Biodiversity refers to variety of life living on earth (plants, animals, fungi and microorganisms). It is a measure of the health of ecosystems. Biodiversity is the variety among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes this includes diversity within species, between species, and of ecosystems. Biodiversity includes not only species we consider rare, threatened, or endangered but also every living thing from humans to organisms such as microbes, fungi, and invertebrates. Biodiversity creates a well functioning ecosystem, which cleanses water and air resources, minimizing the effects of pollution.

Biodiversity of Maharashtra

The special features of biodiversity of Maharashtra are related to the great variability in biogeographic regions.

Northern Maharashtra has primarily large tracts of deciduous teak forest.

The Deccan Plateau consists of a large semiarid grassland ecosystem.

The Western Ghats are hot spots of biodiversity. Its plateau and ridges are specialized habitats.

The coasts have a variety of forest types such as mangrove, rocky and sandy shores.

Rivers and lakes are important inland aquatic systems.
**PLANT BIODIVERSITY**

Maharashtra is the third largest state in the country and covers a geographical area of 3,07,713 square km. There is diversity in the vegetation of the state, due to its climatic and topographical variations. These plants include bushes, grasses, herbs, shrubs, trees, vines, ferns, and mosses. Through the process of photosynthesis, plants provide us with the oxygen which we breathe and the sugars that provide the primary fuel for life. The diversity of plants on the planet earth is an important resource for food, shelter, agriculture and medicines.

The vegetation of the state mainly includes open scrub jungles which form the most important feature of the Deccan region.

The forests region of Maharashtra comprises 17% of the total area which are present in the eastern part of the state and the Sahyadri range also known as western ghat.

The western ghats area is about 1,64,280 square km out of that natural landscape constitutes only 41 per cent. The area identified as ecologically sensitive is about 37 per cent i.e., about 90% of the natural landscape.

**Jarul Flower** (Lagerstroemia Speciosa) or giant crape-myrtle is called as Pride of India is also known as state flower of Maharashtra. This ornamental plant is native to tropical parts and subtropical of southern Asia, India. & Mango (Mangifera Indica) is known as king of fruits & also a State fruit of Maharashtra. The fruit is seasonal & having great demand in commercial market.

Due to change in climatic conditions or human activities some species of plants are rarely found now a days. Few endemic plant species of Maharashtra are Abutilon ranadei (Son Ghanta), Alysicarpus tetragonolobus (Lal shevra), Carvia callosa (Karvi), Ceropegia media, Euphorbia panchganiensis has shown in below picture:
NEW DISCOVERIES:

Recently studies were carried out at Western Ghats of Karnataka. During the exploration, a total of 78 species belonging to two sub-families, 12 tribes, and 43 genera of Poaceae...
Alloteropsis cimicina (L.) Stapf, Apluda mutica L., Arthroxon lanceolatus (Roxb.) Hochst, Arundinella nepalensis Trin., Arundinella tuberculata Munro ex Lisboa, Bambusa arundinacea (Retz.) Willd. etc. are few new species discovered during study has shown in below picture. This represents 6.5% of grass species recorded in India. This indicates the richness of grass species in the region.

At Malabar Wildlife Sanctuary in Kerala State, huge number of meliolaceous fungi were reported. This study describes a new species that belongs to the genus Meliola from Kerala State.
A new and rare species of orchids has been discovered in the southern-most tip of Western Ghats by city-based scientists from the Botanical Survey of India (BSI). This flower was morphologically similar to Habenaria crinifera Lindl., another orchid species.
The biodiversity of animals is vast and there are several animal species which have been trained, domesticated and used for the food production, for the agriculture and are the primary biological capital for livestock development. This plays a vital role in food safety and also in maintaining the rural development.

State animal of Maharashtra is Indian giant squirrel. They prefer mixed deciduous, most evergreen, tropical and rain forests. They are arboreal, and spending most of its time in trees. The weight of Indian giant squirrel is between 1.5 to 2.0kg. Head to body length measures about 20 to 40cms. Colour of body is deep red to brown, and have white furs in the belly area. The underparts and the front legs are usually dirty white or cream coloured. Ears of an Indian giant squirrel are short and round.

