

GE 2211 Environmental Science and Engineering

Unit – II

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# Conservation of Biodiversity

M. Subramanian

Assistant Professor  
Department of Chemical Engineering  
Sri Sivasubramaniya Nadar College of Engineering  
Kalavakkam – 603 110, Kanchipuram (Dist)  
Tamil Nadu, India  
[msubbu.in\[AT\]gmail.com](mailto:msubbu.in[AT]gmail.com)

# Contents

- conservation of biodiversity: in-situ and ex-situ  
conservation of biodiversity

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# Conservation of Biodiversity

- Conservation is the protection, preservation, management, or restoration of wildlife and natural resources such as forests and water.
- Through the conservation of biodiversity the survival of many species and habitats which are threatened due to human activities can be ensured.
- Other reasons for conserving biodiversity include securing valuable Natural Resources for future generations and protecting the well being of eco-system functions.

# Strategies

- The strategies for conservation and sustainable utilisation of biodiversity have comprised providing special status and protection to biodiversity - rich areas by declaring them as national parks, wildlife sanctuaries, biosphere reserves, ecologically fragile and sensitive areas.
- Other strategies include offloading pressure from reserve forests by alternative measures of fuelwood and fodder need satisfaction by afforestation of degraded areas and wastelands and creation of *ex-situ* conservation facilities such as gene banks. For example, the Tura Range in Garo Hills of Meghalaya is a gene sanctuary for preserving the rich native diversity of wild citrus and musa species.

# In-situ and ex-situ conservation

- **In-situ:** Conservation of habitats, species and ecosystems where they naturally occur. This is in-situ conservation and the natural processes and interaction are conserved as well as the elements of biodiversity.
- **Ex-situ:** The conservation of elements of biodiversity out of the context of their natural habitats is referred to as ex-situ conservation. Zoos, botanical gardens and seed banks are all example of ex-situ conservation.
- In-situ conservation is not always possible as habitats may have been degraded and there may be competition for land which means species need to be removed from the area to save them.

# In-situ Conservation

- Designating specific areas as protected sites
  - It amounts to over 6% of the land set aside throughout the world
- This type of conservation applies only to wild fauna and flora and not to the domesticated animals and plants, because conservation is achieved by protection of populations in nature
- It includes a system of protected areas of different categories, e.g. National Parks, Sanctuaries, Nature Reserves, Natural Monuments, Cultural Landscapes, Biosphere Reserves, etc.

# International designations of Protected Areas

- **Ramsar sites** – designated under the Convention on Wetlands of international Importance.
- **Biosphere reserves** – designated under the UNESCO Man and The biosphere Programme
- **Biogenetic reserves** – designated under the Berne Convention
- **World Heritage sites** – designated under the UNESCO Convention for the Protection of World Cultural and Natural Heritage.

# Biosphere reserves

- The biosphere reserve concept has been developed through the Man and Biosphere (MAB) Programme of the United Nations Educational, Scientific and Cultural Organisation (UNESCO).
- Biosphere reserves are an attempt to reconcile the problems of conserving biodiversity and biological resources, with sustainable use of natural resources for people.
- They form an international network of sites, nominated by national governments, but designated by UNESCO
- The first reserves were nominated as long ago as 1976. By 2001, a network of 393 reserves in 94 countries had been developed.



# In-situ conservation in India

- Approximately, 4.2 per cent of the total geographical area of the country has been earmarked for extensive *in-situ* conservation of habitats and ecosystems.
- A protected area network of 85 national parks and 448 wildlife sanctuaries has been created. The results of this network have been significant in restoring viable population of large mammals such as tiger, lion, rhinoceros, crocodiles and elephant

# Ex-situ conservation

- **Zoos** - These may involve captive breeding programmes,
- **Aquaria** - research, public information and education
- **Plant Collections** - breeding programmes and seed storage