

TOPIC: *In situ* Conservation

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***In situ* Conservation**

Biodiversity is the richness of organisms. It mainly refers to the variety and variability of life existing on the planet Earth. The term biodiversity usually refers to the process of measuring the variation at the genetic, species, and ecosystem level. Biodiversity plays a vital role in boosting the ecosystem. The factors responsible for the cause of changes in biodiversity are:

- Increase in population
- Habitat loss
- Pollution
- Invasive species
- Over exploitation
- Change in the climatic conditions

We all need to conserve biodiversity, as it leads to the conservation of essential ecological diversity to preserve the continuity of food chains.

Biodiversity can be conserved in two main ways, in-situ conservation and ex-situ conservation.

In situ conservation is the on-site **conservation** of genetic resources in natural populations of plant or animal species such as forest genetic resources, in natural populations of tree and animal species.

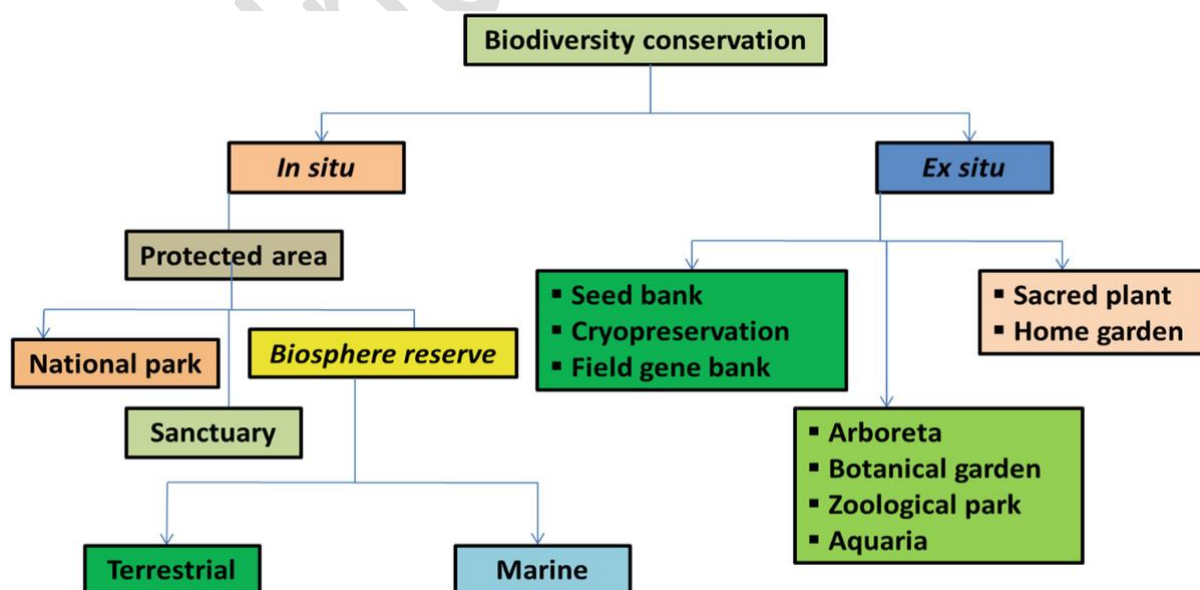


Figure: Biodiversity conservation methods

In-Situ Conservation Strategies:

In-situ or on site conservation is conservation of wild animals and plants in their natural habitat. The aim of in-situ conservation is to allow the population to maintain or perpetuate itself within the community environment, to which it is adapted. In-situ conservation is the ideal method of conserving wild plant genetic resources.

Protected Areas:

Areas of natural habitats/ecosystem under in situ conservation are called protected areas. The 1994 IUCN guidelines for protected area management categories define a protected area as an area of land or sea specially dedicated to the protection and maintenance of biological diversity and of natural and associated cultural resources and managed through legal or other effective means. There are many types of protected areas with differing degrees of protection, permanency and purpose. India has over 600 protected areas, which includes over 90 national parks, over 500 animal sanctuaries and more than 15 biosphere reserves.

Hotspots:

It is a natural area showing maximum biodiversity and endemic species. Species in this area are proved to be endangered. Norman Myers developed the hot spots concept in 1988 to designate priority areas for in situ conservation. He identified 12 hot spots. Of the 25 hot spots in the world, two are located in India extending into the neighbouring countries. Western ghats and Eastern Himalayas in India has been identified as hot spots. These areas are particularly rich in floral wealth and endemism, especially flowering plants. Reptiles, amphibians, swallow-tailed butterflies, and some mammals are also found here.

National Park:

A national park is a reserve of land, usually owned by a National Government. It is a tract of land, which is declared public property to preserve and develop for the purpose of recreation and culture. It is protected from human development activities and pollution. National parks are protected areas of IUCN category II.

Yellowstone National Park in California was established as the world's first protected area. The first national park in India was Hailey National Park, now known as Jim Corbett National Park, established in the year 1935.

In national park all private rights are non-existent and all forestry operations and other usages such as grazing of domesticated animals are prohibited.

Some national parks are as below:

National Park	Location
Hazaribagh national park	Jharkhand
Betla national park	Jharkhand
Periyar national park	Kerala
Kanha national park	Madhya Pradesh
Gir national park	Gujrat
Valmiki national park	Bihar



Sanctuaries:

A sanctuary is a reserved area for the protection of wildlife. Collection of forest products, cutting trees for timber are allowed provided they do not affect the

animals. There are 448 existing wildlife sanctuaries in India. Another 217 sanctuaries are proposed in the Protected Area Network report.

