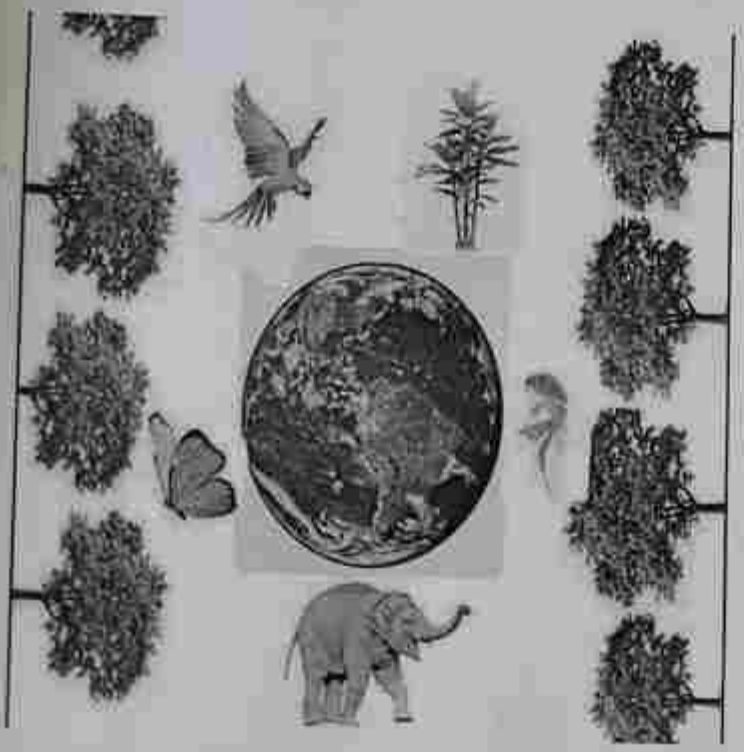
Plants are critical to other life on earth because they form the basis of all food webs. Most plants are autotrophic, creating their own food using water, carbon dioxide, and light through a process called photosynthesis. Some of the earliest fossils found have been aged at 3.8 billion years. These fossil deposits show evidence of photosynthesis, so plants, or the plant like structure ancestors of plants, have lived on this planet longer that of other groups of organism. At one time, anything considered to be a plant. Now plants are divided into several kingdoms: Protista, Fungi and Plantae. Most aquatic plants occur in the kingdoms Plantae and Protista.

D.FISH

Fish (plural: fish or fishes) are an aquatic group of vertebrates which live in water and respire (get oxygen) with gills. They do not have limbs, like arms or legs, and they do have digits (fingers & toes). This is a definition which does not quite work: some amphibia also live in water and have external gills, but they are not fish.

E.MAMMALS

Mammals are a group of vertebrates constituting the class Mammalia characterized by the presence of mammary glands which in females produce milk for feeding (nursing) their young, a neocortex (a region of the brain), fur or hair, and three middle ear bones. These characteristics distinguish them from reptiles (including birds) from which they diverged in the carboniferous, over 300 million years ago. Around 6,400 extant species of mammals have been described. Most mammals are intelligent, with some possessing large brains, self-awareness, and tool use.



A) BIRDS

BAYA WEAVER

- **COMMON ENGLISH NAME:** BAYA WEAVER
- **SCIENTIFIC NAME:** PLOCEUS PHILIPPINUS
- **BENGALI NAME:** BABUI

1) DISTRIBUTION:

- The baya weaver is a weaverbird found across the Indian Subcontinent and Southeast Asia.

2) CHARATERISTICS:

- A widespread weaver that is known for its nest-a long hanging nest with a bulbous chamber and a narrow tubular
- Breeding males have yellow forehead and crown, a dark throat that contrasts with yellow underparts.

SPARROW

- **SCIENTIFIC NAME:** PASSERIDAE
- **COMMON ENGLISH NAME:** SPARROW
- **BENGALI NAME:** CHORAI

1) DISTRIBUTION:

- **It is native to Eurasia and North Africa, and was introduced to South Africa, North and South America, Australia, New Zealand, Middle East, India and Central Asia, where its population thrived under a variety of environmental and climatic conditions.**

2) CHARACTERISTICS:

- **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.
- Males have reddish feathers on their backs and females are brown and striped.

COMMON MYNA

- SCIENTIFIC NAME: ACRIDOTHERES TRISTIS
- COMMON ENGLISH NAME: COMMON MYNA
- BENGALI NAME: SHALIK

1) DISTRIBUTION:

- It is found from southern Kazakhstan, Turkmenistan and eastern Iran to southern China, Indochina, the Malay Peninsula and southern India.
- It has also been introduced to Hawaii and North America.

2) 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.
- The sexes are similar and birds are usually seen in pairs.

B) INSECTS

BUTTERFLY

Butterflies are a large group of insects, belonging to the order "Lepidoptera", which means "scaly wing". They are characterized by their large, often colorful wings and by their proboscis, which they use to suck flower nectar.

- *Class: Insecta.*
- *Kingdom: Animalia.*
- *Order: Lepidoptera.*
- *Phylum: Arthropoda.*
- *Class: Insects.*
- *Scientific name: Rhopalocera.*
- *Life span: 15-29 days.*
- *Size: 1/8 inch to 12 inches.*
- *Colour : White, red, green etc (can be of any colour).*
- *Family: Pieridae, Riodiridae etc.*

- 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.

B) INSECTS

BUTTERFLY

Butterflies are a large group of insects, belonging to the order "Lepidoptera", which means "scaly wing". They are characterized by their large, often colorful wings and by their proboscis, which they use to suck flower nectar.

- *Class: Insecta.*
- *Kingdom: Animalia.*
- *Order: Lepidoptera.*
- *Phylum: Arthropoda.*
- *Class: Insects.*
- *Scientific name: Rhopalocera.*
- *Life span: 15-29 days.*
- *Size: 1/8 inch to 12 inches.*
- *Colour : White, red, green etc (can be of any colour).*
- *Family: Pieridae, Riodiridae etc.*

STRUCTURE:

Like all other insects, butterflies have six legs and three main body parts: head, thorax (chest or mid section) and abdomen (tail end). They also have two antennae and an exoskeleton.

HABITAT:

Butterflies live in different habitats, including mangroves, salt marshes, lowland forests, sand dunes, wetlands, mountainous regions and grasslands.

PRIMARY DIET:

Butterflies mostly eat nectar and water. Each butterfly species prefer a specific plant but they will feed wherever food is available.

SPECIAL CHARACTERISTICS:

Camouflage- A productive colouring that enables butterflies to blend in with its environmental thus hiding from its predator.

Grasshopper is a plant eating insects with long hind legs which they use for producing a chirping sound frequently found in grassy places and low vegetation.

- *Class: Insecta.*
- *Order: Orthoptera.*
- *Kingdom: Animalia.*
- *Phylum: Arthropoda.*
- *Colour: green.*
- *Size: 1 to 7 cm in length.*
- *Family: Acrididae.*
- *Scientific name: Caelifera*
- *Other physical feature: Ectothermic.*

HABITAT:

Most grasshoppers prefer dry open habitats with lots of grass and small plants. They are generally found in temperate, tropical and terrestrial barriers.

PRIMARY DIET:

Grasshoppers are primarily harbivores. They mostly eat leaves, flowers, stems etc.

SPECIAL CHARACTERISTICS:

Grasshoppers use their chirping ability to give them a boost into the air but mostly are pretty strong flies and make good use of their wings to escape predators.

MOSQUITO

There are about 170 different kinds of mosquitoes in North America alone. These pests are part of the same family as houseflies and fruit flies, because they all have two clear, veined wings. Best known as a summer pest, mosquitoes can develop from egg to adult in 10 to 14 days.

- *Class: Insecta*
- *Kingdom: Animalia*
- *Family: Culicidae*
- *Order: Diptera*
- *Size: 1/4" to 3/8"*
- *Shape: Narrow, oval.*
- *Legs: 6.*
- *Species: Varies.*
- *Phylum: Arthropoda.*
- *Wings: Yes.*
- *Colour: Pale brown with whitish strpes across abdomen.*
- *Antenna:Yes.*

DIET:

We usually say, "| have been bitten by a mosquito", but this is not completely true. Mosquitoes do not bite. Female mosquitoes feed on plant nectar and blood. They need the protein to reproduce. To get to the blood, they pierce our skin with their "proboscis" and suck our blood. Male mosquitoes feed exclusively on plant nectars. Mosquitoes are busiest at night and will file up to 14 miles for a blood meal. They hunt for food by detecting body heat and Carbon Dioxide, the gas we breathe out.

HABITAT:

Mosquitoes breed in soft, moist soil or stagnant water sources such as storm drains, old tires, children's wading pools and birdbaths.

IMPACT:

Mosquitoes spread diseases such as West Nile Virus, malaria and dengue fever.

PREVENTION:

POINTS OF IDENTIFICATION:

- *Taproot and branched.*
- *Stem green, hairy, herbaceous and branched.*
- *Leaves simple, exstipulate, reticulate venation.*
- *Flowers pentamerous, regular, bisexual.*
- *It is a cultivated, annual ornamental plant. The plant is a herb, attaining a height of 2-3 feet.*

PINUS

- *Division: Tracheophyta (vascular plants)*
- *Genus: Pinus*
- *Kingdom: Plantae*
- *Class: Gymnospermae (simple leaf, seeds nakes, cones present, xylem lacks vessels).*

POINTS OF IDENTIFICATION:

- It is an evergreen, perennial and woody plant.
- Main plant body is sporophyte which is differentiated into root, stem and needle like leaves.
- The stem is cylindrical, erect, covered with bark and branching is monopodial.
- It produces different kind of spores.
- Microsporphylls bear microsporangia which produce microspores i.e., pollen grains are light and winged. These are dispersed by the wind.

AGARICUS (MUSHROOM)

Genus: Agaricus sps.
Kingdom: Fungi (non-green, heterotrophic organisms, possess hyphae).
Class: Basidiomycetes (bear basidiomycetes on basidium).
Division: Eumycota (mycocelium and fungal cellulose present).

POINTS OF IDENTIFICATION:

- *It is a fleshy, saprophytic fungus which grows on damp logs of wood, trunks of trees and on decaying organic matter.*
- *The fungal body consists of two parts:*
  1. *Somatic: Vegetative mycelium under the ground.*
  2. *Reproductive: Fructification or fruiting body above the ground.*
- *Primary mycelium produced from basidiospore is septate, haploid, short lived and monokaryotic.*
- *Secondary mycelium is dikaryotic and long-lived. A mass of hyphae is interwoven to form a rhizomorph.*
- *Mushrooms' main body is umbrella-shaped called frutification or fruiting body which is an aerial, erect called Basidiocarp.*

D. FISH

Fish used to be a class of vertebrates. Now the term covers five classes of aquatic vertebrates:

- *Jawless fish*
- *Armoured fish*
- *Cartilaginous fish*

- Ray-finned fish
- Lobe-finned fish

There are more fish than tetrapods (land vertebrates): there are over 33,000 described species of fish. Fish are usually covered with scales. They have two sets of paired fins and several unpaired fins. Most fish are cold-blooded . A fish takes in the oxygen from the water using gills. There are many different kinds of fish. They live in fresh water in lakes and rivers, and in salt water in the ocean. Some fish are less than one centimeter long. The largest fish is the whale shark, which can be almost 15 meters long and weigh 15 tons. Most fish live in the water. A group of fish called the lungfish have developed lungs because they live in rivers and pools which dry up in certain parts of the year. They burrow into mud and aestivate until the water returns.

TYPES OF FISH

"Fish" is not a formal taxonomic grouping in systematic biology. Amphibians, reptiles, birds and mammals all descended from lobe-finned fish (and not from fish as a whole). But the use of the term "fish" is so convenient that we go on using it.

...pe of the body of a fish is important to its swimming. This is because streamlined ...y shapes makes the water drag less. Here are some common fish shapes:-

EEL-LIKE

The long, ribbon-like shape of an eel's body shows another shape. This enables them to hide in cracks, springing out quickly to capture prey, then returning quickly to their hiding spot.

FLATFISH

Flatfish live on the bottom of the ocean or lake. Most use camouflage: they change colours to match the ocean floor. During their early lives, their eyes move to the upper side of their flat body.

REEF FISH

Reef fish also have flat bodies, and their body is often highly coloured. Flat bodies can slip in and out among the corals, sponges, and rocks, avoiding predators. Angelfish, surgeonfish, and butterflyfish are examples.

FISH AS FOOD

Some people eat many different kinds of fish. These include carp, cod, herring, perch, sardines, sturgeon, tilapia, trout, tuna, and many others. A person who buys and sells fish for eating is called a fishmonger.

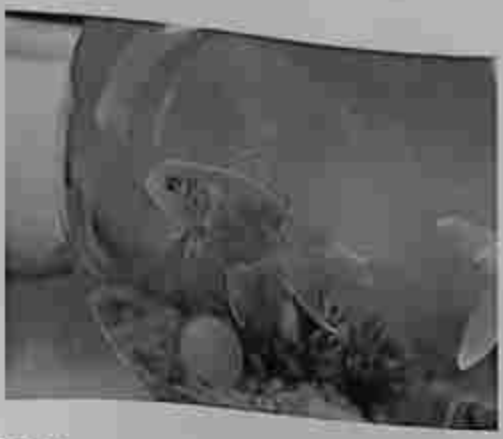
The word to fish is also used for the activity of catching fishes. People catch fish with small nets from the side of the water or from small boats, or with big nets from big boats. People can also catch fish with fishing poles and fishhooks with bait. This is often called angling. Anglers also different types of fishing lures.

Because people are catching too many fish for food or other uses, there are less and less fish in the sea. This is a problem known as Overfishing.

FISH AS PETS

Selective breeding of carp made them into the domesticated koi in Japan, and goldfish in China. This breeding began over 2,000 years ago. The Chinese brought their goldfish

indoors during the Song Dynasty. They kept them in large ceramic vessels. That we now do in glass fish tanks.



