Theory

46
TYCM

Saathi

Date __/__/____

2 : Ecosystem and Biodiversity

★ Introduction –

- An ecosystem is a community of living organism in conjunction with the nonliving component of their environment, interacting as a system.

- These biotic and abiotic components are regarded as linked together through nutrient cycle and energy flows.

- As ecosystems are defined by the network of interactions among organisms, and between organism and their environment, they can be of any size but usually encompass specific, limited spaces.

- Ecosystem are controlled both by external and internal factor. External factors such as climate, the parent material which form the soil and topography, control the overall structure of an ecosystem and the way things works within it, but are not themselves influenced by ecosystem.

- They also influence the quantity of plants. By breaking down dead organic matter, decomposer release carbon back to atmosphere and facilitate nutrient cycling by converting nutrient stored in dead biomass back to a form that can be readily used by plants and other microbes

Date __/__/____

Saathi

* Ecosystem types —

1] Aquatic ecosystem
   a] Marine ecosystem
      i] Large marine ecosystem
   b] Freshwater ecosystem
      i] Lake ecosystem
      ii] River ecosystem
      iii] Wetland

2] Terrestrial ecosystem
   a] Forest
   b] Littoral Zone
   c] Riparian Zone
   d] Subspace lithoautotropic microbial ecosystem
   e] Urban ecosystem
   f] Desert

* Ponds Project -

A pond is different from river. River are generally Fast flowing. Pond are hollows with water in them. There is very little water flow in a pond. The pond at Roe Valley Country Park has been there for a very long time. Old map as far back as 1782 shows the pond. It is thought to have been a quarry From which the stones to build limavady town were taken By the year 2000 the pond had been neglected For a long time. It was completely choked with dead leaves.

Date __/__/____

Saathi

The pond was cleared out. Water plants were replanted and wildife encouraged to develop in the Pond.

a] Habitat and Biodiversity:
At one time there were many ponds then we have today. Farmers need ponds for their cattle. They now have piped water. This has reduced the habitat available to wildlife. This means that many creature will become rare. Our native biodiversity is becoming weak due to lack of pond habitat

b] Safety:
Ponds are very interesting place to study. They are also very dangerous. Steep sides and mud at the bottom can make even the shallowest water dangerous. Your visit to pond will have been very carefully Supervised.

c] Pond Plants:

1] Plankton and Algae:
The smallest plant in ponds are plankton. These are so tiny that they cannot be seen except with a microscope. They provide for many of smaller creature in pond. Another small plant is algae. This can Sometimes be seen floating on ponds as what looks like a green scum. Algae can become a problem in some ponds. Farmers use chemical called nitrate and phosphates as fertilizer.

Date __/__/____

Saathi

* Ecosystem types —

1] Aquatic ecosystem
a] Marine ecosystem
  i] Large marine ecosystem
b] Freshwater ecosystem
  i] Lake ecosystem
  ii] River ecosystem
  iii] Wetland

2] Terrestrial ecosystem
a] Forest
b] Littoral Zone
c] Riparian Zone
d] Subspace lithoautotropic microbial ecosystem
e] Urban ecosystem
f] Desert

* Ponds Project -

A pond is different from river. River are generally Fast flowing. Pond are hollows with water in them There is very little water flow in a pond. The pond at Rye Valley Country Park has been there For a very long time. Old map as far back as 1782 shows the pond. It is thought to have been a quarry From which the stones to build Hinwick town were taken. By the year 2000 the pond had been neglected For a long time. It was completely choked with dead leaves.

Page No.

Date __/__/____

Saathi

The pond was cleaned out. Water plants were replanted and wildife encouraged to develop in the Pond.

a] Habitat and Biddiversity:
At one time there were many ponds than we have today. Farmers need ponds for their cattle. They now have piped water. This has reduced the habitat available to wildlife. This means that many creatures will become rare. Our native biodiversity is becoming weak due to lacks of pond habitat

b] Safety:
Ponds are very interesting place to study. They are also very dangerous, steep sides and mud at the bottom can make even the shallowest water dangerous. Your visit to pond will have been very carefully Supervised.

c] Pond Plants:

1] Plankton and Algae:
The smallest plant in ponds are plankton. These are so tiny that they cannot be seen except with a microscope. They provide for many of smaller creature in pond. Another small plant is algae. This can Sometimes be seen floating on ponds as what looks like a green scum. Algae can become a problem in some ponds. Farmers use chemical called Nitrate and phosphates as Fertilizer.

Page No.

Date __/__/____

Saathi

9] Plant Succession

If you look at the pond you will see that some plants live entirely outside the water and some live entirely in it. Others are partially in water. Flowers live in wet ground around the pond. Water lilies float in the pond and are attached to the bottom by long stem. You will also see Canadian pond weed which is completely submerged under the water. Each of these plants need special adaptations to survive where they grow.

8] Pond Creatures:

1] Snail.

You will find many snail in pond. They can vary from 25 mm to 50 mm in size. Like all Snail they have hard shell. They are molluscs and are closely related to their land cousins. There are many different kinds of snail to be found in pond. The water snail floats. It has gills. The pond snail and the ramshorn snail cannot breathe underwater. All snail eat algae.

2] Water Spider:

They can be about 16mm. They are arachnids. They cannot breathe underwater. They spin a web and use it as air ball. They spend most of their time in this air bell only coming out to catch the small creature they eat.

Page No.

Date __/__/____

Saathi

3] Shrimp:

The shrimp is about 16 mm long. They have 7 or 9 pair of legs. They swim on their sides. To breathes using gills. They will not live in polluted water. Their presense means that pond is not paluted.

4] Caddis Fly Larva

They are about 20mm long. The caddis fly is moth like fly. Like many insects it has a life cycle of egg, larva, pupa and adult. The adult caddis lay it eggs in water. The larva stage make its own case from silk like material. The pupa stage also remain in case. Eventually the adult fly emerge and begins its life.

5] Beetle Larva

Many insects have part of there life cycle in water. Dragonfiles, Damsel Flies, Caddis flies all leave the water at the adult stage. Others remain in water. You will find various larva in water. They are large as about 50 mm when fully grown. It is fierce predator eating whatever it catch.

6] Pond Skater

Pond skater are 1st creature you will notice on water. They are about 20 mm. You will be able to tell immediately that they are insect as they have 6 legs. These hold out from the body so it can spread its weight as wide as possible. Some species of pond skater can fly other Can't.

Page No.

Saathi

Date __/__/____

7] Whirligig Beetle:
In spring time and early summer the whirligig beetle is very obvious on surface of water. You will see large number of them whirling about in the manner that gives their name. They are about 15mm long.

* Food Chain and Ecology of Pond:

All life in pond depend upon the ability of the plant to photosynthesis. The animal are then able to feed them from plant. You will be familiar with idea of food chain. e.g.

Sun → Algae → tadpole → Kingfisher

Following are the Consumer of pond habitat food chain:

1] Primary Consumers are herbivores that depend on the producer for food - example - Tadpole, snail

2] Seconday Consumer are organism which depend on primary consumer for food. Example - frog

3] Tertiary Consumer are animals which feed on primary & Secondary. example - duck, Crane

4] Top Consumer are predater which include the osprey, fish Hawks and human.

Page No.