

# Conservation of Biodiversity

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# Biodiversity - Conservation

## Types of Biodiversity Conservation

There are two types of biodiversity conservation

1. In-situ conservation (within habitat)
2. Ex-situ conservation (outside habitat)

### 4.11.1. In-situ conservation

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- ♣ In-situ conservation involves protection of fauna and flora within its natural habitat, where the species normally occurs is called in-situ conservation.
- ♣ The natural habitats or ecosystems maintained under in-situ conservation are called '*protected areas*'.

### 4.11.2. Ex-situ Conservation

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- ♣ Ex-situ conservation involves protection of fauna and flora outside the natural habitats.
- ♣ This type of conservation is mainly done for conservation of crop varieties and the wild relatives of crops.

# In- situ Conservation

*Important In-situ conservation: National parks, Wildlife sanctuaries, Biosphere reserves, Gene sanctuary etc.*

## **Methods of In-situ conservation**

Around 4% of the total geographical area of the country is used for In-situ conservation. The following methods are presently used for In-situ conservation

In-situ Conservation	Numbers available
National Parks	80
Wild-life sanctuaries	420
Biosphere reserves	7
Botanical gardens	120

# National Parks in India

## Some important national parks in India

Name of National Park	State	Important Wildlife
Kaziranga	Assam	One horned Rhino
Gir National Park	Gujarat	Indian Lion
Bandipur	Karnataka	Elephant
Dachigam	J & K	Hangul
Corbett	U.P	Tiger
Kanha	M.P	Tiger
Ranthambore	Rajasthan	Tiger
Sariska	Rajasthan	Tiger
Periyar	Kerala	Tiger, Elephant

Watch Top Wildlife Sanctuaries & National Parks, India:  
<https://www.youtube.com/watch?v=zP1Yux3qBIE>

# Wildlife Sanctuaries

## Some Important Wildlife Sanctuaries in India

Name of Sanctuary	State	Major Wildlife
Mudamalai Wildlife Sanctuary	Tamil Nadu	Tiger, Elephant, Leopard
Vedanthangal Wildlife Sanctuary	Tamil Nadu	Water birds
Nal Sarovar Bird Sanctuary	Gujarat	Water birds
Wild Ass Sanctuary	Gujarat	Wild ass, wolf, nilgai, chinkara
Hazaribagh Sanctuary	Bihar	Tiger, Leopard
Ghana Bird Sanctuary	Rajasthan	Birds
Abohar Wildlife Sanctuary	Punjab	Black buck
Jaldapara Wildlife Sanctuary	W. Bengal	Rhinoceros, Elephant, Tiger

# Biosphere Reserves in India

## Some important Biosphere Reserves in India

Name of Biosphere	State
Gulf of Mannar	Tamil Nadu
Nilgiri	Tamil Nadu, Kerala, Karnataka
Nanda Devi	U.P
Nokrek	Meghalaya
Mannas	Assam
Sunder bans	West Bengal
Great Nicobars and Similipal	Orissa

### Role of biosphere reserves

1. It gives long term survival of evolving ecosystem
2. It protects endangered species
3. It protects maximum number of species and communities
4. It serves as site or recreation and tourism
5. It is useful for educational and research purposes

# Madhya Pradesh: Unesco stripes for Panna Biosphere Reserve



Source: <https://timesofindia.indiatimes.com/city/bhopal/madhya-pradesh-unesco-stripes-for-panna-biosphere-reserve/articleshow/78963588.cms>

<https://en.unesco.org/news/panna-india-fuvahmulah-and-addu-atoll-maldives-join-unescos-world-network-biosphere-reserves>

# Ex-situ Conservation

## **Role of Ex-situ conservation**

1. It involves maintenance and breeding of endangered plant and animal species under controlled conditions
2. It identifies those species which are at more risk of extinction
3. It prefers the species, which are more important to man in near future among the endangered species

**Important Ex-situ conservation:** Botanical gardens, seed banks, microbial culture collections, tissue and cell cultures, museums, zoological gardens.



# Methods

## **Methods of Ex-situ Conservation**

The following important gene bank (or) seed bank facilities are used in Ex-situ conservation

### **1. National Bureau of Plant Genetic Resources (NBPGR)**

It is located in New Delhi. It uses cryo preservation techniques to preserve agricultural and horticultural crops.

