

UPSC Civil Services Examination

UPSC Notes GS-III [Biodiversity]

Topic: Biodiversity Hotspots in India

Biodiversity is referred to as the variation of plant and animal species in a particular habitat. Species evenness and species richness form the major components of biodiversity.

India is known for its rich biodiversity and has 23.39% of the geographical area covered by forests and trees.

Coined by Norman Myers, the term "Biodiversity hotspots" can be defined as the regions which are known for their high species richness and endemism.

According to Conservation International, a region must fulfill the following two criteria to qualify as a hotspot:

1. The region should have at least 1500 species of vascular plants i.e., it should have a high degree of endemism.
2. It should contain 70% of its original habitat.

There are major four biodiversity hotspots in India.

1. The Himalayas
2. Indo-Burma Region
3. The Western Ghats
4. Sundaland

The Himalayas

Considered as the highest in the world, the Himalayas comprises of North-East India, Bhutan, Central and Eastern parts of Nepal. This region holds a record of having 163 endangered species which includes the Wild Asian Water Buffalo, One-horned Rhino and as many as 10,000 plant species, of which 3160 are endemic. This mountain range covers nearly 750,000 km².

Indo - Burma Region

The Indo-Burma Region is stretched over a distance of 2,373,000 km². In the last 12 years, 6 large mammal species have been discovered in this region: the Large-antlered Muntjac, the Annamite Muntjac, the Grey-shanked Douc, the Annamite Striped Rabbit, the Leaf Deer and the Saola.

This hotspot is also known for the endemic freshwater turtle species, most of which are threatened with extinction, due to over-harvesting and extensive habitat loss. There are also 1,300 different bird species, including the threatened White-eared Night-heron, the Grey-crowned Crocias, and the Orange-necked Partridge.

The Western Ghats

The Western Ghats are present along the western edge of peninsular India and covers most of the deciduous forests and rain forests. This region consists of 6000 plant species of which 3000 are endemic. Originally, the vegetation in this region was spread over 190,000 km² but has been now reduced to 43,000 km². The region is also known for 450 species of birds, 140 mammals, 260 reptiles and 175 amphibians.

Sundaland

The Sundaland hotspot lies in South-East Asia and covers Singapore, Thailand, Indonesia, Brunei and Malaysia. In the year 2013, the Sundalands was declared as a World Biosphere Reserve by the United Nations. This region is famous for its rich terrestrial and marine ecosystem. Sundaland is one of the biologically richest hotspots in the world which comprises of 25,000 species of vascular plants, of which 15,000 are found only in this region.

Flora and Fauna of India

India is famous for its rich flora and fauna. India houses over 500 species of mammals, more than 200 species of birds and 30,000 different species of insects. Moreover, the country has 66 National Parks, 333 Wildlife Sanctuaries and 35 Zoological Gardens which comprises of a wide variety of fauna. The Zoological Survey of India which is headquartered in Kolkata is responsible for surveying the faunal resources of India.

India having diverse climate, topology and habitat are known to have the richest flora in the world with over 18000 species of flowering plants. These plant species constitutes 6-7% of the world's plant species. There are 8 main floristic regions in India- the Western and the Eastern Himalayas, Indus and Ganges, Assam, the Deccan, Malabar and Andaman Islands which is home to 3000 Indian plant species. The forests in India cover ranges from the tropical rainforest including Andaman, Western Ghats and North-east of India to the coniferous forests of the Himalayas. The deciduous forests can be found in the eastern, central and southern parts of India.

Endangered Species of India

India is known to be home for 6.5% of the world's species which includes 7.6% of all mammals and 12.6% of all bird species. But with the rapid loss of biodiversity, many species are becoming extinct or at risk of becoming critically endangered. The species that are at risk of extinction due to the sudden decrease in their population and habitat are known as endangered species.

Some of the top 5 endangered species in India are listed in the table below:

Top 5 Endangered Species of India	
Endangered Animal Species	Endangered Plant Species
The Royal Bengal Tiger	Ebony tree
The Great Asiatic Lion	Indian Mallow
The Snow Leopard	Malabar Lily
The Pig Nosed Frog	Assam Catkin Yew
The Pink Headed Duck	Milkwort

What is the IUCN Red List?

Founded in 1964, the IUCN Red List also known as the Red Data List evaluates the biological species in the world which are at the risk of extinction. The aim of IUCN is to focus on the conservation of the world's species to reduce the species extinction. More than 77,300 species have been assessed on the IUCN Red List.

According to the reports of 2019 as per IUCN Red List, 41% of the amphibians and 33% of the coral reefs are in the threatened category.

The IUCN Red List can be divided into the following 9 categories:

1. Extinct (EX) – No known individuals remaining.
2. Extinct in the wild (EW) – Known only to survive in captivity, or as a naturalized population outside its historic range.
3. Critically endangered (CR) – Extremely high risk of extinction in the wild.
4. Endangered (EN) – High risk of extinction in the wild.
5. Vulnerable (VU) – High risk of endangerment in the wild.
6. Near threatened (NT) – Likely to become endangered in the near future.
7. Least concern (LC) – Lowest risk. Does not qualify for a more at-risk category. Widespread and abundant taxa are included in this category.
8. Data deficient (DD) – Not enough data to make an assessment of its risk of extinction.
9. Not evaluated (NE) – Has not yet been evaluated against the criteria

To know about the critically endangered species of India as per [IUCN Red List 2019](#) refer to the linked article.

Tiger Conservation in India

Since a large number of the tiger population in India is entering into the list of endangered species, the conservation of tigers has become a crucial point in India. One of the initiatives taken by the Government of India for the protection of the tigers is the 'Project Tiger'. This project was launched in April 1973 and was administered by the National Tiger Conservation Authority.

Project Tiger aims at protecting the tiger population in India, preventing them from the risk of extinction and preserving areas of biological importance as a natural heritage.

The list of major threats to Tiger Population are:

- Man- animal conflict
- Hunting, poaching and illegal trade
- Habitat and loss of prey species

It is due to this initiative that India's tiger population has risen to 2,967 in 2018 within a span of 12 years. As per the latest data, the largest survey conducted by the government to map the Tiger Population in India till date was over 381,400 km of forested habitats across 20 states.

To know about, the [Tiger Reserves in India](#), refer to the linked article.