

## **Wildlife Conservation**

**Wildlife:** Wildlife means all non-domesticated animals and plants. Or all living organisms that live in their natural habitats.

### **A. Importance of Wildlife or Values of Wildlife**

#### **1. Ecological value**

All the living organisms are inter-linked with each other and formed ecosystem. Destruction of wildlife may cause upset its balance, resulting severe consequences. Wildlife helps in dispersal of seeds, soil formation, water balance, nutrient recycling, production of oxygen, absorption of pollutants and acts gene pool for future evolutionary process etc. Thus, protection of wildlife has great importance to quality of life and survival of man himself.

#### **2. Economic value**

Wildlife can be commercially used to earn currency as they provide meat, hides, fur, horns and ivory and products used in manufacture of paints, fibers and medicines etc. Wildlife of a country may even attract people from domestic and abroad that help to earn foreign exchange. They are also worth as game and they are hunted for sport by spending money.

#### **3. Medicinal value**

Lots of wild plants and animals are sources of pharmaceutical products. For example; yarsa gumba, talispatra and jatamashi etc. are the most important medicinal plants of Nepal. Many are under research for bio-medicines.

#### **4. Aesthetic value**

Wild plants and animals are the source of beauty, wonder and joy, recreational pleasure for many people. Activities, like bird watching, hiking, hunting, fishing and visiting to wildlife in protected areas, are good experience for people to feel pleasure, satisfaction and happiness.

#### **5. Scientific value**

Scientific studies of many wildlife species are direct value to human. For examples; sea urchins have helped greatly in the understanding of human embryology, rhesus monkeys have contributed to present knowledge of human blood groups etc. Every species can help scientists to understand how life has evolved and function on this planet.

#### **6. Ethical value**

Each species has inherent right to exist or to struggle to exist. This ethical stance is based on the view that each species has intrinsic value unrelated to its usefulness to human. All religions preach a great respect and reverence for life.

#### **7. Genetic value**

Wildlife has importance to study their genetic characters to know the evolution, relation among them. It also helps in artificial breeding program in agriculture and animal husbandry to produce hybrid varieties of plants and animals. Genetic engineers require existing wild plant species to develop the new crop strains of tomorrow.

### **B. Cause of wildlife extinction or depletion**

The major causes of wildlife depletion are following;

### **1. Habitat destruction and degradation**

The natural habitats have been converted into residential areas, agricultural lands, industrial areas, scrubland for livestock grazing, slash and burn system of traditional farming, mining, collection of fuelwoods, commercial timbering, unsustain exploitation of selected economic plants and industrial pollution etc. are caused of the fragmentation of habitats, forest destruction and degradation and threats to wildlife. Habitat fragmentation makes many species vulnerable to predators, fires, outbreak of diseases and acts as barrier for breeding population.

### **2. Human population growth and poverty**

Increase in human population and poverty lead pressure to the forest areas and convert the forestland into agricultural farm. This has direct impact on environment for deterioration and biodiversity loss.

### **3. Over exploitation of forest resources**

People are large extended dependent on forest for their sustenance like fuelwood, fodder, timber, shelter, medicine, livestock grazing and food etc. Deforestation is generally attributed to overuse and misuse of forest resources. Several valuable species are threat to extinct and effect on bioactivities like shelter, movement, fertility of animals and food.

### **4. Hunting and poaching**

Illegal hunting/ killing of wildlife is common practice for the body parts and meat. River fish stocks are overexploited, pheasants and ungulates are hunted for their meat and carnivores are hunted for their hides and bones. The gall bladders of the sloth and Himalayan bear, rhino's horn are illegally smuggled and traded in national and international market. These are caused of depletion of wildlife.

### **5. Trade**

There has been trade of wild flora and fauna both legally and illegally. The mismanagement in the collection/harvesting procedure of main economic plants including medicinal and orchid, are serious concern that has been leading these plant species towards an extinction from natural habitat.

### **6. Pollution**

Due to the continuous deforestation, smoke and other pollutants, effect on climate etc., causes different types of environmental effects like global warming, greenhouse effect, desertification etc. Heavy pollution affects wildlife directly and indirectly. Similarly, slowly degradable pesticides kill some organisms, reduce their ability to reproduce and make them more vulnerable to disease, parasites and predators.