FRESHWATER FISH

41% of all fish live in freshwater. There are also some important fish which breed in rivers, and spend the rest of their life in the seas. Examples are salmon, trout, the sea lamprey,[8] and three-spined stickleback. Some other fish are born in salt water, but live most of their adult lives in fresh water: for example the eels. Species like these change their physiology to cope with the amount of salt in the water.

E. MAMMALS

ROYAL BENGAL TIGER

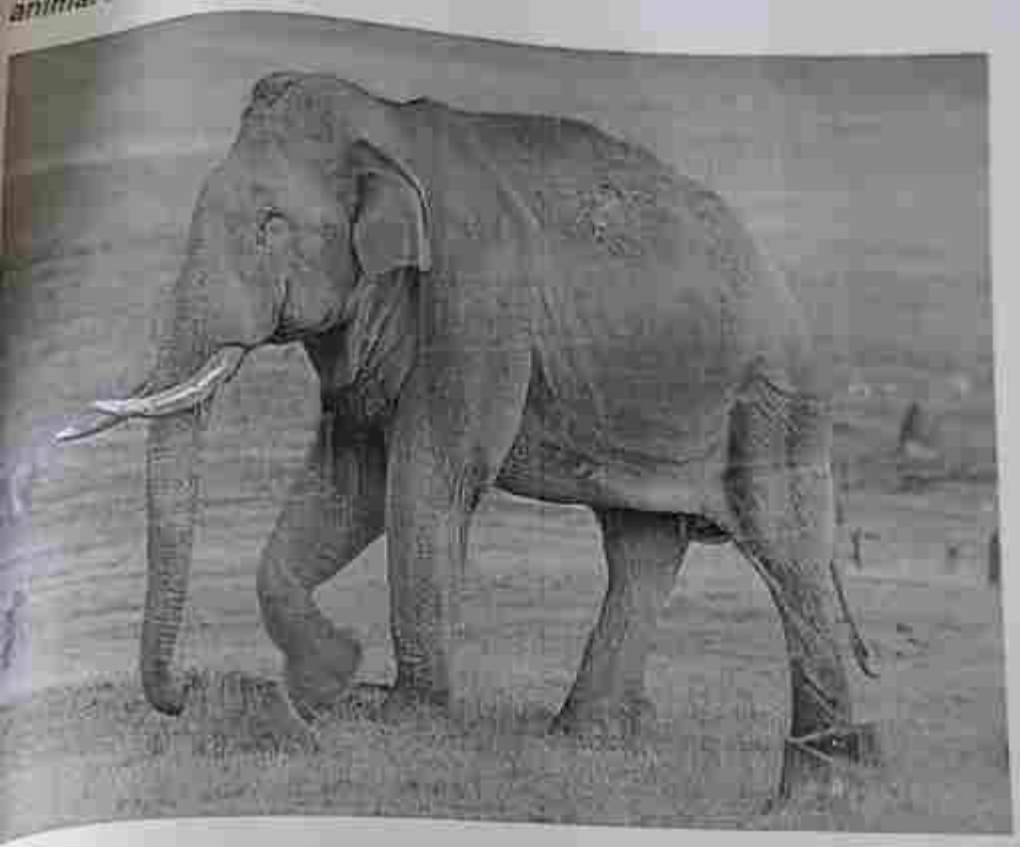
The Bengal tiger is a population of the Panthera tigris tigris subspecies. It ranks among the biggest wild cats alive today. It is considered to belong to the world's charismatic megafauna. The Bengal tiger's coat is yellow to light orange, with stripes ranging from dark brown to black; the belly and the interior parts of the limbs are white, and the tail is orange with black rings. The white tiger is a recessive mutant, which is reported in the wild from time to time in Assam, Bengal and Bihar.

ONE HORNED RHINO

The Indian rhinoceros (Rhinoceros unicornis), also called the Indian rhino, greater one-horned rhinoceros or great Indian rhinoceros, is a rhinoceros species native to the Indian subcontinent. As a result of habitat destruction and climatic changes its range has gradually been reduced so that by the 19th century, it only survived in the Terai grasslands of southern Nepal, northern Uttar Pradesh, northern Bihar, northern West Bengal, and in the Brahmaputra valley of Assam.

ASIATIC ELEPHANT

The Asian elephant (Elephas maximus), also known as the Asiatic elephant, is the only living species of the genus Elephas and is tributed throughout the Indian subcontinent and Southeast Asia, om India in the west, Nepal in the north, Sumatra in the south, and to Borneo in the east. The Asian elephant is the largest living land animal in Asia.



CONCLUSION

DS

s' spatial distributions are directly effected by global warming and
osequently climate change. In general terms it has been stated by the scientific
ommunity that the distribution of species have been moving in a poleward trend.
Within the realm of our study we found no conclusive evidence to prove or
disprove this statement. The evidence that we did find and cited leads us to the
conclusion that the distribution of species is infact being altered by climatic
change, but we were unable to determine exactly what that change was. This
project focused on bird species (as we found they were ideal indicators of
species shifts due to the fact that their patterns of movement are already larger
and more immediate than other organisms. This and the fact that bird movements
and migrations are well documented are the reason we chose to focus our study
on birds). Evidence found specifically from birds shows that there is a correlation
between bird population characteristics and alterations in climatic factors such
as temperature and precipitation. The change in population characteristics shows
that some sort of shift or generally trended movement is occurring.

INSECT

Insects play many important roles in nature. They aid bacteria, fungi, and other
organisms in the decomposition of organic matter and in soil formation. The
decay of carrion, for example, brought about mainly by bacteria, is accelerated by
the maggots of flesh flies and blowflies. The activities of these larvae, which
distribute and consume bacteria, are followed by those of moths and beetles,
which break down hair and feathers. Insects and flowers have evolved together.
Many plants depend on insects for pollination. Some insects are predators of
others.

PLANTS

Each plant is characterized by one of the three life histories: haploid (1n), diploid
(2n), or the most common haploid-diploid. Within each of these three types, there
are also variations. Of the plants with haploid life cycles, most algae lack a
dikaryotic phase, while most fungi have a dikaryotic phase. There are also other
algae and fungi that are characterized by diploid life cycles. Lastly, plants with a
haploid-diploid life history undergo an alternation of generations, either similar or
dissimilar. In all of these life cycles, asexual reproduction may occur, but it is

BIBLIOGRAPHY:

I have taken help from the following sites:

https://en.m.wikipedia.org/wiki/Bird

https://en.m.wikipedia.org/wiki/Fish

https://en.m.wikipedia.org/wiki/Insect

https://en.m.wikipedia.org/wiki/Mammal

https://en.m.wikipedia.org/wiki/Plant

BOOKS:

1) Dr. Bala-Sujan Kumar- Environmental Studies, Model Field and Project Work.

2) Kaushik Anubha, Kaushik C.P. New Age nternational Publishers.

3) Singh Savindra- Environmental Geography- llahabad, Pravalika.

ACKNOWLEDGEMENT

We would like to thank our ENVS teacher, Ms. Mahua Dutta for giving us this golden opportunity to delve more into the world of flowers and birds. We have been able to increase our knowledge as well as learn better teamwork due to this project. We would also like to express our gratitude to all the people who have made this project successful by helping us in various ways. Thank you.

PROJECT

(STUDY OF COMMON PLANTS, INSECTS, FISH, BIRDS, MAMMALS AND BASIC PRINCIPLES OF IDENTIFICATION)

ENVIRONMENTAL STUDY

NAME: SUDESHNA GANGULY

REGISTRATION NO: 013-1211-0170-21

ROLL NO: 213013-11-0034

COLLEGE ROLL NO: 21/BSCH/0148

INTRODUCTION

A.BIRDS

Birds are a group of warm-blooded vertebrates constitutin the class Aves characterised by feathers, toothless beaked jaws, the laying of hard-shelled eggs, a high metabolic rate, a four-chambered heart, and a strong yet lightweight skeleton. Birds live worldwide and range in size from the 5.5 cm (2.2 in) bee hummingbird to the 2.8 m (9 ft 2 in) ostrich. There are about ten thousand living species, more than half of which are passerine, or "perching" birds. Birds have wings whose development varies according to species; the only known groups without wings are the extinct moa and elephant birds. Wings, which evolved from forelimbs, gave birds the ability to fly, although further evolution has led to the birds including ratites, penguins, and diverse endemic island species. The digestive and respiratory systems of birds are also uniquely adapted for flight. Some bird species of aquatic environments, particularly seabirds and some waterbirds, have further evolved for swimming.

B.INSECTS

Insects are generally considered the most successful group of living organisms o n Earth. Insects are the largest group within the anthoped phylum. Insects have a chitinous exosheletion, a three point body, three points of jointed legs, compand eyes and are pain of antennae. Insects are adoptal creatures that live in almost every habitat on earth while some insects do live in water but 97% of insect habitat are on land.

C.PLANTS

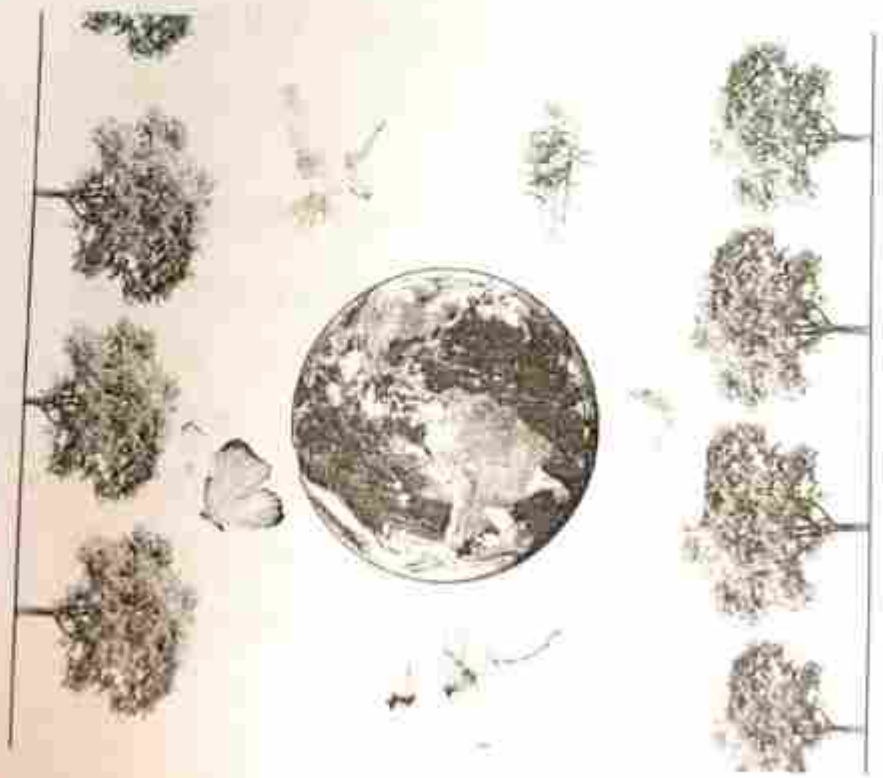
Plants are critical to other life on earth because they form the basis of all food webs. Most plants are autotrophic, creating their own food using water, carbon dioxide, and light through a process called photosynthesis. Some of the earliest fossils found have been aged at 3.8 billion years. These fossil deposits show evidence of photosynthesis, so plants, or the plant like structure ancestors of plants, have lived on this planet longer that of other groups of organism. At one time, anything considered to be a plant. Now plants are divided into several kingdoms: Protista, Fungi and Plantae. Most aquatic plants occur in the kingdoms Plantae and Protista.

D.FISH

Fish (plural: fish or fishes) are an aquatic group of vertebrates which live in water and respire (get oxygen) with gills. They do not have limbs, like arms or legs, and they do have digits (fingers & toes). This is a definition which does not quite work: some amphibia also live in water and have external gills, but they are not fish.

E.MAMMALS

Mammals are a group of vertebrates constituting the class Mammalia characterized by the presence of mammary glands which in females produce milk for feeding (nursing) their young, a neocortex (a region of the brain), fur or hair, and three middle ear bones. These characteristics distinguish them from reptiles (including birds) from which they diverged in the carboniferous, over 300 million years ago. Around 6,400 extant species of mammals have been described. Most mammals are intelligent, with some possessing large brains, self-awareness, and tool use.



A) BIRDS

BAYA WEAVER

- COMMON ENGLISH NAME: BAYA WEAVER
- SCIENTIFIC NAME: PLOCEUS PHILIPPINUS
- BENGALI NAME: BABUI

1) DISTRIBUTION:

- The baya weaver is a weaverbird found across the Indian Subcontinent and Southeast Asia.

2) CHARATERISTICS:

- A widespread weaver that is known for its nest-a long hanging nest with a bulbous chamber and a narrow tubular
- Breeding males have yellow forehead and crown, a dark throat that contrasts with yellow underparts.

SPARROW

- **SCIENTIFIC NAME:** PASSERIDAE
- **COMMON ENGLISH NAME:** SPARROW
- **BENGALI NAME:** CHORAI

1) DISTRIBUTION:

- It is native to Eurasia and North Africa, and was introduced to South Africa, North and South America, Australia, New Zealand, Middle East, India and Central Asia, where its population thrived under a variety of environmental and climatic conditions.

2) CHARACTERISTICS:

- 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.
- Males have reddish feathers on their backs and females are brown and striped.

COMMON MYNA

- **SCIENTIFIC NAME:** ACRIDOTHERES TRISTIS
- **COMMON ENGLISH NAME:** COMMON MYNA
- **BENGALI NAME:** SHALIK

1) DISTRIBUTION:

- It is found from southern Kazakhstan, Turkmenistan and eastern Iran to southern China, Indochina, the Malay Peninsula and southern India.
- It has also been introduced to Hawaii and North America.

2) 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.
- The sexes are similar and birds are usually seen in pairs.

B) INSECTS

BUTTERFLY

Butterflies are a large group of insects, belonging to the order "Lepidoptera", which means "scaly wing". They are characterized by their large, often colorful wings and by their proboscis, which they use to suck flower nectar.

