



Biodiversity is the condition where different species of plants and animals, live together and depend on each other in the same habitat.

In the ecosystem there are different species of plants and animals which depend on one another.

Let us take the example of a simple food chain:

Planktons - Small Crustaceans - Fish - Man



The planktons are consumed as food by the crustaceans, which in turn are consumed by fish. These fish are consumed by man. Thus, if we look at this food chain closely, man who is at the top of the food chain, is indirectly dependent on planktons though he does not consume them directly. If the planktons are not available, the crustaceans cannot survive, and if crustaceans are wiped out the fish do not get their food and they die, thus affecting man. Biodiversity is very essential for maintaining the balance of nature or the ecological balance.

e.g. Rats feed on grains. The rats in turn are consumed by snakes. In other words the snakes help in maintaining a check on the rats which are a menace to farmers because they destroy grains. At the same time, the population of the snakes should also be kept under check. This is done by eagles which feed on the snakes. Thus we see that every species of animal plays an important role in maintaining the ecological balance.

Disadvantages of monoculture

Monoculture causes a lot of ecological problems. Monoculture consists of only one type or species.

Many plant pests have very specific requirements for their food and so they attack only one variety of plants; e.g. wheat. Traditional agriculture mixes varieties of plants, and thus each field will have some resistant and some vulnerable or susceptible plants. If the crops are attacked, only some of them will be affected. In modern agriculture this type of mixed cropping is not being practiced. Sometimes, the entire district cultivates the same variety, thus making all the crops in the district vulnerable to pests.

Why Biodiversity?

There are different levels in an ecosystem. The following are the levels:

- Plants
- Animals
- Scavengers

Plants produce their own food, whereas animals cannot do so and have to depend on plants. When plants and animals die, they are consumed by bacteria, which are known as the decomposers. In this particular hierarchy every animal plays an important role. The nutrients from the soil are recycled and the recycling can be complete only if the bacteria and other decomposers act on the dead organic matter.

Role of Small Animals and Insects in Biodiversity

Pollination: Pollination is a process by which plants propagate their species.

Small animals and insects play an important role in Pollination. Insect pollination results in a uniform crop and, in some cases, an improvement of quality of the fruit. A very good example of an insect which is a good pollinator is the honey bee.

The members of a colony of honey bees visit about 100 flowers during a field trip and make about four million field trips every year. Fruit crops like apple, strawberry, lime, grapes, papaya and vegetables like lady's finger, brinjal, tomato and crops like cotton, alfa alfa, etc., depend on honey bees for pollination.

The value of honey bees in the pollination of crops is 15-20 times that of the honey and bee wax it produces.

If a colony has crops worth Rs.10/- the visit of the bees from the colony would have increased the crop yields to the value of Rs.100/- or Rs.150/- more than what the farmer would have got without bees. In Coimbatore it has been found that visits by honey bees has resulted in increased yields ranging from 23%-53% in cotton.

Predators and Parasites

Some insects are very valuable to man because they kill the insect pests feeding on the crops.

Examples:

- Mud wasps feed on caterpillars
- Ants feed on various types of insects
- Birds feed on insects, thus protecting the crop. It is always necessary therefore to grow trees in fields along the bunds, to enable birds to nest in them and feed on the insects in the field.

Birds are helpful in so many ways. They help in pollination, they feed on insect pests and prevent the crops from being destroyed. Similarly, snakes are very useful in the control of rodents in the field, which destroy huge quantities of grains.

Insects as Weed Killers

Some of the insects feed on menacing weeds and destroy them and so they are considered helpful to man. In many cases the presence of these insects has led to the complete eradication of the weed or at least in keeping it under check.

e.g.The grasshopper feeds on a variety of weeds.

Insects as Soil Builders

Some insects like ants, bees, larvae, flies, crickets, and earthworms are found in the soil. Ants, termites, bees and wasps build terrestrial nests and during the process of making tunnels and burrowing into the soil the soil particles get disintegrated. Soil aeration is facilitated. Sub-soil is brought to the surface resulting in the turning of the soil and the soil is enriched by addition of insect saliva. The excreta and the bodies of dead insects also enrich the soil. The earthworm also plays a very important role in soil building, in fact the earthworm is known as the "friend of the farmer".

Insects as scavengers

These are insects which feed upon the dead and decaying plant and animal matter. Since insects help to remove from the earth's surface the dead and decomposing bodies, which could otherwise be a health hazard, they are referred to as scavengers. In addition to cleaning the filth from human habitations, these insects help to convert dead bodies into simpler organic substances, before returning them to the soil where they become easily available as food for growing plants. e.g. termites, maggot of flies, larvae and adults of beetles, etc.

Thus we see that insects, plants, animals, bacteria, fungi, etc., all play a very important role in preserving the ecological balance. We can see the need for biodiversity where different organisms and plants depend on each other for survival.