### **7. Natural calamities**

Wild species with a very restricted range are vulnerable to natural calamities such as volcanic eruption, landslide, glacier outbreak, fire and flood etc. They could eliminate species with small geographic ranges.

## **8. Introduction of exotic species**

Introduction of exotic or alien species into the habitat is one of the main causes of animal extinction, habitat alteration and degradation. Many of these introduced species have no natural predators, competitor, parasites and pathogens that control their numbers. This can allow them to dominate in their new ecosystem and reduce the population of many native species, making them a form of biological pollution.

### **C. Wildlife Conservation or Conservation Strategies or Wildlife Management**

Methods of conservation of wildlife are following;

#### **1. Habitat management**

Habitat management is primary tool used to manage, protect and enhance wildlife population. It includes ecological study of habit and habitat of wild species, census and statistical data collection regarding species to be conserved the hotspot and suitable habitat. Habitat improvement consists of bringing into useful association those conditions needed by a species to reproduce and survive.

#### **2. Establishment of protected areas**

The establishment of protected areas like national parks, wildlife reserves, sanctuaries, zoo, botanical garden and conservation areas etc. serve to conserve the species in their wild state and provide scientific, educational and recreational opportunities to people. They also help to protect of specific natural and cultural features, wilderness and maintenance of environmental services, earn revenue and sustainable use of natural resources.

#### **3. Mass education**

To achieve the goal of conservation of wildlife, there is a great need of educating the people and their participation. There are various methods adopted to aware the general people like; publicity through media and documentary shows, setting up nature clubs in educational institutions, celebrating wildlife day and week, training farmer and other tribal people to protect endangered species etc.

#### **4. Captive breeding and reintroduction of species**

Several endangered species are only survived in captivity. In captive breeding, some or all wild individuals of critically endangered species are captured for breeding in captivity. When these species reproduce and flourish their off springs. Later, they are reintroduced into several parks, reserves or areas of their original natural habitats.

#### **5. Protected by Law**

All countries have authorized laws for conservation and protection of wildlife. In Nepal, National park and Wildlife Conservation act was formulated in 1973. According to act, killing, hunting, capturing of wildlife is punishable.

#### **6. Management predators and wildlife diseases**

Expand the field of research on control and causes of various wildlife diseases to protect endangered and threatened species from being extinct. Similarly, the predator control plan should be prepared and included in conservation program to achieve goal of conservation.

#### 7. **International/multinational agreements**

Wild ranging animals and migratory birds cover large areas and may cross international border. Those areas that come on their routes should be protected to conserve species.

#### 8. **Establishment of Seed bank and sperm bank**

Genetic information and germplasm of wild species of plants and animals are also preserved in seed bank and sperm bank respectively.

**Wildlife conservation:** It means “management of biosphere and promoting of status of wildlife for present and future generation”. Or Wildlife conservation means “protection, preservation, management and studying of wildlife”.

Types of conservation:

1. In-situ conservation: Conservation of species within their natural habitat is called in-situ conservation. In this method, natural ecosystem is maintained and protected. Like national park, wildlife reserve etc.
2. Ex-situ conservation: Conservation of species in artificial ecosystem. Like zoo, botanical garden etc.

**Wildlife management:** It is “the application of scientific knowledge and technical skills to protect, conserve, limit, enhance or create wildlife habitat”. It also includes implementing law and regulation to protect existing habitat of wildlife.]

#### **D. Concept of threatened species**

1. **IUNC:** International Union of Conservation of Nature and Natural resources (**IUCN**) is leading one international organization, work for promoting and preserving status of wildlife and environment. It prepares Red List of Threatened wildlife and categorized various categories based of following;
  - Present and past distribution of wild species
  - Decline in the number of populations in course of time
  - The abundance and quality of natural habitats
  - Biological and potential value of species

**Following are the IUCN threat categories;**

##### **I. Extinct (Ex)**

Those species which are no longer known to exist in wild condition but survive in cultivation and domesticate form, are no definitely reported during the past 50 years. For example; pink headed duck (*Rhodonessa caryophyllacea*).

##### **II. Endangered (E)**

Those species whose number have been reduced to critical level or whose habitat have been reduced. If casual factors continue operating the species in danger of extinction in near future. Also include those species which may be extinct but have been seen in wild during past 50

years. E.g., lynx (*Felis lynx*), wild yak (*Bos mutus*), wild buffalo (*Bubalus arene*), Himalayan musk deer (*Moschus chrysogaster*), Bengal tiger (*Panthera tigris*), rhino (*Rhinoceros unicornis*).