A wild life sanctuary is dedicated to protect the wild life mainly endangered species. In the sanctuary killing, hunting or capturing of any species is prohibited except by or under the control of highest authority in the department responsible for management of sanctuary.

Bird sanctuary	Location
Ghana Keoladeo bird sanctuary	Bharatpur(Rajasthan)
Kabarlake bird sanctuary	Begusarai(Bihar)

- Rhino sanctuary: Kaziranga of Assam. This sanctuary is mainly for Rhinoceros(1855 rhinos). Mammals protected are hog deer,pig,wild elephant,buffaloes,swamp deer,wild water buffalo and sambhar.
- Pobitora wildlife sanctuary: Located 30 km east of Guwahati. This sanctuary has a dense population of the one horned rhinoceros and also home to 200 migratory birds and various reptiles.
- Crocodyles sanctuary: Tristate Chambal sanctuary is jointly run by Rajasthan,Uttar Pradesh and Madhya Pradesh.
- Musk deer sanctuary: Kedarnath sanctuary of Uttaranchal
- Hangul deer sanctuary: Dachigam sanctuary of Jammu & Kashmir

Biosphere Reserves:

In Biosphere reserves whole ecosystem is conserved. The concept of biosphere reserves has come under the Man And Biosphere Programme (MAB) of UNESCO. Biosphere reserves have been described as undistributed natural areas for scientific study.

The biosphere reserve has concentric areas zoned for different use.

- a. The core zone is the innermost zone devoted to preserve biodiversity with no human interference.

b. Around the core zone there is the buffer zone in which some settlement and resource use is allowed. In this area, variety of educational programmes and research activities are carried out, such as identification of endangered species, artificial propagation of species, and application of tissue culture techniques to enable rapid multiplication of threatened species.

c. The outermost zone is the transition zone where sustainable development activities are permitted. This is an area of interaction between the biosphere reserve management and the local people. Here activities such as forestry, recreation, cropping, etc. are permitted.

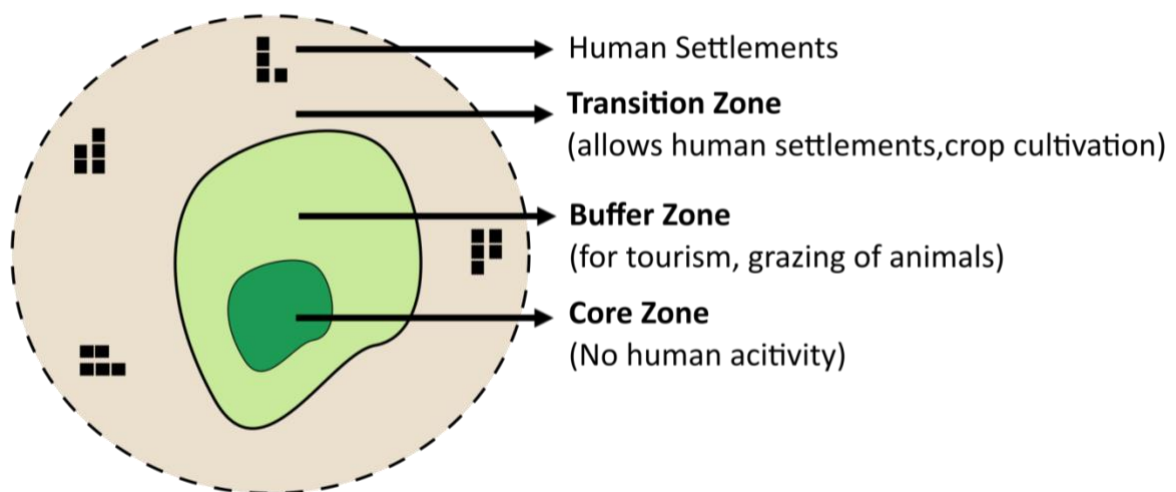


Figure: Different zone of Biosphere Reserve

Some biosphere reserves of India is represented in table:

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List of Biosphere Reserves in India

Name of the Biosphere Reserve	State	Area in km ²
1. Great Rann of kutch	Gujarat	12,454
2. Gulf of Mannar	Tamil Nadu	10,500
3. Sunderbanas	West Bengal	9,630
4. Cold Desert	Himachal Pradesh	7,770
5. Nandadevi	Uttarakhand	5,860
6. Nilgiri	T.N., Kerala, Karnatak	5,520
7. Dehang-Dibang	Arunachal Pradesh	5,112
8. Pachmarhi	Madhya Pradesh	4981.72
9. Seshachalam Hills	Andhra Pradesh	4755
10. Similipal	Odisha	4374
11. Achanakamar-Amarkantak	Madhya Pradesh, Chattisgarh	3835
12. Manas	Assam	2837
13. Khangechendzonga	Sikkim	2620
14. Agasthyamalai	Kerala, T.N.	1828
15. Great Nicobar	Andaman & Nicobar Islands	885
16. Nokrek	Meghalaya	820
17. Dibru-Saikhowa	Assam	765
18. Panna	Madhya Pradesh	

Advantages of in-situ conservation:

1. The flora and fauna live in natural habitats without human interference.
2. The life cycles of the organisms and their evolution progresses in a natural way.
3. In-situ conservation provides the required green cover and its associated benefits to our environment.
4. It is less expensive and easy to manage.
5. The interests of the indigenous people are also protected.

Advantages of In-Situ Conservation of Plant Resources:

- a. It enables the conservation of a large range of potentially interesting alleles.
- b. This method is especially suitable for species, which cannot be established or regenerated outside the natural habitats.

c. This method allows natural evolution to continue because of the existence of variation.

d. It facilitates research on species in their natural habitats.

e. It assures protection of other species that are dependent on the species under consideration.

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