- *Class: Insecta.*
- *Kingdom: Animalia.*
- *Order: Lepidoptera.*
- *Phylum: Arthropoda.*
- *Class: insects.*
- *Scientific name: Rhopalocera.*
- *Life span: 15-29 days.*
- *Size: 1/8 inch to 12 inches.*
- *Colour : White, red, green etc (can be of any colour).*
- *Family: Pieridae, Riodiridae etc.*

STRUCTURE:

Like all other insects, butterflies have six legs and three main body parts: head, thorax (chest or mid section) and abdomen (tail end). They also have two antennae and an exoskeleton.

HABITAT:

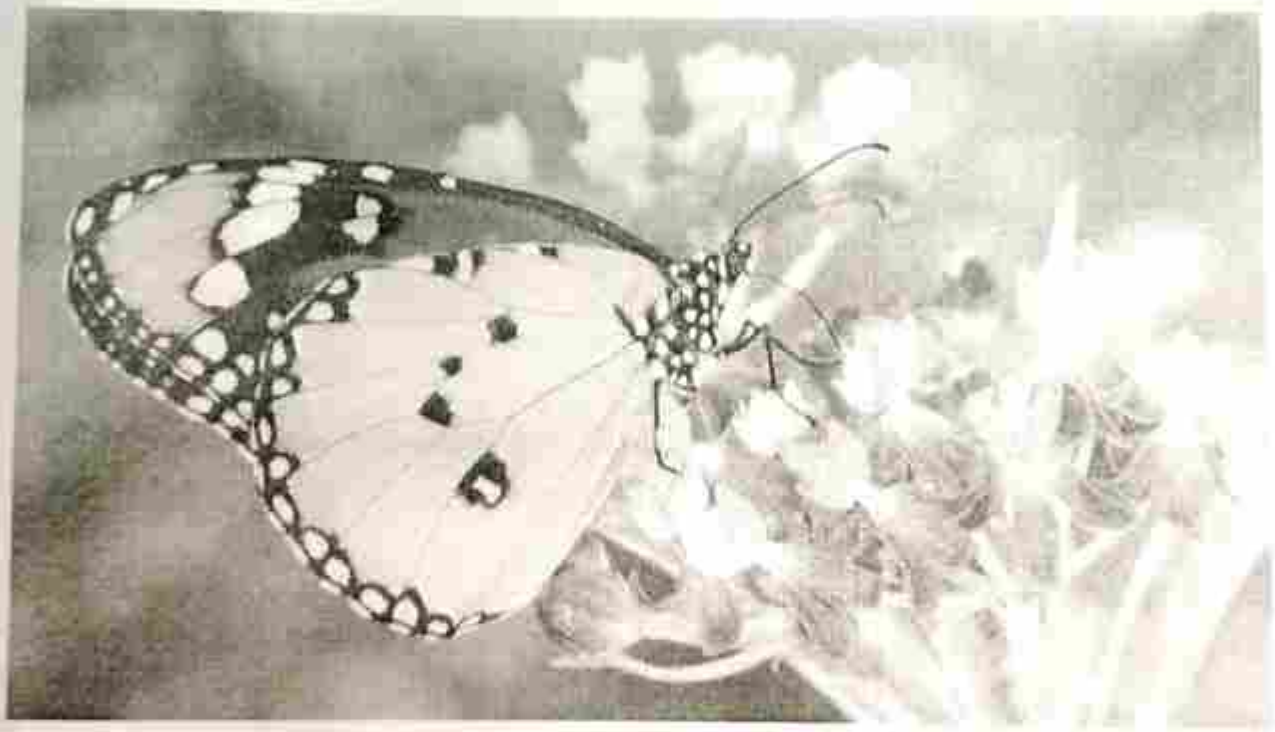
Butterflies live in different habitats, including mangroves, salt marshes, lowland forests, sand dunes, wetlands, mountainous regions and grasslands.

PRIMARY DIET:

Butterflies mostly eat nectar and water. Each butterfly species prefer a specific plant but they will feed wherever food is available.

SPECIAL CHARACTERISTICS:

Camouflage- A productive colouring that enables butterflies to blend in with its environmental thus hiding from its predator.



GRASSHOPPER

Grasshopper is a plant eating insects with long hind legs which they use for producing a chirping sound frequently found in grassy places and low vegetation.

- *Class: Insecta.*
- *Order: Orthoptera.*
- *Kingdom: Animalia.*
- *Phylum: Arthropoda.*
- *Colour: green.*
- *Size: 1 to 7 cm in length.*
- *Family: Acrididae.*
- *Scientific name: Caelifera*
- *Other physical feature: Ectothermic.*

HABITAT:

Most grasshoppers prefer dry open habitats with lots of grass and small plants. They are generally found in temperate, tropical and terrestrial barriers.

PRIMARY DIET:

Grasshoppers are primarily harbivores. They mostly eat leaves, flowers, stems etc.

SPECIAL CHARACTERISTICS:

Grasshoppers use their chirping ability to give them a boost into the air but mostly are pretty strong flies and make good use of their wings to escape predators.

MOSQUITO

There are about 170 different kinds of mosquitoes in North America alone. These pests are part of the same family as houseflies and fruit flies, because they all have two clear, veined wings. Best known as a summer pest, mosquitoes can develop from egg to adult in 10 to 14 days.

- *Class: Insecta*
- *Kingdom: Animalia*
- *Family: Culicidae*
- *Order: Diptera*
- *Size: 1/4" to 3/8"*
- *Shape: Narrow, oval.*
- *Legs: 6.*
- *Species: Varies.*
- *Phylum: Arthropoda.*
- *Wings: Yes.*
- *Colour: Pale brown with whitish strpes across abdomen.*
- *Antenna:Yes.*

DIET:

We usually say, "| have been bitten by a mosquito", but this is not completely true. Mosquitoes do not bite. Female mosquitoes feed on plant nectar and blood. They need the protein to reproduce. To get to the blood, they pierce our skin with their "proboscis" and suck our blood. Male mosquitoes feed exclusively on plant nectars. Mosquitoes are busiest at night and will file up to 14 miles for a blood meal. They hunt for food by detecting body heat and Carbon Dioxide, the gas we breathe out.

HABITAT:

Mosquitoes breed in soft, moist soil or stagnant water sources such as storm drains, old tires, children's wading pools and birdbaths.

IMPACT:

Mosquitoes spread diseases such as West Nile Virus, malaria and dengue fever.

PREVENTION:

- *Replace all stagnant water at least once a week.*
- *Remove trash from around any standing water.*
- *When sleeping outdoors or in areas where mosquito populations are heavy, surround your bed with "mosquito" netting.*

C.PLANTS

PETUNIA HYBRIDA

- *Division: Tracheophyta.(vascular plant)*
- *Kingdom: Plantae*
- *Class: Magnoliapsida (flowring plants)*
- *Genus: Petunia;Juss.*

POINTS OF IDENTIFICATION:

- *Taproot and branched.*
- *Stem green, hairy, herbaceous and branched.*
- *Leaves simple, exstipulate, reticulate venation.*
- *Flowers pentamerous, regular, bisexual.*
- *It is a cultivated, annual ornamental plant. The plant is a herb, attaining a height of 2-3 feet.*

PINUS

- *Division: Tracheophyta (vascular plants)*
- *Genus: Pinus*
- *Kingdom: Plantae*
- *Class: Gymnospermae (simple leaf, seeds nakes, cones present, xylem lacks vessels).*

POINTS OF IDENTIFICATION:

- *It is an evergreen, perennial and woody plant.*
- *Main plant body is sporophyte which is differentiated into root, stem and needle like leaves.*
- *The stem is cylindrical, erect, covered with bark and branching is monopodial.*
- *It produces different kind of spores.*
- *Microsporphylls bear microsporangia which produce microspores i.e., pollen grains are light and winged. These are dispersed by the wind.*

AGARICUS (MUSHROOM)

- *Genus: Agaricus sps.*
- *Kingdom: Fungi (non-green, heterotrophic organisms, possess hyphae).*
- *Class: Basidiomycetes (bear basidiomycetes on basidium).*
- *Division: Eumycota (mycecelium and fungal cellulose present).*

POINTS OF IDENTIFICATION:

- *It is a fleshy, saprophytic fungus which grows on damp logs of wood, trunks of trees and on decaying organic matter.*
- *The fungal body consists of two parts:*
  1. *Somatic: Vegetative mycelium under the ground.*
  2. *Reproductive: Fructification or fruiting body above the ground.*
- *Primary mycelium produced from basidiospore is septate, haploid, short lived and monokaryotic.*
- *Secondary mycelium is dikaryotic and long-lived. A mass of hyphae is interwoven to form a rhizomorph.*
- *Mushrooms' main body is umbrella-shaped called frutification or fruiting body which is an aerial, erect called Basidiocarp.*

D. FISH

Fish used to be a class of vertebrates. Now the term covers five classes of aquatic vertebrates:

- *Jawless fish*
- *Armoured fish*
- *Cartilaginous fish*
- *Ray-finned fish*
- *Lobe-finned fish*

There are more fish than tetrapods (land vertebrates): there are over 33,000 described species of fish. Fish are usually covered with scales. They have two sets of paired fins and several unpaired fins. Most fish are cold-blooded . A fish takes in the oxygen from the water using gills. There are many different kinds of fish. They live in fresh water in lakes and rivers, and in salt water in the ocean. Some fish are less than one centimeter long. The largest fish is the whale shark, which can be almost 15 meters long and weigh 15 tons. Most fish live in the water. A group of fish called the lungfish have developed lungs because they live in rivers and pools which dry up in certain parts of the year. They burrow into mud and aestivate until the water returns.

E. MAMMALS

ROYAL BENGAL TIGER

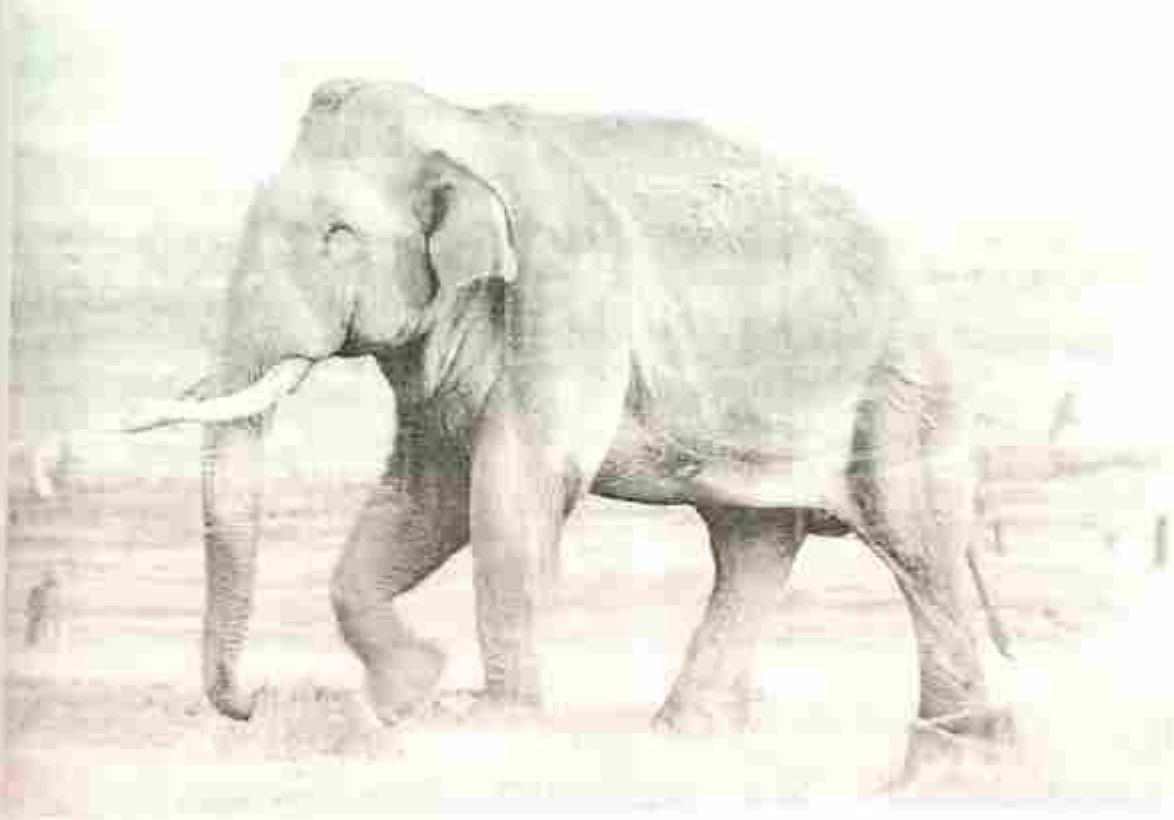
The Bengal tiger is a population of the Panthera tigris tigris subspecies. It ranks among the biggest wild cats alive today. It is considered to belong to the world's charismatic megafauna. The Bengal tiger's coat is yellow to light orange, with stripes ranging from brown to black; the belly and the interior parts of the limbs are white, and the tail is orange with black rings. The white tiger is a recessive mutant, which is reported in the wild from time to time in Assam, Bengal and Bihar.

ONE HORNED RHINO

The Indian rhinoceros (Rhinoceros unicornis), also called the Indian rhino, greater one-horned rhinoceros or great Indian rhinoceros, is a rhinoceros species native to the Indian subcontinent. As a result of habitat destruction and climatic changes its range has gradually been reduced so that by the 19th century, it only survived in the Teral grasslands of southern Nepal, northern Uttar Pradesh, northern Bihar, northern West Bengal, and in the Brahmaputra valley of Assam.

ASIATIC ELEPHANT

The Asian elephant (Elephas maximus), also known as the Asiatic elephant, is the only living species of the genus Elephas and is distributed throughout the Indian subcontinent and Southeast Asia, from India in the west, Nepal in the north, Sumatra in the south, and to Borneo in the east. The Asian elephant is the largest living land animal in Asia.



