

Application of Ecology in Wildlife conservation

Wildlife' is a term that refers to animals that are not normally domesticated. They are a living resource that will die and be replaced by others of their kind. Wildlife plays an important role in balancing the environment and provides stability to different natural processes of nature. It can be found in all ecosystems, desert, rainforests, plains and other areas.

Wildlife is important for its beauty, economic, scientific and survival value. It helps to maintain the ecological balance of nature and maintains the food chain. It provides useful substances and wild animal products like ivory, leather, honey, tusk etc. Besides being a country's cultural asset it also provides aesthetic value to man. We largely depend on wildlife for every elementary requirement in our life. for eg. The clothes we wear and the medicines we consume.

Threat to wildlife:

Wildlife is under threat from many different kinds of human activities, from directly destroying habitat to spreading invasive species and disease. Most ecosystems are facing multiple threats. Each new threat puts additional stress on already weakened ecosystems and their wildlife.

Living things face a constant barrage of external stresses or threats that challenge their ability to survive and reproduce. If a species is unable to successfully cope with these threats through adaptation, they may face extinction.

A constantly changing physical environment requires organisms to adapt to new temperatures, climates, and atmospheric conditions. Living things must also deal with unexpected events such as volcanic eruptions, earthquakes, meteor strikes, fires, and hurricanes.

As new life forms arise and interact, species are further challenged to adapt to one another to deal with competition, predation, parasitism, disease, and other complex biotic processes.

In recent evolutionary history, threats facing many animals and other organisms have been driven primarily by the effects of a single species: humans. The extent to which humans have altered this planet has affected countless species and has initiated extinctions on such a vast scale that many scientists believe we are now experiencing a mass extinction (the sixth mass extinction in the history of life on earth).

Deforestation is also one of the main reasons for the loss of wildlife. Mass killings of wild animals for their meat, bones, fur, teeth, hair, skin, etc., are going on throughout the

world. Therefore, the need for wildlife conservation has now become a necessity. Population growth, expansion of agriculture and livestock raising building of cities and roads, and pollution are among the many pressures on the natural habitat of wildlife. Along with illegal hunting, habitat reduction and its degradation has threatened the biodiversity of the regions where these are rampant.

Like forests, wildlife is also a national resource, which not only helps in maintaining the ecological balance but is also beneficial from economic, recreational and aesthetic points of view. There was a time when human interference was minimum the number of wild animals was quite high and there was no problem of their protection or conservation. But, with the expansion of agriculture, settlement, industrial and other developmental activities and mainly due to greed of man, the number of wild animals gradually became lesser and lesser. With the result that several species of animals have become extinct and several, others are on the verge of being so.

Wildlife conservation:

Ecology is the study of earth systems and is integral in wildlife conservation. We cannot begin to protect an animal without knowing what is happening around it. Wildlife conservation encompasses all human activities and efforts directed to preserve wild animal from extinction. It involves both protection and scientific management of wild species. Wildlife and nature have largely being associated which humans for numerous emotional and social reasons. Wildlife plays an essential role in the ecological and biological processes that are yet again significant to life. The normal functioning of the biosphere depends on endless interaction among animals, plants and micro organisms. Wildlife has occupied a special place of veneration and preservation in various cultures of the world.

Preservation of wildlife does not mean a blanket protection to all faunal and floral species; rather, it implies a proper, judicious control over the multiplication of plants and animals, which interact together to provide a proper environment to man whose very existence is in peril today. Due to the irrational use of natural and biotic resources of the earth in the past, most of the wildlife has been destroyed beyond retrieval. It is our urgent duty to protect the natural splendor of ecosystems and to evolve a system of co-existence with every living creature upon the earth.

Although most countries of the world are very particular regarding conservation of wildlife, the number of wild animals is reducing day by day. World Wild Life Fund is the

international agency, which is doing commendable work in promoting the protection of wildlife. There are national agencies also engaged in the conservation of wildlife.

Some of the ecological steps in the direction of wildlife conservation could be as follows:

1. To survey and collect all the information about wildlife, especially, their number and growth.
2. To protect habitat by protecting forests.
3. To delimit the areas of their natural habitat.
4. To protect wildlife from pollution and from natural hazards.
5. To impose complete restriction on hunting and capturing of wildlife.
6. To impose restrictions on export and import of wildlife products and severe punishment to be given to those who indulge in this activity.
7. To develop game sanctuaries for specific wild animals or for general world life.
8. To make special arrangements to protect those species whose number is very limited.
9. To develop general awareness at national and international level regarding protection of wildlife.
10. To adopt a system of wildlife management through trained personnel.

