

Omnivores are the consumers that eat animal flesh as well as plants and plants products.

Find examples of omnivores. |

| tertiary carnivores are not eaten by any other animals. They are also called top carnivores. |

Decomposers or reducers break down the complex organic compounds of dead matter (of plants and animals) into simple compounds. They secrete digestive enzymes into dead and decaying plant and animal remains to digest the organic material. After digestion decomposers absorb the products for their own use. The remaining substance is added to environment. Many types of bacteria and fungi are the principal decomposers of biosphere.

| the minerals which are released by decomposers are used as nutrients by the producers |

(predator 2) and the snake is preyed upon by an Eagle (predator 3).

- Certain plants (pitcher plant, sundew Venus fly trap etc.) are carnivorous and live as predators such plants live in the areas where minerals and other nutrients are lacking. They feed on insects to fulfill their nitrogen requirements. These plants have mechanism to attract insects. For example they secrete sweet nectar that attracts the insects searching for food. Their leaves are also modified to capture the prey.

Predation keeps the prey population under check, so as to maintain an ecological balance. Humans benefit from this interaction in the biological control of weeds and pests. In order to control pests in an area, their predators are released there.

Symbiosis:

It is a relationship between members of different species, in which they live together for longer or shorter periods of time.

Symbiosis is of three types.

➤ Parasitism

It is a type of symbiosis (between members of different species) in which smaller partner (parasite) derives food and shelter from the body of large partner (host) and in turn harms it.

| Host can survive without parasite but
parasite cannot survive without host | .

In temporary parasitism, the parasite spends most of its life cycle as independent free-living organisms. Only a part of its life cycle is spent as a parasite. Leech, bed bug mosquito is common temporary parasites of humans. In permanent parasitism, the parasites spend their whole life cycle as parasites. Many

Ecosystem Balance and Human Impact:

The interactions among organisms and between organisms and the abiotic components of their environment produce steady and balanced ecosystems.

Biogeochemical cycles also maintain the balance in ecosystems by recycling natural resources, so that they do not deplete.

Humans try to modify environment (e.g. cutting of trees) to fulfill their needs. This has upset the delicate balance in ecosystems and nature as well. Some of the human impact on the balance of ecosystems and nature are described next.

➤ Global Warming

The addition of greenhouse gases (e.g. carbon dioxide, methane, ozone) in atmosphere increases the temperature of the earth. These gases remain in the lowest part of Earth's atmosphere and do not allow solar radiations

Some heavy metals e.g. lead, mercury, arsenic and cadmium also make the water polluted. Such metals can be present in the water, released from industrial and urban areas. If water with such heavy metals is given to plants, the metals enter the vegetables that grow on these plants. Such contaminated vegetables are harmful for human health. Heavy metals reduce growth and development and cause cancer and nervous system damage. Mercury and lead can cause joint diseases such as rheumatoid arthritis, and diseases of kidneys, circulatory system and nervous system.

➤ Effects of water Pollution

The following are major effects of water pollution.

➤ Eutrophication

➤ Epidemics

Organic pollutants in water facilitate the growth of germs. Such polluted water causes epidemics like cholera gastro-Ent-enteritis etc.

➤ Control of water Pollution

Public should be made aware of the dangers of water pollution. Before releasing the sewage into water bodies, it must be purified through sewage treatment techniques.

Industrial wastes should also be treated before they are released into water bodies.

➤ Land Pollution

Land (soil) is an important resource as it is the basis for the growth of producers. In the recent times, soil has been subjected to pollution.

The pesticides used in agriculture have been chemicals that stay in soil for long times. The

and research for the conservation of natural resources in Pakistan.

➤ The WWF (old name is world wildlife fund but now it is called world wide fund for nature) is working on many projects related to the conservation of nature. The following are some important programmes of WWF-Pakistan (in collaboration with the government of Pakistan):

➤ Improving sub-watershed management and environmental awareness around Ayubia National Park.

➤ Plantation of the trees of jatropha and Mangroves at district Thatta, Sindh.

➤ District wise forest cover assessment of Pakistan

➤ Saving wetlands sky high programme (for the conservation and management of high altitude wetland)

➤ Indus basin water security project (to protect the water-flow needed for the maintenance