

## Unit 4 Lecture 9

### Conservation Methods:

#### 1. In situ conservation:

It refers to protection zones and areas of high biological biodiversity. These areas, described as natural ecosystems, will protect species with minimum human interference. The buffer zones or seminatural ecosystems can allow for some human disturbance as long as the impact of humanity is not greater than any other factors.

For preservation of the endangered species, the only measure suggested is the strict protection against poaching of both vegetation as well as animal resources. For in-situ conservation, the biosphere reserve offers the best site of natural conservation of threatened flora. India has 80 national parks and 421 wildlife sanctuaries covering an area of About 1.4 lakh square kilometer constituting more than 4% of the total geographic area of the country, and one-fifth of the forest area. The protected area includes 23 tiger reserves as well as 14 biosphere reserves.

The Wildlife Institute of India has comprehensively reviewed the existing protected area network and highlighted the need to identify new protected areas in different parts of the country, in order to ensure representation of maximum wildlife habitats. It has made proposals to increase the existing network coverage in India to 147 national parks with an area of 49,435 square kilometer, and 519 wildlife sanctuaries with an area of 116, 879 square kilometer raising the coverage upto 5.06% of the total land area. The conservation efforts towards plant species have not been given adequate attention particularly of those which are potential economic and scientific value. The other important aspects is to incorporate rehabilitative strategies for rare, threatened and endangered plant and animal species.

Scientific studies in regard to in situ conservation should focus on the following lines where very little data are available:

1. Applied research for conservation of living resources.
2. Interlinkages between plant and animal species.
3. Quantitative assessment of the conservation status of the species.
4. Successional status of key species in different ecosystems.
5. Multiplication and restoration of endangered, rare and endemic species using biotechnology.
6. Ecological restoration of degraded micro and macrohabitats.
7. Identification of critical index species and their sensitive parameters.
8. Assessment of the impact of exotic species on the ecosystem.
9. Determination of the impact on the ecosystem of various activities in the protected areas.
10. The possible climate change and its impact on biodiversity.
11. Hydrological changes including surface run off and percolation in protected areas.

12. Primary production and cycling of nutrients in the soil.
13. Studies on satellite mapping of all protected areas.
14. Development of methodologies for classification of microhabitats.

The important point in in-situ conservation is that the forest trees, wild plants, wild animals and micro-organisms all occur together in an ecosystem. Therefore, if an attempt is made to conserve and enrich the ecosystem, much can be achieved in a single step. This would be particularly advantageous in tropical forests where many species occur in low densities and have a high degree of endemism.

To identify ecosystem that have been left out and in urgent need of conservation, it is necessary to match the 12 bio-geographical provinces (viz. Ladakh, Himalayan Highlands, Malabar rain forest, Bengal rain forest, Indus–Ganga monsoon forest, Assam–Burma monsoon forest, Mahanadian, Coromandel, Decan thorn forest, Thar desert, Lakshadweep Islands, Andaman and Nicobar Islands) with the present day protected areas network. From such a study there will emerge the additional areas which are in need of conservation. The process of identification of the additional areas must be based, among other things, on the following:

- centres of diversity of crop plants in the Indian region particularly with regard to wild ancestors of the crop plant genetic resources, non crop plant genetic resources, and forest tree genetic resources
- Wild relatives of live stock.
- Fresh water system (rivers and lakes)
- Marine fish and other economic sea animals;
- Mangroves and coral system
- Island ecosystem
- Threatened/endangered biota including materials used for teaching and
- Unique and fragile ecosystems, including hot spots (NE Himalayas) and endemic areas.

## **2. Ex-situ Conservation:**

India has done commendably well as far as ex-situ conservation of crop genetic resources is concerned. It has also taken up such work on livestock, poultry and fish genetic resources. However there is need to develop facilities for long and medium term conservation through-

- Establishment of genetic Enhancement Centres for producing good quality of seeds;
- Enhancement in the existing zoos and botanical. Garden network;
- Seed gene banks;
- Tissue culture gene banks;
- Pollen and spores banks;
- Captive breeding in zoological gardens; and
- In vivo and in vitro preservation.

However, both ex -situ and in -situ conservation of forest trees and micro organisms (except nitrogen fixing blue green algae) have not received much attention.