There have been a lot of animals that have gone extinct over the past few years and this is a matter of great sorrow. Few endemic animal species of Maharashtra are Panthera tigris tigris (Royal Bengal Tiger), Panthera uncia (Snow leopard), Martes quwatransii (Nilgiri Marten), Macaca silenus (Lion tailed macaque or Wanderoo), Antilope cervicapra (Blackbuck) has shown in below picture:
Lonar Lake is situated about 155 km from Parbhani town in Buldhana District of Maharashtra State. Lonar Crater is more than 52,000 years old yet the youngest, well preserved
and only Hyper-Velocity Crater on earth. It was formed in the Deccan Plateau’s hard basalt rock, the only of its kind on earth. Lake is emerald green in color.

The southern and southeastern parts of the crater represent natural forest vegetation with considerable undergrowth. There is a patch of about 22 hectares of land under cultivation. Different vegetables, crops like hanana and fruit trees like lemon, papaya etc. are grown there. Teak, Neem, Acacia species and Babul are the other trees of common occurrence.

The lake water and the adjacent area represent a good habitat for avifauna, both resident and migratory. Roosting of Cattle-Egrets, Peacocks and Indian Mynas were observed on the submerged treetops and trees near the crater Lake. Lake water provides good breeding ground for many water birds like Coots and Dabchick. Other water birds found in the area were White-necked Stork, Pond Heron, Indian Moorhen, Little Egret, Flamingo, Sandpiper, Brahminy Duck, Spoonbill etc. Among the terrestrial bird species found in the Lonar sanctuary were Peafowl, Quail, Black Drongo, Weaverbird, Gray Tit, Small Green Bee-eater, Tailor bird, Jungle Crow, Robin, White-spotted Flycatcher, Golden Oriole, Crow Pheasant, Black-shouldered Kite, Parakeet, Owl etc. The sanctuary supports a good population of peafowl, which were found mainly in the southern and western parts of the forest. Snakes and lizards commonly occur in the forested tracts of the slopes. Below picture is of lonar crater.

NEW DISCOVERIES:

Scientists belonging to the Indian Institute of Science (IISc) and the Bombay Natural History Society (BNHS) have discovered two new species of lizards in the Western Ghats. The spiny-headed forest lizard is like a ghost among Indian lizards with only a few sightings recorded since its initial discovery in 1997. They are actually a part of a distinct group of lizards found only in the Western Ghats, which was named as Monilesaurus.
Wildlife plays an important role in balancing the ecosystem and provides stability to different natural processes of nature. The rate of extinction has grown enormous. To rescue such species from extinction, wildlife sanctuaries, conservation programmes are carried out by countries.

**IMPACTS ON BIODIVERS**

- Development in progress
- The wilderness and wildlife is seriously impacted by development, overuse and misuse of natural resources.
- Traditional hill slope agriculture 'rab', based on wood ash cultivation
- Impact of rural industrialization
- Forest loss – Mumbai – Pune expressway
- Impact of tourism on wildlife
- Destruction of plateau vegetation – Panchgani
- Impacts of pilgrimage tourism – Bhimashankar
**WHAT IS A WILDLIFE SANCTUARY?**

In the modern, overpopulated world the need for dedicated space for wildlife is increasingly important. National parks, wildlife sanctuaries, and protected spaces for nature help conserve the natural world, a place specifically built for captive animals & critically endangered species. They provide care to neglected and abused captive animals for the rest of their lives.

**LIST OF WILDLIFE SANCTUARIES IN MAHARASHTRA:**

1. Tadoba National Park – TATR
2. Nagzira Wildlife Sanctuary
3. Pench National Park
4. Navegaon National Park, Gondia District
5. Melghat Wildlife Sanctuary, Amravati District
6. Bhimashankar Wildlife Sanctuary, Pune District
7. Radhanagari Bison Sanctuary
8. Bor Wildlife Sanctuary
9. Karnala Bird Sanctuary
10. Koyna Wildlife Sanctuary
11. Sagarreshwar Wildlife Sanctuary
12. Sanjay Gandhi National Park, Mumbai
13. Rehekuri Blackbuck Sanctuary
14. Bhigwan Bird Sanctuary

**CONSERVATION PROGRAMMES CARRIED OUT TO PROTECT BIODIVERSITY**

1. Wildlife conservation is the practice of protecting wild plant and animal species and their habitat.

2. Conservation and analyses of these genetic resources rely on demographic characterization and correct breeding schemes.

3. Project tiger, Project Elephant, Crocodile Conservation Project are some of the projects carried out to conserve the biodiversity.
Steps Taken by Indian Government to Protect Biodiversity:

Along with above specified conservation projects of the wild animals, GOI has also initiated few schemes that are worked upon to protect the biodiversity and minimize the mortality of critically endangered, endangered and threatened animals.