CONCLUSION

BIRDS

Birds' spatial distributions are directly effected by global warming and subsequently climate change. In general terms it has been stated by the scientific community that the distribution of species have been moving in a poleward trend. Within the realm of our study we found no conclusive evidence to prove or disprove this statement. The evidence that we did find and cited leads us to the conclusion that the distribution of species is infact being altered by climatic change, but we were unable to determine exactly what that change was. This project focused on bird species (as we found they were ideal indicators of species shifts due to the fact that their patterns of movement are already larger and more immediate than other organisms. This and the fact that bird movements and migrations are well documented are the reason we chose to focus our study on birds). Evidence found specifically from birds shows that there is a correlation between bird population characteristics and alterations in climatic factors such as temperature and precipitation. The change in population characteristics shows that some sort of shift or generally trended movement is occurring.

INSECT

Insects play many important roles in nature. They aid bacteria, fungi, and other organisms in the decomposition of organic matter and in soil formation. The decay of carrion, for example, brought about mainly by bacteria, is accelerated by the maggots of flesh flies and blowflies. The activities of these larvae, which distribute and consume bacteria, are followed by those of moths and beetles, which break down hair and feathers. Insects and flowers have evolved together. Many plants depend on insects for pollination. Some insects are predators of others.

PLANTS

Each plant is characterized by one of the three life histories: haploid (1n), diploid (2n), or the most common haploid-diploid. Within each of these three types, there are also variations. Of the plants with haploid life cycles, most algae lack a dikaryotic phase, while most fungi have a dikaryotic phase. There are also other algae and fungi that are characterized by diploid life cycles. Lastly, plants with a haploid-diploid life history undergo an alternation of generations, either similar or dissimilar. In all of these life cycles, asexual reproduction may occur, but it is

sexual reproduction that is responsible for genetic diversity. Due to variations arising separately and at different rates, the evolution of land plants did not follow a linear sequence. Before land plants, algae with mostly haploid life cycles existed, but land plants later originated from a haploid-diploid ancestor.

Mammals

Mammals play a vital role in maintaining the atmosphere on the Earth. Through their reproduction pattern and gestation period they come to be together in controlling the pressure of eco-system in the Earthas aa a whole. So, it can't be considered as a common or light problem and should be taken a serious matter to have speculations in a group to come to the state to protect the endangered species. It's not that if the species from one place are extinct, it'll effect to that particular place only, but it can bring problem in the eco-system of the whole planet. It can lead to unequal distribution of the species. So when any one country is if suffering from such endangered problems the developed countries should take an action towards that and should launch some social programs and some rewarding state so that people can get encouraged to preserve the environment and the whole Earth. It is confirmed that if this method can't be stopped it will lead to the extinction of all the species on the Earth, so we shouldn't hesitate to try our best to save their life.

Fish

Fish are a vital part of our ecosystem. Fish play an important role in nutrient cycles because they store a large proportion of ecosystem nutrients in their tissues, transport nutrients farther than other aquatic animals and excrete nutrients in dissolved forms that are readily available to primary producers. Although the influence of fish communities on food web structures, nutrient recycling, and productivity is well documented, little is known about the effects on the ecosystem of a reduction in the fish species richness. It is therefore of significant importance to evaluate the potential impacts of ongoing decreases in fish diversity.

BIBLIOGRAPHY:

I have taken help from the following sites:

https://en.m.wikipedia.org/wiki/Bird

https://en.m.wikipedia.org/wiki/Fish

https://en.m.wikipedia.org/wiki/Insect

https://en.m.wikipedia.org/wiki/Mammal

https://en.m.wikipedia.org/wiki/Plant

BOOKS:

(1) Dr. Bala-Sujan Kumar- Environmental Studies, Model Field and Project Work.

(2) Kaushik Anubha, Kaushik C.P. New Age International Publishers.

(3) Singh Savindra- Environmental Geography- Allahabad, Pravalika.

ACKNOWLEDGEMENT

We would like to thank our ENVS teacher, Ms. Mahua Dutta for giving us this golden opportunity to delve more into the world of flowers and birds. We have been able to increase our knowledge as well as learn better teamwork due to this project. We would also like to express our gratitude to all the people who have made this project successful by helping us in various ways. Thank you.

PROJECT

(STUDY OF COMMON PLANTS, INSECTS, FISH BIRDS, MAMMALS AND BASIC PRINCIPLES OF IDENTIFICATION)

ENVIRONMENTAL STUDY

NAME: AYESHA SULTANA

REGISTRATION NO: 013-1211-0182-21

ROLL NO: 213013-11-0045

COLLEGE ROLL NO: 21/BSCH/0162

INTRODUCTION

A.BIRDS

Birds are a group of warm-blooded vertebrates constitutin the class Aves characterised by feathers, toothless beaked jaws, the laying of hard-shelled eggs, a high metabolic rate, a four-chambered heart, and a strong yet lightweight skeleton. Birds live worldwide and range in size from the 5.5 cm (2.2 in) bee hummingbird to the 2.8 m (9 ft 2 in) ostrich. There are about ten thousand living species, more than half of which are passerine, or "perching" birds. Birds have wings whose development varies according to species; the only known groups without wings are the extinct moa and elephant birds. Wings, which evolved from forelimbs, gave birds the ability to fly, although further evolution has led to the birds including ratites, penguins, and diverse endemic island species. The digestive and respiratory systems of birds are also uniquely adapted for flight. Some bird species of aquatic environments, particularly seabirds and some waterbirds, have further evolved for swimming.

B.INSECTS

Insects are generally considered the most successful group of living organisms o n Earth. Insects are the largest group within the anthoped phylum. Insects have a chitinous exosheletion, a three point body, three points of jointed legs, compand eyes and are pain of antennae. Insects are adoptal creatures that live in almost every habitat on earth while some insects do live in water but 97% of insect habitat are on land.

C.PLANTS

Plants are critical to other life on earth because they form the basis of all food webs. Most plants are autotrophic, creating their own food using water, carbon dioxide, and light through a process called photosynthesis. Some of the earliest fossils found have been aged at 3.8 billion years. These fossil deposits show evidence of photosynthesis, so plants, or the plant like structure ancestors of plants, have lived on this planet longer that of other groups of organism. At one time, anything considered to be a plant. Now plants are divided into several kingdoms: Protista, Fungi and Plantae. Most aquatic plants occur in the kingdoms Plantae and Protista.

D.FISH

Fish (plural: fish or fishes) are an aquatic group of vertebrates which live in water and respire (get oxygen) with gills. They do not have limbs, like arms or legs, and they do have digits (fingers & toes). This is a definition which does not quite work: some amphibia also live in water and have external gills, but they are not fish.

E.MAMMALS

Mammals are a group of vertebrates constituting the class Mammalia characterized by the presence of mammary glands which in females produce milk for feeding (nursing) their young, a neocortex (a region of the brain), fur or hair, and three middle ear bones. These characteristics distinguish them from reptiles (including birds) from which they diverged in the carboniferous, over 300 million years ago. Around 6,400 extant species of mammals have been described. Most mammals are intelligent, with some possessing large brains, self-awareness, and tool use.

A) BIRDS

BAYA WEAVER

- **COMMON ENGLISH NAME:** BAYA WEAVER
- **SCIENTIFIC NAME:** PLOCEUS PHILIPPINUS
- **BENGALI NAME:** BABUI

1) DISTRIBUTION:

- **The baya weaver is a weaverbird found across the Indian Subcontinent and Southeast Asia.**

2) CHARATERISTICS:

- **A widespread weaver that is known for its nest-a long hanging nest with a bulbous chamber and a narrow tubular**
- **Breeding males have yellow forehead and crown, a dark throat that contrasts with yellow underparts.**

SPARROW

- **SCIENTIFIC NAME:** PASSERIDAE
- **COMMON ENGLISH NAME:** SPARROW
- **BENGALI NAME:** CHORAI

1) DISTRIBUTION:

- **It is native to Eurasia and North Africa, and was introduced to South Africa, North and South America, Australia, New Zealand, Middle East, India and Central Asia, where its population thrived under a variety of environmental and climatic conditions.**

2) CHARACTERISTICS:

- **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.**
- **Males have reddish feathers on their backs and females are brown and striped.**

COMMON MYNA

- **SCIENTIFIC NAME:** ACRIDOTHERES TRISTIS
- **COMMON ENGLISH NAME:** COMMON MYNA
- **BENGALI NAME: SHALIK**

1) DISTRIBUTION:

- **It is found from southern Kazakhstan, Turkmenistan and eastern Iran to southern China, Indochina, the Malay Peninsula and southern India.**
- **It has also been introduced to Hawaii and North America.**

2) 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.**
- **The sexes are similar and birds are usually seen in pairs.**

B) INSECTS

BUTTERFLY

Butterflies are a large group of insects, belonging to the order "Lepidoptera", which means "scaly wing". They are characterized by their large, often colorful wings and by their proboscis, which they use to suck flower nectar.

- *Class: Insecta.*
- *Kingdom: Animalia.*
- *Order: Lepidoptera.*
- *Phylum: Arthropoda.*
- *Class: insects.*
- *Scientific name: Rhopalocera.*
- *Life span: 15-29 days.*
- *Size: 1/8 inch to 12 inches.*
- *Colour : White, red, green etc (can be of any colour).*
- *Family: Pieridae, Riodiridae etc.*

STRUCTURE:

Like all other insects, butterflies have six legs and three main body parts: head, thorax (chest or mid section) and abdomen (tail end). They also have two antennae and an exoskeleton.

HABITAT:

Butterflies live in different habitats, including mangroves, salt marshes, lowland forests, sand dunes, wetlands, mountainous regions and grasslands.

PRIMARY DIET:

Butterflies mostly eat nectar and water. Each butterfly species prefer a specific plant but they will feed wherever food is available.

SPECIAL CHARACTERISTICS:

Camouflage- A productive colouring that enables butterflies to blend in with its environmental thus hiding from its predator.

GRASSHOPPER

Grasshopper is a plant eating insects with long hind legs which they use for producing a chirping sound frequently found in grassy places and low vegetation.

- *Class: Insecta.*
- *Order: Orthoptera.*
- *Kingdom: Animalia.*
- *Phylum: Arthropoda.*
- *Colour: green.*
- *Size: 1 to 7 cm in length.*
- *Family: Acrididae.*
- *Scientific name: Caelifera*
- *Other physical feature: Ectothermic.*

HABITAT:

Most grasshoppers prefer dry open habitats with lots of grass and small plants. They are generally found in temperate, tropical and terrestrial barriers.

PRIMARY DIET:

Grasshoppers are primarily harbivores. They mostly eat leaves, flowers, stems etc.

SPECIAL CHARACTERISTICS:

Grasshoppers use their chirping ability to give them a boost into the air but mostly are pretty strong flies and make good use of their wings to escape predators.

MOSQUITO

There are about 170 different kinds of mosquitoes in North America alone. These pests are part of the same family as houseflies and fruit flies, because they all have two clear, veined wings. Best known as a summer pest, mosquitoes can develop from egg to adult in 10 to 14 days.

Class: Insecta
Kingdom: Animalia
Family: Culicidae
Order: Diptera
Size: 1/4" to 3/8"
Shape: Narrow, oval.
Legs: 6.
Species: Varies.
Phylum: Arthropoda.
Wings: Yes.
Colour: Pale brown with whitish strpes across abdomen.
Antenna:Yes.

DIET:

We usually say, "| have been bitten by a mosquito", but this is not completely true. Mosquitoes do not bite. Female mosquitoes feed on plant nectar and blood. They need the protein to reproduce. To get to the blood, they pierce our skin with their "proboscis" and suck our blood. Male mosquitoes feed exclusively on plant nectars. Mosquitoes are busiest at night and will file up to 14 miles for a blood meal. They hunt for food by detecting body heat and Carbon Dioxide, the gas we breathe out.

HABITAT:

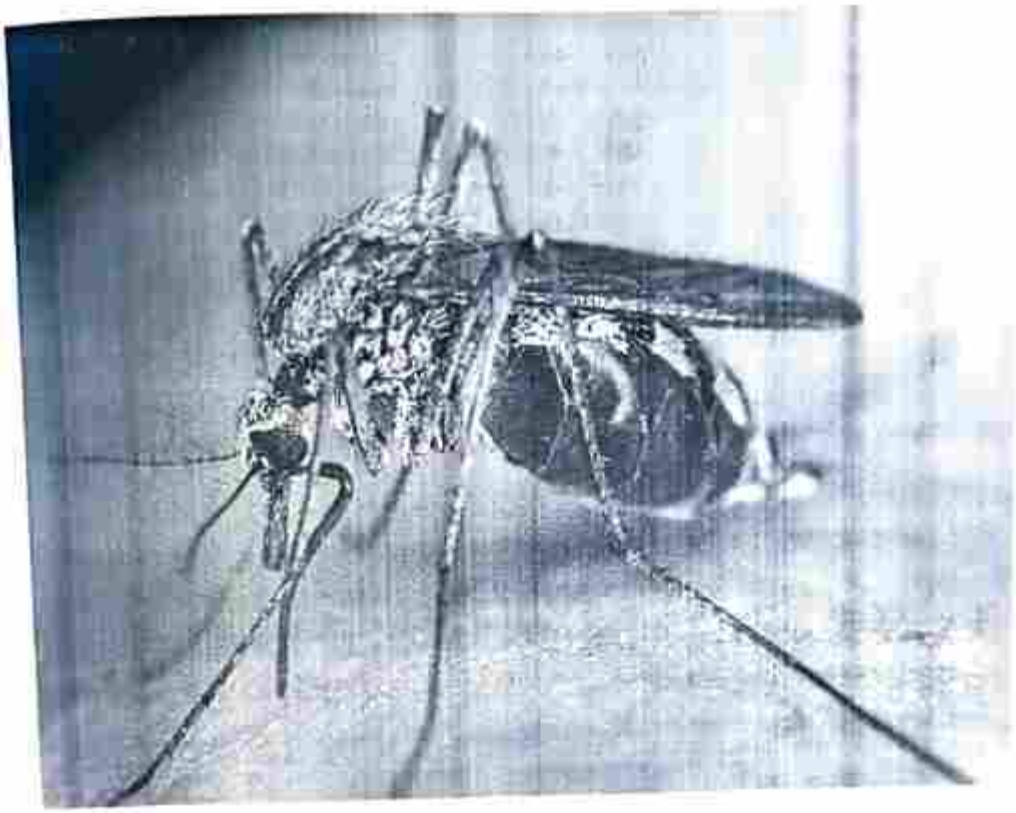
Mosquitoes breed in soft, moist soil or stagnant water sources such as storm drains, old tires, children's wading pools and birdbaths.