### **III. Vulnerable (V)**

Those species that likely to move into the Endangered category in the near future if casual factors continue operating. For e.g., Black buck (*Antelope cervicarpa*), Asiatic rock python (*Python molurus*), gaur bison (*Bos gaurus*), red panda (*Ailurus fulgens*).

### **IV. Rare (R)**

The species with a small world population that are not present Endangered or Vulnerable; but are at risk. These species are usually localized with in restricted geographical areas or habitat or thinly scattered over a more extensive range. For e.g., Imperial eagle (*Aquila heliacal*), lesser kestrel (*Falco nawnanni*).

### **V. Intermediate(I)**

Species known to be Endangered or Vulnerable or Rare but where there is not enough information to say which of the three categories is appropriated. For example, Bengal fox (*Vulpes bengahalensis*), Asiatic golden cat (*Felis temmincki*).

### **VI. Insufficiently known (K)**

Taxa that are suspected but not definitely known to belong to any of the above categories because of lack of information. For example, fishing cat (*Felis viverrinus*), Himalayan thar (*Hemitragus jemlahicus*).

### **VII. Threatened (T)**

The general term is used to refer to a species considered to belong to any one of the above categories.

## **2. CITES:**

The Convention on International Trade in Endanger Species of Wild Fauna and Flora (CITES) held in Washington DC in March 1973AD. The major objectives of CITES is to protect certain species of wild flora and fauna against over exploitation through international trade. It mainly functions under three appendices.

### **i. Appendix I**

It includes the species that likely to be threatened with extinction and trade on these species is strictly regulated and permitted only in special circumstances. For example, *Panther tigris*, *Rhinoceros* spp.

### **ii. Appendix II**

It includes the species which are not threatened but could become so if the trade on these species is not properly controlled. *Cuon alpinus* (wild dog), *Pteropus* spp etc.

### **iii. Appendix III**

It includes the species that identified as being subject to regulation in that country which requires international co-operation to control trade. For example, *Merops flavigula* (Yellow throated martin), *Tragopan satyra* (crimson horned pheasant).

1. **Protected Area:** Natural area designated to protect and maintenance of biological diversity, natural and associated cultural resource and manage through legal or other effective means”.
2. **National Park:** An area declared by status for the purpose of protecting, preserving, and developing wildlife there in or its natural environment for scientific, educational and recreational values. Nepal has 12 national parks
3. **Strict Nature Reserve:** It means an area of ecological significance set aside for purpose of scientific studies.
4. **Wildlife Reserve:** It means an area set aside for conservation and management of animals and birds and their habitats. Nepal has only one wildlife reserve i.e., Koshi-Tappu Wildlife Reserve.
5. **Hunting Reserve:** It means an area set aside for conservation and management of animals and birds and their habitats for the purpose of sport hunting. Nepal has only one hunting reserve, Dhorpatan Hunting reserve.
6. **Buffer zone:** Specific area designated around the National Parks and Wildlife Reserves for local people in order to provide the facility to utilize the forest products in sustainability. [It helps to minimize the park-people conflict.] There are 13 buffer zones present in Nepal.
7. **Conservation Area:** An area manages within integrated plan for the conservation of natural environment and the sustainable use of natural resource. [There is no army and manage by NTNC and NGO.] There are 6 conservation areas in Nepal.
8. **Wetland or Ramsar or Simsar sites:** The wetland is any areas of land that covered with shallow water or soil saturated with moisture. It includes marshes, estuaries, mudflats, ponds, swamps, deltas, shallow seas, bogs, lakes, floodplains etc. Nepal has ten Ramsar sites. Koshi-Tapu Wildlife reserve is the first Ramsar site of Nepal.
9. **Biodiversity Hotspot :** The regions that are both biologically fertile (rich distribution of plants and animals) and highly threatened.
10. **Biodiversity:** Variety and variability of life forms, levels and combination existing in the living world or in a particular area. It consists of three categories;
  - a. **Ecosystem diversity:** Variety and frequency of distinct ecosystem including the variety of habitats, biotic community and their changes in composition and structure over the time is ecosystem diversity.
  - b. **Species diversity:** The variety of species found within a particular geographical area is termed as species diversity.
  - c. **Genetic diversity:** the genetic difference among population of a single species is called genetic diversity.