Here are few important steps that Government of India has taken for the wildlife protection:

1. In the Wildlife Protection Act of 1972, GOI created Protected Areas like National Parks, Sanctuaries, Conservation Reserves and Community Reserves for the wildlife and imposed punishments on those indulged in illegal act of hunting.

2. Wetland (Conservation and Management) Rules 2010 have been drafted to protect of wetlands in India. The Central Government has also initiated the scheme, National Plan for Conservation of Aquatic Eco-System that lends assistance to the states for the sound management of all wetlands.

3. In order to restrict the illegal trade of wildlife and that of endangered species, Wildlife Crime Control Bureau has been established.

4. Special organizations like Wildlife Institute of India, Bombay Natural History society and Salim Ali Centre for Ornithology and Natural History are formed to conduct research on conservation of wildlife.

5. Government of India has banned the veterinary use of diclofenac drug.

6. For restocking of the endangered species, the Central Government first initiated Integrated Development of Wildlife Habitat Scheme and later modified it by including a new component, Recovery of Endangered Species which included animals like Hangul/stag deer in Jammu & Kashmir, Vultures in Punjab, Haryana and Gujarat, Snow Leopard in Jammu & Kashmir, Himachal Pradesh, Uttarakhand and Arunachal Pradesh, Swiftlet in Andaman & Nicobar Islands, Nilgiri Tahr in Tamil Nadu, Sangai Deer in Manipur. Financial and technical assistance is also extended to the state government to provide better means of protection and conservation for the specified species.

7. The State Governments have been asked to strengthen the field formations and increase patrolling in and around the Protected Areas.

8. GOI intensified anti-poaching activities and initiated special patrolling strategy for monsoon season. Also, deployment of anti-poaching squad.
9. In order to strengthen tiger conservation, National Tiger Conservation Authority is constituted by Government of India.

10. A Special Tiger Protection Force (STPF) has also been constituted and is deployed in Karnataka, Maharashtra and Odisha.

11. E-Surveillance has been started in Kaziranga National Park in Assam and borders of Ratapani Wildlife Sanctuary in Madhya Pradesh.

12. The 1972 Act has been amended to make the provisions more effective. Endangered species of plants and animals have been brought under the purview of the Act. Under a new amendment to the Act in 2002, penalties are sought to be enhanced for violations of the provisions of the Act.

13. A Central Zoo Authority (CZA) was established in 1992 under the Act to oversee the management of zoological parks in the country.

**IMPORTANT ENVIRONMENT AND BIODIVERSITY ACTS PASSED BY INDIAN GOVERNMENT**

1. Indian Forests Act 1927
2. Prevention of Cruelty To Animals 1960
3. Wildlife Protection Act 1972
4. Water (Prevention and Control of Pollution) Act 1974
5. Forest Conservation Act 1980
7. Biological Diversity Act 2002
8. Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Rights) Act 2006.

9. The Government of Maharashtra has established the State Biodiversity Board for the conservation and regulation of biological resources in the state. Maharashtra State Biodiversity Board, Nagpur has been established according to the notification issued by Revenue and Forest Department, Mantralaya, Mumbai on 02 January 2012 with letter no. WLP-1009/C.R 15/F-1 (Part 3) in exercise of the powers conferred under the Biological Diversity Act 2002 (18 of 2003).

India is a party to five major international conventions related to wildlife conservation. The Ministry of Environment and Forests is the nodal agency for these conventions.
1. Convention on International Trade in Endangered Species (CITES),
2. Coalition Against Wildlife Trafficking (CAWT),
3. Inter-national Whaling Commission (IWC),
4. United Nations Educational, Sci-entific and Cultural Organisation-World Heritage Committee (UNESCOWHC), and

**Animal Welfare Division:**

The mandate of the Animal Welfare Division is to prevent the infliction of unnecessary pain or suffering on animals. The division is entrusted with the implementation of the provisions of the Prevention of Cruelty to Animals Act, 1960.

Some of the important rules framed under the act include:

i. Performing Animals (Registration) Rules, 2001


v. Breeding of and Experiments on Animals (Control and Super-vision) Rules, 1998


Our long-term response must tackle habitat and biodiversity loss.

“We are intimately interconnected with nature, whether we like it or not. If we don’t take care of nature, we can’t take care of ourselves. And as we hurtle towards a population of billion people on this planet, we need to go into this future armed with nature as our strongest ally.”

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