IMPACT:

Mosquitoes spread diseases such as West Nile Virus, malaria and dengue fever.

PREVENTION:

- *Replace all stagnant water at least once a week.*
- *Remove trash from around any standing water.*
- *When sleeping outdoors or in areas where mosquito populations are heavy, surround your bed with "mosquito" netting.*



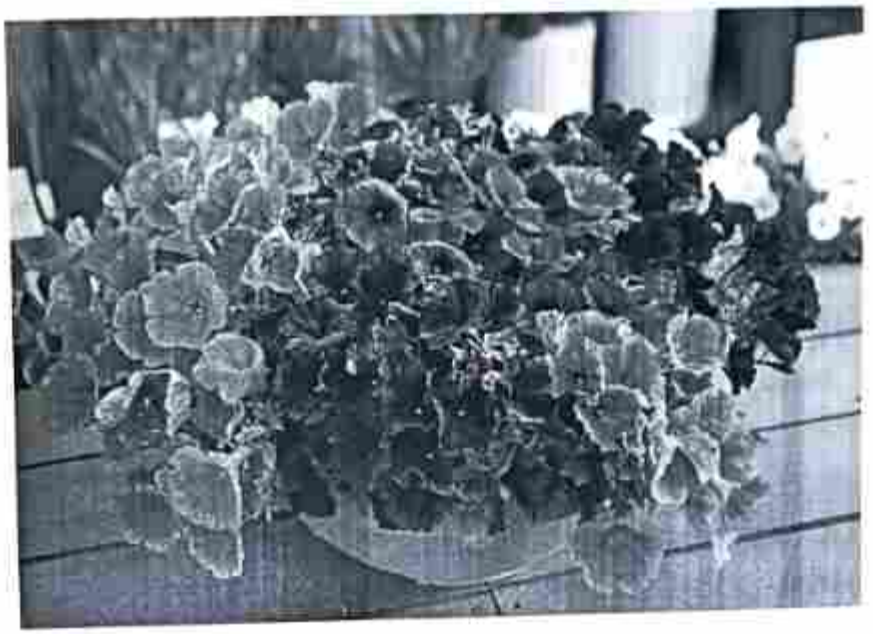
C.PLANTS

PETUNIA HYBRIDA

- *Division: Tracheophyta.(vascular plant)*
- *Kingdom: Plantae*
- *Class: Magnoliapsida (flowring plants)*
- *Genus: Petunia;Juss.*

POINTS OF IDENTIFICATION:

- *Taproot and branched.*
- *Stem green, hairy, herbaceous and branched.*
- *Leaves simple, exstipulate, reticulate venation.*
- *Flowers pentamerous, regular, bisexual.*
- *It is a cultivated, annual ornamental plant. The plant is a herb, attaining a height of 2-3 feet.*



PINUS

- *Division: Tracheophyta (vascular plants)*
- *Genus: Pinus*
- *Kingdom: Plantae*
- *Class: Gymnospermae (simple leaf, seeds nakes, cones present, xylem lacks vessels).*

POINTS OF IDENTIFICATION:

- *It is an evergreen, perennial and woody plant.*
- *Main plant body is sporophyte which is differentiated into root, stem and needle like leaves.*
- *The stem is cylindrical, erect, covered with bark and branching is monopodial.*
- *It produces different kind of spores.*
- *Microsporphylls bear microsporangia which produce microspores i.e., pollen grains are light and winged. These are dispersed by the wind.*

AGARICUS (MUSHROOM)

- *Genus: Agaricus sps.*
- *Kingdom: Fungi (non-green, heterotrophic organisms, possess hyphae).*
- *Class: Basidiomycetes (bear basidiomycetes on basidium).*
- *Division: Eumycota (mycecelium and fungal cellulose present).*

POINTS OF IDENTIFICATION:

- *It is a fleshy, saprophytic fungus which grows on damp logs of wood, trunks of trees and on decaying organic matter.*
- *The fungal body consists of two parts:*
    1. *Somatic: Vegetative mycelium under the ground.*
    2. *Reproductive: Fructification or fruiting body above the ground.*
- *Primary mycelium produced from basidiospore is septate, haploid, short lived and monokaryotic.*
- *Secondary mycelium is dikaryotic and long-lived. A mass of hyphae is interwoven to form a rhizomorph.*
- *Mushrooms' main body is umbrella-shaped called frutification or fruiting body which is an aerial, erect called Basidiocarp.*

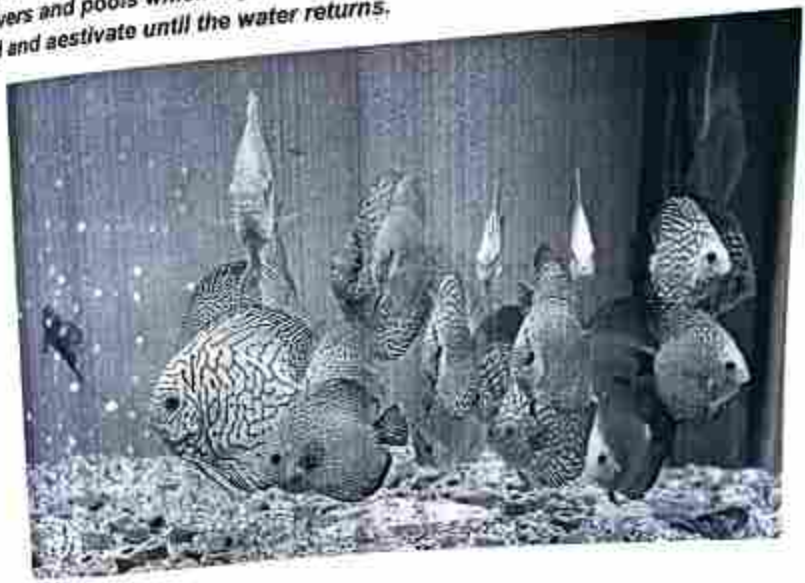
D. FISH

Fish used to be a class of vertebrates. Now the term covers five classes of aquatic vertebrates:

- *Jawless fish*
- *Armoured fish*
- *Cartilaginous fish*

- Ray-finned fish
- Lobe-finned fish

There are more fish than tetrapods (land vertebrates): there are over 33,000 described species of fish. Fish are usually covered with scales. They have two sets of paired fins and several unpaired fins. Most fish are cold-blooded . A fish takes in the oxygen from the water using gills. There are many different kinds of fish. They live in fresh water in lakes and rivers, and in salt water in the ocean. Some fish are less than one centimeter long. The largest fish is the whale shark, which can be almost 15 meters long and weigh 15 tons. Most fish live in the water. A group of fish called the lungfish have developed lungs because they live in rivers and pools which dry up in certain parts of the year. They burrow into mud and aestivate until the water returns.



TYPES OF FISH

"Fish" is not a formal taxonomic grouping in systematic biology. Amphibians, reptiles, birds and mammals all descended from lobe-finned fish (and not from fish as a whole). But the use of the term "fish" is so convenient that we go on using it.

Fish are the oldest vertebrate group. The term includes a huge range of types, from the Middle Ordovician, about 490 million years ago, to the present day. These are the main groups:

Agnatha: the jawless fish. Cambrian to present day.

Pteraspids: the head-shields

Anaspids: gills opened as holes. Silurian to end-Devonian.

Cephalaspids: early jawless fish

Lampreys: living ectoparasites

Osteostraci: bony-armoured jawless fish.

Gnathostomata: the jawed fish. Includes all types commonly called fish, except the lamprey.

Placoderms: heavily armoured fish

Chondrichthyes: cartilaginous fish: sharks, rays and skates.

Acanthodii: extinct spiny sharks

Osteichthyes: bony fish.

Actinopterygii: the ray-finned fish.

Chondrostei: sturgeons and some other early types.

Neopterygii: first seen in the later Permian, lighter and faster-moving than previous groups.

Holostei: the gars and bowfins

Teleostei: the most successful group, Triassic to present day.

Sarcopterygii: the lobe-finned fish

Dipnoi: the lungfish; eight genera survive.

Coelacanths: two species survive. They were probably a sister-group to the tetrapods.

Certain animals that have the word fish in their name are not really fish: Crayfish are crustaceans, and jellyfish are Cnidarians. Some animals look like fish, but are not. Whales and dolphins are mammals for example.

BODY SHAPE

The shape of the body of a fish is important to its swimming. This is because streamlined body shapes makes the water drag less. Here are some common fish shapes:-

EEL-LIKE

The long, ribbon-like shape of an eel's body shows another shape. This enables them to hide in cracks, springing out quickly to capture prey, then returning quickly to their hiding spot.

FLATFISH

Flatfish live on the bottom of the ocean or lake. Most use camouflage: they change colours to match the ocean floor. During their early lives, their eyes move to the upper side of their flat body.

REEF FISH

Reef fish also have flat bodies, and their body is often highly coloured. Flat bodies can slip in and out among the corals, sponges, and rocks, avoiding predators. Angelfish, surgeonfish, and butterflyfish are examples.

FISH AS FOOD

Some people eat many different kinds of fish. These include carp, cod, herring, perch, sardines, sturgeon, tilapia, trout, tuna, and many others. A person who buys and sells fish for eating is called a fishmonger.

The word to fish is also used for the activity of catching fishes. People catch fish with small nets from the side of the water or from small boats, or with big nets from big boats. People can also catch fish with fishing poles and fishhooks with bait. This is often called angling. Anglers also different types of fishing lures.

Because people are catching too many fish for food or other uses, there are less and less fish in the sea. This is a problem known as Overfishing.

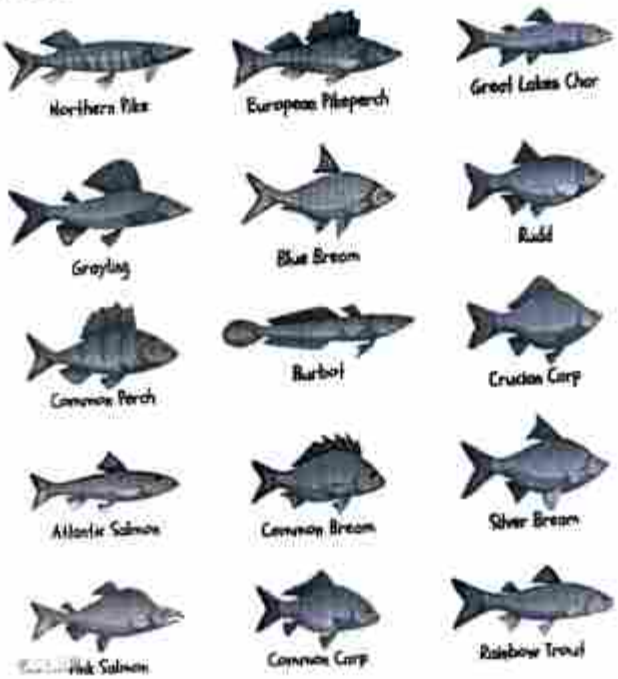
FISH AS PETS

Selective breeding of carp made them into the domesticated koi in Japan, and goldfish in China. This breeding began over 2,000 years ago. The Chinese brought their goldfish

indoors during the Song Dynasty. They kept them in large ceramic vessels. That we now do in glass fish tanks.

FRESHWATER FISH

41% of all fish live in freshwater. There are also some important fish which breed in rivers, and spend the rest of their life in the seas. Examples are salmon, trout, the sea lamprey,[8] and three-spined stickleback. Some other fish are born in salt water, but live most of their adult lives in fresh water: for example the eels. Species like these change their physiology to cope with the amount of salt in the water.



E. MAMMALS

ROYAL BENGAL TIGER

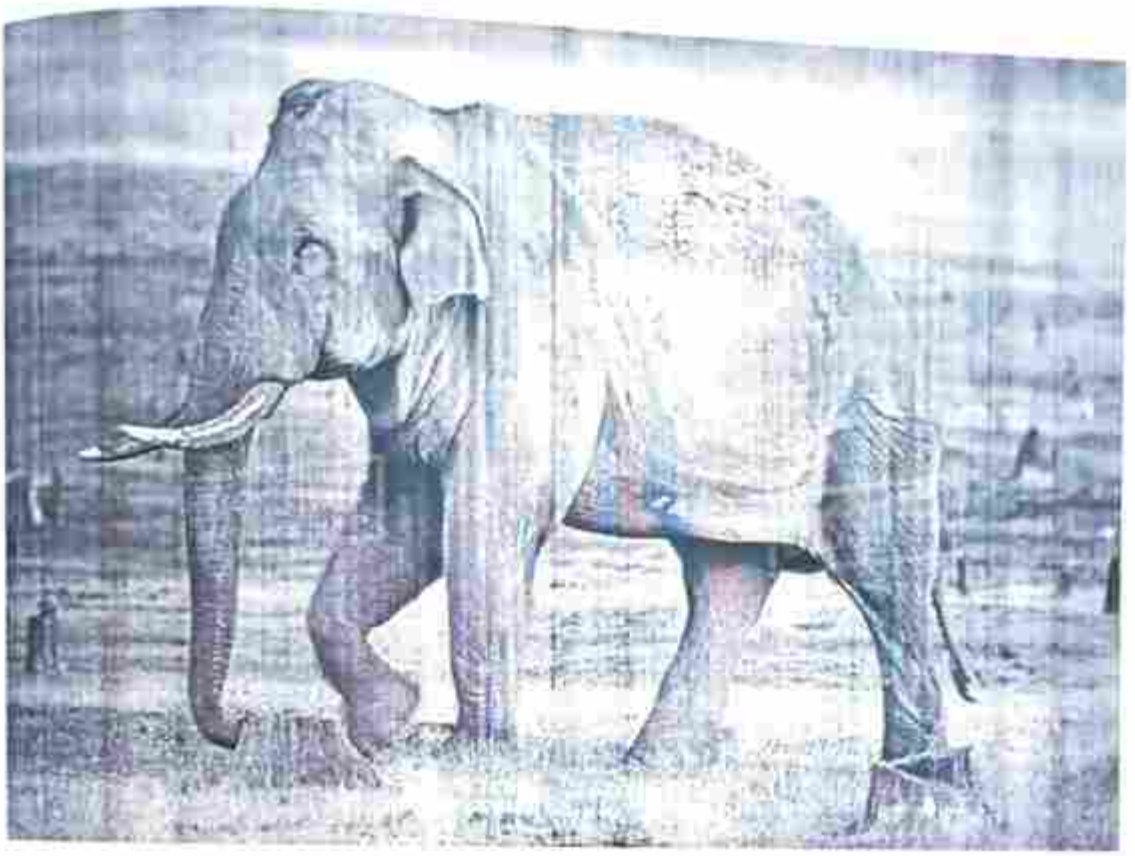
The Bengal tiger is a population of the Panthera tigris tigris subspecies. It ranks among the biggest wild cats alive today. It is considered to belong to the world's charismatic megafauna. The Bengal tiger's coat is yellow to light orange, with stripes ranging from dark brown to black; the belly and the interior parts of the limbs are white, and the tail is orange with black rings. The white tiger is a recessive mutant, which is reported in the wild from time to time in Assam, Bengal and Bihar.