*Cryo preservation technique:* It involves the preservation of seeds, pollen of some important agricultural and horticultural crops by using liquid nitrogen at a temperature as low as  $-196^{\circ}\text{C}$ . Varieties of rice, pearl millet, Brassica, turnip, radish, tomato, onion, carrot, chilli, tobacco, etc., have been preserved successfully in liquid nitrogen for several years.

### **2. National Bureau of Animal Genetic Resources (NBAGR)**

It is located at Karnal, Haryana. It preserves the semen of domesticated bovine animals.

### **3. National Facility for Plant Tissue Culture Repository (NFPTCR)**

It develops the facility for conservation of varieties of crop plants or trees by tissue culture. This facility has been created within the NBPGR

# Case Study

- Endangered vultures found dead @ Botswana. Vulture is excellent scavengers play its critical role in keeping ecosystems clean of diseases found in rotting carcasses. These endangered vultures are poisoned deliberately by poachers, or accidentally by farmers in Southern Africa.



**White backed Vulture, Africa**

# KMTR

THE HINDU

## Forest dept. road endangers core KMTR habitat: activists

But officials insist they only cleared the 'katcha' road to have better access for officials to the core areas for better surveillance

B ARAVIND KUMAR  
P. SUDHAKAR

A road laid by the Forest Department with heavy machinery inside the core, inviolate habitats of the Kalakkad Mundanthurai Tiger Reserve (KMTR) in Tirunelveli district could endanger its very existence, activists say.

While KMTR officials insist that they were only clearing the 'katcha' road to have better access for Forest Department officials to the core areas for better surveillance and that no heavy machinery was used, activists point out that for decades, foresters have only travelled by foot and not on jeeps, and this could set off a dangerous trend.

Photographs accessed by *The Hindu* show that bulldozers are being used to lay the road. The road was being laid in gross violation of the Forest (Conservation) Act



Photograph accessed by *The Hindu* shows that bulldozers are being used to lay the road.

and the Wildlife Protection Act. The new road and the resultant vehicular movement could endanger the KMTR's core and threaten its very survival, and activists have called for a halt to this activity.

### Type-I unit

KMTR was declared a tiger reserve in 1988, the first in Tamil Nadu. It has been identified as a Type-I tiger conservation unit representing the tropical moist evergreen

forests. It also forms part of the inter-State Agasthiyarmalai Biosphere Reserve, declared one of the plant diversity centres by UNESCO.

It was also declared the Regional Centre of Endemism in the Indian subcontinent. There are 2,255 species of Angiosperms so far recorded from the KMTR, including 448 species endemic to the Western Ghats, in addition to 150 species that are strictly endemic to the Agasthiyarmalai, say researchers

working in the reserve.

According to activists, this core habitat is one of the highly protected areas with the least entry points. One has to cross the Papanasam checkpoint and reach the Mundanthurai plateau and thereon travel to Servalar and the Karaiyar dam inside the core.

The vehicular movement is usually restricted up to the dam, as *pucca* roads have been laid only up to that. Only 5 kani tribal settlements are present in the core area. There are very few elephant areas in the reserve.

About 10 years ago, trekking was also stopped. There are only patrolling/combing routes available from the Karaiyar dam to Kalivarpul until recently, which lead to Bommacadu (Kerala border). The forest staff and the anti-poaching watchers were patrolling the forest by foot, say activists.



Importantly, activists and researchers said these were the few tropical evergreen patches left in the country, free from any man-made interventions and serving as a water catchment for the perennial Tamirabharani river.

Alleging that heavy machinery was being operated now to clear rainforest patch along Karaiyar-Kannikatti-Kalivarpul Mottai for 30 km, the activists say such clearing would amount to loss of biodiversity, encourage a larger vehicular movement and allow easy access to poachers and even Maoist infiltration.

And for an area that had no road entry, creating a

road by clearing the forest inside the core area raises suspicion, they add.

"Another reason for laying the road could be to facilitate access for high-profile pilgrims to the Agasthiyar temple in the peak in vehicles. Now they have to trek," says an activist.

KMTR field director Yogesh Singh did not react and said the local officer (a deputy director) would answer. KMTR deputy director (Ambasamudram division) Kommu Omkaram denied that heavy equipment was used to lay roads in the core zone between the Papanasam dam and Kalibar Pullmottai. The 30-km 'katcha' road connecting the border with Kerala through the dense jungle would usually be maintained to ensure the movement of the vehicles of KMTR officials to reach the spots within the shortest possible time.

# **Thank You**