India is a good example where several steps have been taken for wildlife conservation. It is a country of varied wildlife, where more than 500 types of wild animals, 2,100 types of birds and about 20,000 types of reptiles and fishes have been found. According to an estimate, in India, about 200 species of wild animals and birds have already become extinct and another 2,500 are on the verge of extinction. Some of them are black buck, chinkara, wolf, swamp deer, nilgai, Indian gazelle, antelope, tiger, rhinoceros, Gir lion, crocodile, flamingo, pelican, bustard, white crane, grey heron, mountain quail, etc. In India, the government and NGOs are taking keen interest in the protection of wildlife. The Wild Life Protection Act, 1972 (as amended in 2002) has several provisions for the conservation of wildlife.

India is blessed with a total of 771 Protected Areas that include 104 National Parks, 544 Wild Life Sanctuaries, 46 Community Reserves, and 77 Conservation Reserves, covers the total area **162099.47 km² (coverage 4.93% of the country)**. These protected areas have been established all over the country in order to secure the future of the endangered species.

Apart from this, a Wild Life Conservation Week is also celebrated from 7th of October every year. But still there is a long way to go in this direction.

For effective conservation of wildlife, there are three basic needs such as:

- (a) Adequate food and water,
- (b) Place of living, and
- (c) Place to breed in safety.

To achieve these, the following measures are in practice:

1. Reserve forests, national parks, sanctuaries are left unexploited. Where total un-exploitation is not possible, the cutting-operation of the forests is done in limited blocks at a time.
2. Growing of a single variety of plant is discouraged as far as possible, instead mixed vegetation is encouraged.
3. Natural opening of the forest, waterholes and riversides are guarded against poachers.
4. Control-burning of grassland, to increase forage and to preserve organic materials in the soil, is done in block with un-burnt area in between.
5. Provisions for dust-baths and artificial salt-licks are made in the forests for maintaining the normal health of the animals.
6. Grazing of domestic livestock is dangerous to wild animals, as the latter can never compete successfully with the domestic stock. Moreover, the domestic stock may be responsible for transmitting several contagious diseases. Hence, grazing by the domestic stock is avoided as far as possible.
7. Cultivation near the sanctuaries/parks is also avoided to prevent ecological-hazards due to pesticides.
8. Scientific studies by qualified personnel specially on threatened species of wild animals are encouraged in order to assess and improve their status, even by breeding them in captivity and rehabilitating them in suitable habitats.

Several such measures have been undertaken and many more are needed to halt the decline of wildlife and to create conditions in which it can flourish with its diversity in natural settings. But nothing could be fruitful without educational and publicity programmes for a change in the human-outlook, especially in the school children who are the builders of the future society.

Methods Used for the Conservation of Wildlife:

Methods of conservation of faunal and floral species are broadly classified into two methods, such as **In-situ conservation and Ex-situ conservation.**

In-situ conservation is the most appropriate method. This approach includes protection of total ecosystems through a network of Protected Areas. The common natural habitats (protected areas) that have been set for in-situ conservation of wildlife include national parks, sanctuaries, biosphere reserves, several wetlands (mangroves, coral reefs etc.), sacred groves and lakes.

Ex-situ conservation involves cultivation of rare plants and rearing of threatened animal species in zoological and botanical gardens and preservation of the plant species in the form of seeds in seed banks etc. by means of tissue-culture techniques. Individuals of the species are maintained in artificial conditions under human supervision. These methods include maintaining gene banks, pollen preservation and the most useful is the cryopreservation by with tissue culture and germ plasm conservation are made.

There are three specific objectives of conservation of wildlife as follows:

- (a) To maintain essential ecological process and life-supporting systems (air, water and soil).
- (b) To preserve the diversity of species or the range of genetic material of world's organisms.
- (c) To ensure a continuous use of species, in fact ecosystem, that support rural communities and urban industries.

Thus the conservation of wildlife has broad objective, not only concerned with biotic (plants, animals and microorganisms) but also with abiotic factors. Therefore, conservation of biodiversity is a complex operation which is specifically concerned with plants, animals and microorganisms and with these nonliving elements of the environment on which they depend.