ONE HORNED RHINO

The Indian rhinoceros (Rhinoceros unicornis), also called the Indian rhino, greater one-horned rhinoceros or great Indian rhinoceros, is a rhinoceros species native to the Indian subcontinent. As a result of habitat destruction and climatic changes its range has gradually been reduced so that by the 19th century, it only survived in the Terai grasslands of southern Nepal, northern Uttar Pradesh, northern Bihar, northern West Bengal, and in the Brahmaputra valley of Assam.

ASIATIC ELEPHANT

The Asian elephant (Elephas maximus), also known as the Asiatic elephant, is the only living species of the genus Elephas and is distributed throughout the Indian subcontinent and Southeast Asia, from India in the west, Nepal in the north, Sumatra in the south, and to Borneo in the east. The Asian elephant is the largest living land animal in Asia.



CONCLUSION

BIRDS

Birds' spatial distributions are directly effected by global warming and subsequently climate change. In general terms it has been stated by the scientific community that the distribution of species have been moving in a poleward trend. Within the realm of our study we found no conclusive evidence to prove or disprove this statement. The evidence that we did find and cited leads us to the conclusion that the distribution of species is infact being altered by climatic change, but we were unable to determine exactly what that change was. This project focused on bird species (as we found they were ideal indicators of species shifts due to the fact that their patterns of movement are already larger and more immediate than other organisms. This and the fact that bird movements and migrations are well documented are the reason we chose to focus our study on birds). Evidence found specifically from birds shows that there is a correlation between bird population characteristics and alterations in climatic factors such as temperature and precipitation. The change in population characteristics shows that some sort of shift or generally trended movement is occurring.

INSECT

Insects play many important roles in nature. They aid bacteria, fungi, and other organisms in the decomposition of organic matter and in soil formation. The decay of carrion, for example, brought about mainly by bacteria, is accelerated by the maggots of flesh flies and blowflies. The activities of these larvae, which distribute and consume bacteria, are followed by those of moths and beetles, which break down hair and feathers. Insects and flowers have evolved together. Many plants depend on insects for pollination. Some insects are predators of others.

PLANTS

Each plant is characterized by one of the three life histories: haploid (1n), diploid (2n), or the most common haploid-diploid. Within each of these three types, there are also variations. Of the plants with haploid life cycles, most algae lack a dikaryotic phase, while most fungi have a dikaryotic phase. There are also other algae and fungi that are characterized by diploid life cycles. Lastly, plants with a haploid-diploid life history undergo an alternation of generations, either similar or dissimilar. In all of these life cycles, asexual reproduction may occur, but it is

sexual reproduction that is responsible for genetic diversity. Due to variations arising separately and at different rates, the evolution of land plants did not follow a linear sequence. Before land plants, algae with mostly haploid life cycles existed, but land plants later originated from a haploid-diploid ancestor.

Mammals

Mammals play a vital role in maintaining the atmosphere on the Earth. Through their reproduction pattern and gestation period they come to be together in controlling the pressure of eco-system in the Earthas aa a whole. So, it can't be considered as a common or light problem and should be taken a serious matter to have speculations in a group to come to the state to protect the endangered species. It's not that if the species from one place are extinct, it'll effect to that particular place only, but it can bring problem in the eco-system of the whole planet. It can lead to unequal distribution of the species. So when any one country is if suffering from such endangered problems the developed countries should take an action towards that and should launch some social programs and some rewarding state so that people can get encouraged to preserve the environment and the whole Earth. It is confirmed that if this method can't be stopped it will lead to the extinction of all the species on the Earth, so we shouldn't hesitate to try our best to save their life.

Fish

Fish are a vital part of our ecosystem. Fish play an important role in nutrient cycles because they store a large proportion of ecosystem nutrients in their tissues, transport nutrients farther than other aquatic animals and excrete nutrients in dissolved forms that are readily available to primary producers. Although the influence of fish communities on food web structures, nutrient recycling, and productivity is well documented, little is known about the effects on the ecosystem of a reduction in the fish species richness. It is therefore of significant importance to evaluate the potential impacts of ongoing decreases in fish diversity.

BIBLIOGRAPHY:

I have taken help from the following sites:

https://en.m.wikipedia.org/wiki/Bird

https://en.m.wikipedia.org/wiki/Fish

https://en.m.wikipedia.org/wiki/Insect

https://en.m.wikipedia.org/wiki/Mammal

https://en.m.wikipedia.org/wiki/Plant

BOOKS:

(1) Dr. Bala-Sujan Kumar- Environmental Studies, Model Field and Project Work.

(2) Kaushik Anubha, Kaushik C.P. New Age International Publishers.

(3) Singh Savindra- Environmental Geography- Allahabad, Pravalika.

ACKNOWLEDGEMENT

We would like to thank our ENVS teacher, Ms. Mahua Dutta for giving us this golden opportunity to delve more into the world of flowers and birds. We have been able to increase our knowledge as well as learn better teamwork due to this project. We would also like to express our gratitude to all the people who have made this project successful by helping us in various ways. Thank you.

PROJECT

Study of Common plants, Insects, Fish & basic Identification

ENVIRONMENTAL STUDY

NAME : DEBPARNA PAL

REG NO : 013-1211-0189 - 21

ROLL NO : 213013 - 11 - 0052

COLLEGE ROLL NO : 21/BSCH/0173

INTRODUCTION

A.BIRDS

Birds are a group of warm-blooded vertebrates constitutin the class Aves characterised by feathers, toothless beaked jaws, the laying of hard-shelled eggs, a high metabolic rate, a four-chambered heart, and a strong yet lightweight skeleton. Birds live worldwide and range in size from the 5.5 cm (2.2 in) bee hummingbird to the 2.8 m (9 ft 2 in) ostrich. There are about ten thousand living species, more than half of which are passerine, or "perching" birds. Birds have wings whose development varies according to species; the only known groups without wings are the extinct moa and elephant birds. Wings, which evolved from forelimbs, gave birds the ability to fly, although further evolution has led to the birds including ratites, penguins, and diverse endemic island species. The digestive and respiratory systems of birds are also uniquely adapted for flight. Some bird species of aquatic environments, particularly seabirds and some waterbirds, have further evolved for swimming.

B.INSECTS

Insects are generally considered the most successful group of living organisms on Earth. Insects are the largest group within the anthoped phylum. Insects have a chitinous exosheletion, a three point body, three points of jointed legs, compand eyes and are pain of antennae. Insects are adoptal creatures that live in almost every habitat on earth while some insects do live in water but 97% of insect habitat are on land.

C.PLANTS

Plants are critical to other life on earth because they form the basis of all food webs. Most plants are autotrophic, creating their own food using water, carbon dioxide, and light through a process called photosynthesis. Some of the earliest fossils found have been aged at 3.8 billion years. These fossil deposits show evidence of photosynthesis, so plants, or the plant like structure ancestors of plants, have lived on this planet longer that of other groups of organism. At one time, anything considered to be a plant. Now plants are divided into several kingdoms: Protista, Fungi and Plantae. Most aquatic plants occur in the kingdoms Plantae and Protista.

D.FISH

Fish (plural: fish or fishes) are an aquatic group of vertebrates which live in water and respire (get oxygen) with gills. They do not have limbs, like arms or legs, and they do have digits (fingers & toes). This is a definition which does not quite work: some amphibia also live in water and have external gills, but they are not fish.

E.MAMMALS

Mammals are a group of vertebrates constituting the class Mammalia characterized by the presence of mammary glands which in females produce milk for feeding (nursing) their young, a neocortex (a region of the brain), fur or hair, and three middle ear bones. These characteristics distinguish them from reptiles (including birds) from which they diverged in the carboniferous, over 300 million years ago. Around 6,400 extant species of mammals have been described. Most mammals are intelligent, with some possessing large brains, self-awareness, and tool use.

A) BIRDS

BAYA WEAVER

COMMON ENGLISH NAME: BAYA WEAVER
SCIENTIFIC NAME: PLOCEUS PHILIPPINUS
BENGALI NAME: BABUI

1) DISTRIBUTION:

The baya weaver is a weaverbird found across the Indian Subcontinent and Southeast Asia.

2) **CHARATERISTICS:**

A widespread weaver that is known for its nest-a long hanging nest with a bulbous chamber and a narrow tubular

Breeding males have yellow forehead and crown, a dark throat that contrasts with yellow underparts.

GRASSHOPPER

Grasshopper is a plant eating insects with long hind legs which they use for producing a chirping sound frequently found in grassy places and low vegetation.

Class: Insecta.
Order: Orthoptera.
Kingdom: Animalia.
Phylum: Arthropoda.
Colour: green.
Size: 1 to 7 cm in length.
Family: Acrididae.
Scientific name: Caelifera
Other physical feature: Ectothermic.

HABITAT:

Most grasshoppers prefer dry open habitats with lots of grass and small plants. They are generally found in temperate, tropical and terrestrial barriers.

PRIMARY DIET:

Grasshoppers are primarily harbivores. They mostly eat leaves, flowers, stems etc.

SPECIAL CHARACTERISTICS:

Grasshoppers use their chirping ability to give them a boost into the air but mostly are pretty strong flies and make good use of their wings to escape predators.

C.PLANTS

PETUNIA HYBRIDA

Division: Tracheophyta.(vascular plant)
Kingdom: Plantae
Class: Magnoliapsida (flowring plants)
Genus: Petunia;Juss.

POINTS OF IDENTIFICATION:

Taproot and branched.
Stem green, hairy, herbaceous and branched.
Leaves simple, exstipulate, reticulate venation.
Flowers pentamerous, regular, bisexual.
It is a cultivated, annual ornamental plant. The plant is a herb, attaining a height of 2-3 feet.

D. FISH

Fish used to be a class of vertebrates. Now the term covers five classes of aquatic vertebrates:

Jawless fish
Armoured fish
Cartilaginous fish
Ray-finned fish
Lobe-finned fish

There are more fish than tetrapods (land vertebrates): there are over 33,000 described species of fish. Fish are usually covered with scales. They have two sets of paired fins and several unpaired fins. Most fish are cold-blooded . A fish takes in the oxygen from the water using gills. There are many different kinds of fish. They live in fresh water in lakes and rivers, and in salt water in the ocean. Some fish are less than one centimeter long. The largest fish is the whale shark, which can be almost 15 meters long and weigh 15 tons. Most fish live in the water. A group of fish called the lungfish have developed lungs because they live in rivers and pools which dry up in certain parts of the year. They burrow into mud and aestivate until the water returns.

REEF FISH

Reef fish also have flat bodies, and their body is often highly coloured. Flat bodies can slip in and out among the corals, sponges, and rocks, avoiding predators. Angelfish, surgeonfish, and butterflyfish are examples.

FISH AS FOOD

Some people eat many different kinds of fish. These include carp, cod, herring, perch, sardines, sturgeon, tilapia, trout, tuna, and many others. A person who buys and sells fish for eating is called a fishmonger.

The word to fish is also used for the activity of catching fishes. People catch fish with small nets from the side of the water or from small boats, or with big nets from big boats. People can also catch fish with fishing poles and fishhooks with bait. This is often called angling. Anglers also different types of fishing lures.

Because people are catching too many fish for food or other uses, there are less and less fish in the sea. This is a problem known as Overfishing.

FISH AS PETS

Selective breeding of carp made them into the domesticated koi in Japan, and goldfish in China. This breeding began over 2,000 years ago. The Chinese brought their goldfish indoors during the Song Dynasty. They kept them in large ceramic vessels. That we now do in glass fish tanks.

FRESHWATER FISH

41% of all fish live in freshwater. There are also some important fish which breed in rivers, and spend the rest of their life in the seas. Examples are salmon, trout, the sea lamprey,[8] and three-spined stickleback. Some other fish are born in salt water, but live most of their adult lives in fresh water: for example the eels. Species like these change their physiology to cope with the amount of salt in the water.

E. MAMMALS

ROYAL BENGAL TIGER

The Bengal tiger is a population of the Panthera tigris tigris subspecies. It ranks among the biggest wild cats alive today. It is considered to belong to the world's charismatic megafauna. The Bengal tiger's coat is yellow to light orange, with stripes ranging from dark brown to black; the belly and the interior parts of the limbs are white, and the tail is orange with black rings. The white tiger is a recessive mutant, which is reported in the wild from time to time in Assam, Bengal and Bihar.

ONE HORNED RHINO

The Indian rhinoceros (Rhinoceros unicornis), also called the Indian rhino, greater one-horned rhinoceros or great Indian rhinoceros, is a rhinoceros species native to the Indian subcontinent. As a result of habitat destruction and climatic changes its range has gradually been reduced so that by the 19th century, it only survived in the Terai grasslands of southern Nepal, northern Uttar Pradesh, northern Bihar, northern West Bengal, and in the Brahmaputra valley of Assam.

BIBLIOGRAPHY:

I have taken help from the following sites:

https://en.m.wikipedia.org/wiki/Bird

https://en.m.wikipedia.org/wiki/Fish

https://en.m.wikipedia.org/wiki/Insect

https://en.m.wikipedia.org/wiki/Mammal

https://en.m.wikipedia.org/wiki/Plant

BOOKS:

(1) Dr. Bala-Sujan Kumar- Environmental Studies, Model Field and Project Work.

(2) Kaushik Anubha, Kaushik C.P. New Age International Publishers.

(3) Singh Savindra- Environmental Geography- Allahabad, Pravalika.

ACKNOWLEDGEMENT

We would like to thank our ENVS teacher, Ms. Mahua Dutta for giving us this golden opportunity to delve more into the world of flowers and birds. We have been able to increase our knowledge as well as learn better teamwork due to this project. We would also like to express our gratitude to all the people who have made this project successful by helping us in various ways. Thank you.

GOKHALE MEMORIAL GIRL' COLLEGE

UNIVERSITY OF CALCUTTA

ROLL NO.: 213013-11-0064

REGISTRATION NO.: 013-1211-0208-21

ENVS PROJECT : STUDY OF COMMON

BIRDS, PLANTS, INSECTS & MAMMALS

CONTENT

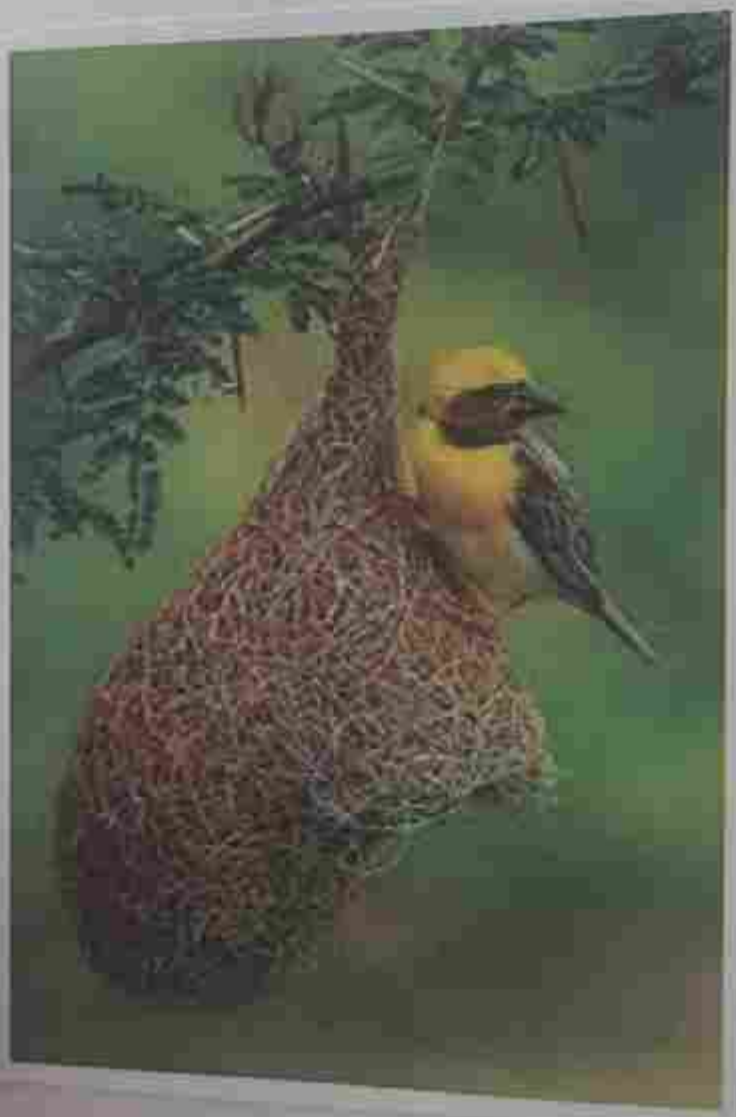
INTRO)DUCTION

Birds are a group of warm blooded vertebrates constituting the class aves characterised by feathers, toothless beaked jaws the laying of hard shelled eggs, a high metabolic rate, a four chambered heart and a strong yet light weight skeleton. Insects on the other hand are generally considered the most successful group of living organisms on earth. Insects are the largest group within the arthroped phyllum. Insects have a chitinous exoskeleton a three paird body three pairs of jointed legs compound eyes and a pair of antennae. Plants are critical to other life on earth because they form the basis of all food webs. Most plants are auto-trophic creating their own food using water, carbon dioxide and light through a process called photosynthesis. Fish are an aquatic group of vertebrates which live in water and respire with gills. They do not have limbs but they do have digits. Mammals are a group of vertebrates constituting the class Mammalia characterised by the presence of mammary glands which in females produce milk for feeding their young. These characteristics distinguish them from reptiles.

SPARROW

- Scientific Name : Passeridae
- Common English Name : Sparrow
- Bengali Name : Chorai

It is native to Eurasia and N. Africa and was introduced in S. Africa, N and S America, Australia, New Zealand, India and central Asia where its population thrived under a variety of environmental and climatic conditions. 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.



BAYA WEAVER

- Common English Name : Baya weaver
- Scientific Name : Ploceus Philippinus
- Bengali Name : Babui

The Baya weaver is a weaver bird found across the Indian subcontinent and southeast Asia. A widespread weaver that is known for its nest a long hanging nest with a bulbous chamber and a narrow tubular. Breeding males have yellow forehead and a creamy a darker throat that contrasts with yellow underparts.

MUSHROOM

It is a fleshy saprophytic fungus which grows on dumps of wood, trunks of trees and on decaying organic matter. The fungal body consists of two parts Somatic and reproductive. Primary mycelium produced from basidiospore is septate, haploid, short lived and monokaryotic. Secondary mycelium is a dikaryotic and long lived. A mass of hyphae is interwoven to form a rhizomorph. Mushrooms main body is umbrella shaped called fruitification or fruiting body which is an aerial part called Basidiocarp

PETUNIA

- Division : Tracheophyta
- Kingdom : Plantae
- Class : Magnoliopsida
- Genus : Jussi, Petunia

Points of identification :

- Taproot and branched
- Stem green, hairy, herbaceous and branched.
- Leaves simple, exstipulate
- Flowers pentamerous, regular and bisexual
- It is a cultivated, annual ornamental plant. The plant is erect, attaining a height of 2-3 feet.

BUTTERFLY

Butterflies are a large group of insects, belonging to the order "Lepidoptera" which means "Scaly wing" They are characterised by their large often colourful wings and by their proboscis which they use to suck flower nectar. Like all other insects butterflies have six legs and three main body parts : head, thorax and abdomen. They also have two antennae and an exoskeleton. Butterflies mostly eat nectar and water. Camouflage - a production colouring that enables butterflies to blend with its environmental thus hiding from its predators. This birds special characteristics.

beetles w
which ar
commonly
rns for
during th
temperate
organs a
are noctu
They are S

FIREFLY

The lampyridae are a family of elateroid beetles with more than 2,000 described species, many of which are light emitting. They are soft bodied beetles commonly called fireflies, lightning bugs, or glowworms for their conspicuous production of light mainly during twilight. They are found in most tropical and temperate regions that have special light producing organs on the underside of the abdomen. Most fireflies are nocturnal, although some species are diurnal. They are soft bodied beetles.

FISH

Fish is not a formal taxonomic grouping in systematic biology - Amphibians, reptiles, birds and mammals all descended from lobe finned fish But the use of the term fish is so convenient that we go on using it - Fish are the oldest vertebrate group - The term includes a huge range of types from the middle ordovician about 490 million years ago to the present day

FLAT FISH

Flatfish live on the bottom of the ocean or lake - Most use camouflage : they change colours to match the ocean floor During their early lives their eyes move to the upper side of their body.

REEF FISH

Reef fish also have flat bodies.

Their bodies often highly coloured. Flat bodies can slip in and out among the corals, sponges and rocks avoiding predators. Angelfish, Surgeon fish and butterfly fish are examples.

FRESH WATER FISH

41% of all fish live in fresh-water. There are also some important fish which breed in rivers and spend the rest of their life in the seas. Examples are Salmon, trout sea lamprey etc. Some others are salt water fish like eels.

ROYAL BENGAL TIGER

The Bengal Tiger is a population of the Panthera Tigris tigris Subspecies. It ranked among the biggest wild cats alive today. It is considered to belong to the world's charismatic megafauna. The Bengal tiger's coat is yellow to light orange, with stripes ranging from dark brown to black; the belly and the interior parts of the limbs are white and the tail is orange with black rings. The white tiger is a recessive mutant which is separated in the wild from time to time in Assam, Bengal and Bihar.

ELEPHANT

The Asian Elephant (Elephas maximus)

known as the Asiatic elephant is the only living
es of the genus elephas and is distributed
ghout the Indian subcontinent and South east Asia
India in the west, Nepal in the north, Sumatra
South east to Borneo in the east. The Asian
ant is the largest living land animal in Asia

CONCLUSION

Birds spatial distribution are directly affected by global warming and subsequently climate change In general terms it has been stated by the Scientific community that the distribution of species have been moving in a polewards trend. Insects play many important roles in nature - they aid bacteria, fungi and other organisms in the decomposition of organic matter and in soil formation. Each plant is characterised by one of the three life histories; haploid, diploid or the most common haploid - diploid - Mammals play a vital role in maintaining the atmosphere on earth through their reproduction pattern and gestation period they come together controlling the ecosystem. Fish are a vital part of the ecosystem too. Fish play an important role in nutrient cycles in the ecosystem.

ACKNOWLEDGEMENT

I would like to thank our EVS
teacher, Miss Mahua Datta for giving us the golden opportu-
-nity to delve more into the world of birds and flowers
We have been able to increase our knowledge as well
as learn better team work. Due to this project. We
rather I would also like to express my gratitude
to all the people including friends, teachers and
parents who have made this project successful by
helping us in various ways.

Thank You

PROJECT

(STUDY OF COMMON PLANTS, INSECTS, FISH BIRDS, MAMMALS AND BASIC PRINCIPLES OF IDENTIFICATION)

ENVIRONMENTAL STUDY

NAME: ANUSHKA NIYOGI

REGISTRATION NO: 013-1211-0215-21

ROLL NO: 213013-11-0071

COLLEGE ROLL NO: 21/BSCH/0205

INTRODUCTION

A.BIRDS

Birds are a group of warm-blooded vertebrates constitutin the class Aves characterised by feathers, toothless beaked jaws, the laying of hard-shelled eggs, a high metabolic rate, a four-chambered heart, and a strong yet lightweight skeleton. Birds live worldwide and range in size from the 5.5 cm (2.2 in) bee hummingbird to the 2.8 m (9 ft 2 in) ostrich. There are about ten thousand living species, more than half of which are passerine, or "perching" birds. Birds have wings whose development varies according to species; the only known groups without wings are the extinct moa and elephant birds. Wings, which evolved from forelimbs, gave birds the ability to fly, although further evolution has led to the birds including ratites, penguins, and diverse endemic island species. The digestive and respiratory systems of birds are also uniquely adapted for flight. Some bird species of aquatic environments, particularly seabirds and some waterbirds, have further evolved for swimming.

B.INSECTS

Insects are generally considered the most successful group of living organisms on Ear th. Insects are the largest group within the anthoped phylum. Insects have a chitinous exosheletion, a three point body, three points of jointed legs, compand eyes and are pain of antennae. Insects are adoptal creatures that live in almost every habitat on earth while some insects do live in water but 97% of insect habitat are on land.

C.PLANTS

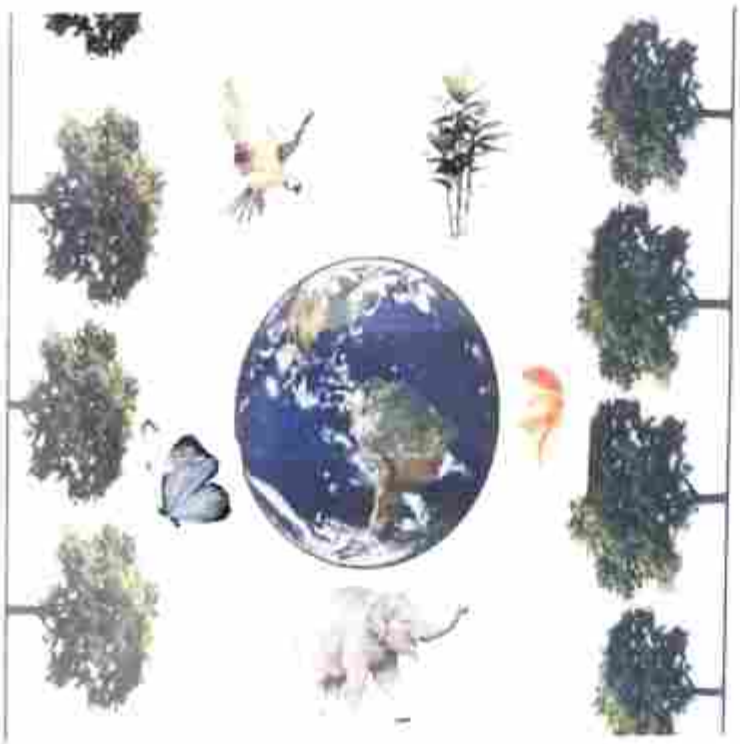
Plants are critical to other life on earth because they form the basis of all food webs. Most plants are autotrophic, creating their own food using water, carbon dioxide, and light through a process called photosynthesis. Some of the earliest fossils found have been aged at 3.8 billion years. These fossil deposits show evidence of photosynthesis, so plants, or the plant like structure ancestors of plants, have lived on this planet longer that of other groups of organism. At one time, anything considered to be a plant. Now plants are divided into several kingdoms: Protista, Fungi and Plantae. Most aquatic plants occur in the kingdoms Plantae and Protista.

D.FISH

Fish (plural: fish or fishes) are an aquatic group of vertebrates which live in water and respire (get oxygen) with gills. They do not have limbs, like arms or legs, and they do have digits (fingers & toes). This is a definition which does not quite work: some amphibia also live in water and have external gills, but they are not fish.

E.MAMMALS

Mammals are a group of vertebrates constituting the class Mammalia characterized by the presence of mammary glands which in females produce milk for feeding (nursing) their young, a neocortex (a region of the brain), fur or hair, and three middle ear bones. These characteristics distinguish them from reptiles (including birds) from which they diverged in the carboniferous, over 300 million years ago. Around 6,400 extant species of mammals have been described. Most mammals are intelligent, with some possessing large brains, self-awareness, and tool use.



SPARROW

- SCIENTIFIC NAME: PASSERIDAE
- COMMON ENGLISH NAME: SPARROW
- BENGALI NAME: CHORAI

1) DISTRIBUTION:

- It is native to Eurasia and North Africa, and was introduced to South Africa, North and South America, Australia, New Zealand, Middle East, India and Central Asia, where its population thrived under a variety of environmental and climatic conditions.

2) CHARACTERISTICS:

- 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.

B) INSECTS

BUTTERFLY

Butterflies are a large group of insects, belonging to the order "Lepidoptera", which means "scaly wing". They are characterized by their large, often colorful wings and by their proboscis, which they use to suck flower nectar.

- *Class: Insecta.*
- *Kingdom: Animalia.*
- *Order: Lepidoptera.*
- *Phylum: Arthropoda*
- *Class: insects.*
- *Scientific name: Rhopalocera.*
- *Life span: 15-29 days*
- *Size: 1/8 inch to 12 inches.*
- *Colour : White, red, green etc (can be of any colour).*
- *Family: Pieridae, Riodinidae etc.*

STRUCTURE:

Like all other insects, butterflies have six legs and three main body parts: head, thorax (chest or mid section) and abdomen (tail end). They also have two antennae and an exoskeleton.

HABITAT:

Butterflies live in different habitats, including mangroves, salt marshes, lowland forests, sand dunes, wetlands, mountainous regions and grasslands.

PRIMARY DIET:

Butterflies mostly eat nectar and water. Each butterfly species prefer a specific plant but they will feed wherever food is available.

SPECIAL CHARACTERISTICS:

Camouflage- A productive colouring that enables butterflies to blend in with its environmental thus hiding from its predator.

C.PLANTS

PETUNIA HYBRIDA

- *Division: Tracheophyta.(vascular plant)*
- *Kingdom: Plantae*
- *Class: Magnoliapsida (flowring plants)*
- *Genus: Petunia;Juss.*

POINTS OF IDENTIFICATION:

- *Taproot and branched.*
- *Stem green, hairy, herbaceous and branched.*
- *Leaves simple, exstipulate, reticulate venation.*
- *Flowers pentamerous, regular, bisexual.*
- *It is a cultivated, annual ornamental plant. The plant is a herb, attaining a height of 2-3 feet.*

D. FISH

Fish used to be a class of vertebrates. Now the term covers five classes of aquatic vertebrates:

- *Jawless fish*
- *Armoured fish*
- *Cartilaginous fish*
- *Ray-finned fish*
- *Lobe-finned fish*

There are more fish than tetrapods (land vertebrates): there are over 33,000 described species of fish. Fish are usually covered with scales. They have two sets of paired fins and several unpaired fins. Most fish are cold-blooded . A fish takes in the oxygen from the water using gills. There are many different kinds of fish. They live in fresh water in lakes and rivers, and in salt water in the ocean. Some fish are less than one centimeter long. The largest fish is the whale shark, which can be almost 15 meters long and weigh 15 tons. Most fish live in the water. A group of fish called the lungfish have developed lungs because they live in rivers and pools which dry up in certain parts of the year. They burrow into mud and aestivate until the water returns.

E. MAMMALS

ROYAL BENGAL TIGER

The Bengal tiger is a population of the Panthera tigris tigris subspecies. It ranks among the biggest wild cats alive today. It is considered to belong to the world's charismatic megafauna. The Bengal tiger's coat is yellow to light orange, with stripes ranging from dark brown to black; the belly and the interior parts of the limbs are white, and the tail is orange with black rings. The white tiger is a recessive mutant, which is reported in the wild from time to time in Assam, Bengal and Bihar.

ONE HORNED RHINO

The Indian rhinoceros (Rhinoceros unicornis), also called the Indian rhino, greater one-horned rhinoceros or great Indian rhinoceros, is a rhinoceros species native to the Indian subcontinent. As a result of habitat destruction and climatic changes its range has gradually been reduced so that by the 19th century, it only survived in the Terai grasslands of southern Nepal, northern Uttar Pradesh, northern Bihar, northern West Bengal, and in the Brahmaputra valley of Assam.

ACKNOWLEDGEMENT

We would like to thank our ENVS teacher, Ms. Mahua Dutta for giving us this golden opportunity to delve more into the world of flowers and birds. We have been able to increase our knowledge as well as learn better teamwork due to this project. We would also like to express our gratitude to all the people who have made this project successful by helping us in various ways. Thank you.

PROJECT

(STUDY OF COMMON PLANTS, INSECTS, FISH BIRDS, MAMMALS AND BASIC PRINCIPLES OF IDENTIFICATION)

ENVIRONMENTAL STUDY

NAME: SOUMI KAYAL

REGISTRATION NO: 013-1212-0166-21

ROLL NO: 213013-11-0082

COLLEGE ROLL NO: 21/BSCH/0140

INTRODUCTION

A.BIRDS

Birds are a group of warm-blooded vertebrates constitutin the class Aves characterised by feathers, toothless beaked jaws, the laying of hard-shelled eggs, a high metabolic rate, a four-chambered heart, and a strong yet lightweight skeleton. Birds live worldwide and range in size from the 5.5 cm (2.2 in) bee hummingbird to the 2.8 m (9 ft 2 in) ostrich. There are about ten thousand living species, more than half of which are passerine, or "perching" birds. Birds have wings whose development varies according to species; the only known groups without wings are the extinct moa and elephant birds. Wings, which evolved from forelimbs, gave birds the ability to fly, although further evolution has led to the birds including ratites, penguins, and diverse endemic island species. The digestive and respiratory systems of birds are also uniquely adapted for flight. Some bird species of aquatic environments, particularly seabirds and some waterbirds, have further evolved for swimming.

B.INSECTS

Insects are generally considered the most successful group of living organisms on Earth. Insects are the largest group within the anthoped phylum. Insects have a chitinous exosheletion, a three point body, three points of jointed legs, compand eyes and are pain of antennae. Insects are adoptal creatures that live in almost every habitat on earth while some insects do live in water but 97% of insect habitat are on land.

C.PLANTS

Plants are critical to other life on earth because they form the basis of all food webs. Most plants are autotrophic, creating their own food using water, carbon dioxide, and light through a process called photosynthesis. Some of the earliest fossils found have been aged at 3.8 billion years. These fossil deposits show evidence of photosynthesis, so plants, or the plant like structure ancestors of plants, have lived on this planet longer that of other groups of organism. At one time, anything considered to be a plant. Now plants are divided into several kingdoms: Protista, Fungi and Plantae. Most aquatic plants occur in the kingdoms Plantae and Protista.

D.FISH

Fish (plural: fish or fishes) are an aquatic group of vertebrates which live in water and respire (get oxygen) with gills. They do not have limbs, like arms or legs, and they do have digits (fingers & toes). This is a definition which does not quite work: some amphibia also live in water and have external gills, but they are not fish.

E.MAMMALS

Mammals are a group of vertebrates constituting the class Mammalia characterized by the presence of mammary glands which in females produce milk for feeding (nursing) their young, a neocortex (a region of the brain), fur or hair, and three middle ear bones. These characteristics distinguish them from reptiles (including birds) from which they diverged in the carboniferous, over 300 million years ago. Around 6,400 extant species of mammals have been described. Most mammals are intelligent, with some possessing large brains, self-awareness, and tool use.

A) BIRDS

BAYA WEAVER

COMMON ENGLISH NAME: BAYA WEAVER
SCIENTIFIC NAME: PLOCEUS PHILIPPINUS
BENGALI NAME: BABUI

1) DISTRIBUTION:

The baya weaver is a weaverbird found across the Indian Subcontinent and Southeast Asia.

2) **CHARATERISTICS:**

A widespread weaver that is known for its nest-a long hanging nest with a bulbous chamber and a narrow tubular

Breeding males have yellow forehead and crown, a dark throat that contrasts with yellow underparts.

GRASSHOPPER

Grasshopper is a plant eating insects with long hind legs which they use for producing a chirping sound frequently found in grassy places and low vegetation.

Class: Insecta.
Order: Orthoptera.
Kingdom: Animalia.
Phylum: Arthropoda.
Colour: green.
Size: 1 to 7 cm in length.
Family: Acrididae.
Scientific name: Caelifera
Other physical feature: Ectothermic.

HABITAT:

Most grasshoppers prefer dry open habitats with lots of grass and small plants. They are generally found in temperate, tropical and terrestrial barriers.

PRIMARY DIET:

Grasshoppers are primarily harbivores. They mostly eat leaves, flowers, stems etc.

SPECIAL CHARACTERISTICS:

Grasshoppers use their chirping ability to give them a boost into the air but mostly are pretty strong flies and make good use of their wings to escape predators.

C.PLANTS

PETUNIA HYBRIDA

Division: Tracheophyta.(vascular plant)
Kingdom: Plantae
Class: Magnoliapsida (flowring plants)
Genus: Petunia;Juss.

POINTS OF IDENTIFICATION:

Taproot and branched.
Stem green, hairy, herbaceous and branched.
Leaves simple, exstipulate, reticulate venation.
Flowers pentamerous, regular, bisexual.
It is a cultivated, annual ornamental plant. The plant is a herb, attaining a height of 2-3 feet.

D. FISH

Fish used to be a class of vertebrates. Now the term covers five classes of aquatic vertebrates:

Jawless fish
Armoured fish
Cartilaginous fish
Ray-finned fish
Lobe-finned fish

There are more fish than tetrapods (land vertebrates): there are over 33,000 described species of fish. Fish are usually covered with scales. They have two sets of paired fins and several unpaired fins. Most fish are cold-blooded . A fish takes in the oxygen from the water using gills. There are many different kinds of fish. They live in fresh water in lakes and rivers, and in salt water in the ocean. Some fish are less than one centimeter long. The largest fish is the whale shark, which can be almost 15 meters long and weigh 15 tons. Most fish live in the water. A group of fish called the lungfish have developed lungs because they live in rivers and pools which dry up in certain parts of the year. They burrow into mud and aestivate until the water returns.

REEF FISH

Reef fish also have flat bodies, and their body is often highly coloured. Flat bodies can slip in and out among the corals, sponges, and rocks, avoiding predators. Angelfish, surgeonfish, and butterflyfish are examples.

FISH AS FOOD

Some people eat many different kinds of fish. These include carp, cod, herring, perch, sardines, sturgeon, tilapia, trout, tuna, and many others. A person who buys and sells fish for eating is called a fishmonger.

The word to fish is also used for the activity of catching fishes. People catch fish with small nets from the side of the water or from small boats, or with big nets from big boats. People can also catch fish with fishing poles and fishhooks with bait. This is often called angling. Anglers also different types of fishing lures.

Because people are catching too many fish for food or other uses, there are less and less fish in the sea. This is a problem known as Overfishing.

FISH AS PETS

Selective breeding of carp made them into the domesticated koi in Japan, and goldfish in China. This breeding began over 2,000 years ago. The Chinese brought their goldfish indoors during the Song Dynasty. They kept them in large ceramic vessels. That we now do in glass fish tanks.

FRESHWATER FISH

41% of all fish live in freshwater. There are also some important fish which breed in rivers, and spend the rest of their life in the seas. Examples are salmon, trout, the sea lamprey,[8] and three-spined stickleback. Some other fish are born in salt water, but live most of their adult lives in fresh water: for example the eels. Species like these change their physiology to cope with the amount of salt in the water.

E. MAMMALS

ROYAL BENGAL TIGER

The Bengal tiger is a population of the Panthera tigris tigris subspecies. It ranks among the biggest wild cats alive today. It is considered to belong to the world's charismatic megafauna. The Bengal tiger's coat is yellow to light orange, with stripes ranging from dark brown to black; the belly and the interior parts of the limbs are white, and the tail is orange with black rings. The white tiger is a recessive mutant, which is reported in the wild from time to time in Assam, Bengal and Bihar.

ONE HORNED RHINO

The Indian rhinoceros (Rhinoceros unicornis), also called the Indian rhino, greater one-horned rhinoceros or great Indian rhinoceros, is a rhinoceros species native to the Indian subcontinent. As a result of habitat destruction and climatic changes its range has gradually been reduced so that by the 19th century, it only survived in the Terai grasslands of southern Nepal, northern Uttar Pradesh, northern Bihar, northern West Bengal, and in the Brahmaputra valley of Assam.

BIBLIOGRAPHY:

I have taken help from the following sites:

https://en.m.wikipedia.org/wiki/Bird

https://en.m.wikipedia.org/wiki/Fish

https://en.m.wikipedia.org/wiki/Insect

https://en.m.wikipedia.org/wiki/Mammal

https://en.m.wikipedia.org/wiki/Plant

BOOKS:

(1) Dr. Bala-Sujan Kumar- Environmental Studies, Model Field and Project Work.

(2) Kaushik Anubha, Kaushik C.P. New Age International Publishers.

(3) Singh Savindra- Environmental Geography- Allahabad, Pravalika.

ACKNOWLEDGEMENT

We would like to thank our ENVS teacher, Ms. Mahua Dutta for giving us this golden opportunity to delve more into the world of flowers and birds. We have been able to increase our knowledge as well as learn better teamwork due to this project. We would also like to express our gratitude to all the people who have made this project successful by helping us in various ways. Thank you.