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## Conservation strategies of biodiversity in Maharashtra, India

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### Abstract

The world Bio-diversity is made up of two words Bio—Life. Diversity-Variation. Bio-diversity is the diversity of life on earth and it is not distributed uniformly across the globe. India is one of the 12 mega diversity countries of the world (First is the Brazil) due to the tropical & subtropical location varied physical features, topography & climate. The term bio-diversity includes three different but closely related aspects namely I) Genetic diversity II) Species diversity & III) Economic diversity 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. The rules for the Maharashtra State Biodiversity Board have been constituted by the Government of Maharashtra dated 10th December 2008.

Our country India is located in south Asia between Latitudes 8-37 N and 68-97 E and 3.29 million hectares is quite rich in bio-diversity with high percentage of endemic flora & fauna Western Ghats have tropical climate the hot desert of Rajasthan, the cold desert of Ladakh and beautiful high icy mountains peaks of peaks of Himalayas to the warmer coastal sites of peninsular India. India has over 1,15,000 species of plants & animals. Bio-diversity has great importance for satisfy the need of mankind e.g. food, Clothing & Shelter provides ecological services, provides valuable genetic resource for mankind but now a day's Bio-diversity become loss because Destruction of forests, overexploitation of bio-resources over grazing, shifting cultivation, Urbanization, Industrialization, Illegal trade, Soil degradation and erosion, Diminishing green cover, Mining for ores, roads, river valley projects etc. So the meaningful programmed on forestry based on science & technology. There are several strategic which are adapted for conservation of Bio-diversity like Legislation, In-Situ conservation, Ex-Situ conservation Recording Indigenous Knowledge, Community Participation in Biodiversity Conservation, International Conservation Strategies. Therefore we need have conservation of biodiversity due to Protection of water resources, Soil formation and Protection, Pollution breakdown and absorption, Climatic stability, Maintenance of resources, Food, Medicine, Population Reservoirs, Horticulture and wood requirements, Social benefits, Recreation this is benefits of conservation of Biodiversity.

**Keywords:** Bio-diversity, Flora, Fauna, Biological Resources

### 1. Introduction

The great variety of life on earth has provided for man's needs over thousands of years. This diversity of living creatures forms a support system which has been used by each civilization for its growth and development. Biodiversity is the part of nature which includes the difference in genes among the individuals of a species, the variety and richness of all the plant and animal species at different scales in space, locally in a region, in the country and the world and various types of ecosystems, both terrestrial and aquatic within a defined area. Biodiversity deals with the degree of nature's variety in the biosphere. This variety can be observed at three levels; the genetic variability within a species, the variety of species within a community, and the organization of species in an area into distinctive plant and animal communities constitutes ecosystem diversity.

India, a mega diverse nation, is one of the richest nations in terms of biological diversity. India owes this to its position in the tropical and subtropical latitudes India has a great diversity of natural ecosystems ranging from the cold and high Himalayan regions to the sea coasts; from the wet north-eastern green forests to the dry northwestern arid deserts; with different types of forests, wetlands, island sand the oceans. India consists of fertile river

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plains and high plateaus and several major rivers, including the Ganges, Brahmaputra and Indus. The diverse physical features and climatic situations have formed ecological habitats like forests, grasslands, wetlands, coastal and marine ecosystems and desert ecosystems, which harbor and sustain immense biodiversity. The country is also one of the 12 primary centers of origin of cultivated plants and domesticated animals.

**Definition:** Biodiversity may be defined as the total variance of bio-entities present on the planet earth, which are altogether characterized by a single trait reproduction.

## 2. Objectives

The specific objectives of the present research paper are

- i. To study the Conservation Strategies of Biodiversity in Maharashtra.
- ii. To highlight the Biodiversity in Maharashtra.

## 3. Database and Research Methodology

The present study is mainly based on information regarding biodiversity in Maharashtra, which is collected from various reports published by government of India. Maharashtra state is selected for the present study. An attempt has been made to analyze and interpret the information.

### 3.1. Study Region

The State of Maharashtra extends from 15° 45' North to 20° 6' North latitude and 70° 36' East to 80° 54' East longitude with geographical area of 3,07,713 sq. km. It is bounded by Arabian Sea in the west, the State of Gujarat in the northwest, Madhya Pradesh in the north, Chhattisgarh in the east, Andhra Pradesh in the southwest, Karnataka in the south and Goa in the southwest. The present study the attempt is made to conservation strategies of biodiversity in Maharashtra state of India.

### 3.2. Why Conserve Biodiversity

Biodiversity is essential for maintaining the ecological functions, including stabilizing of the water cycle, maintenance and replenishment of soil fertility, pollination and cross-fertilization of crops and other vegetation, protection against soil erosion and stability of food producing and other ecosystems. Conservation of biological diversity leads to conservation of essential ecological diversity to preserve the continuity of food chains. Biodiversity provides the base for the livelihoods, cultures and economies of several hundred millions of people, including farmers, fisher folk, forest dwellers and artisans. It provides raw material for a diverse medicinal and health care systems. It also provides the genetic base for the continuous up-gradation of agriculture, fisheries, and for critical discoveries in scientific, industrial and other sectors. The rapid erosion of biodiversity in the last few decades has impacted on the health of the land, water bodies and people. Survival of the human race is dependent on conservation of biodiversity.

The Earth Summit produced a plan of action on a number of issues (Agenda 21) including conservation of biodiversity during the 21st century. Conservation and sustainable use of biological resources based on local knowledge systems and practices is ingrained in Indian ethos.

### 3.2. Flora and Fauna of Maharashtra

In Maharashtra has a huge diversity in flora as well as fauna. Its topography as well as the tropical climate has resulted in

the diversity that explore here. and a glimpse of many wildlife species along with a huge collection of the flora as well. This state can be best described as a combination of High Mountain ranges of height 4000 feet and tropical rain forests. About 17% of this state is covered by the thick forests consisting of deciduous plants. Most of the forests are found in the Sahyadri region and are very dense. Maharashtra is said to have 3 game reserves, 5 national parks and 24 bird sanctuaries. So, you can explore a variety of animals like tigers, deers, wild boars, panthers and many more. Maharashtra's forest lies on the borders of Madhya Pradesh state as well as the Sahyadri region too. Some of these areas are converted into wildlife reserves thus preserving the biodiversity. Dhokna-Kolkaz forest of Maharashtra is known for its excellent wildlife that includes flying squirrels, tigers, antelope and lots more. The Nagzira Wild Life Sanctuary is also a famous sanctuary to explore blue ball, panthers, sloth bear, birds etc. In the south, there is the Nawagaon National Park which is the most visited and beautiful parks of Maharashtra. Even the Tadoba National Park is also a wonderful park which can be explored by the tourists. This park is known for the ducks and waterfowls. And the Karnala Bird Sanctuary which is located at a distance of 60 kms from Mumbai.

**Flora of Maharashtra:** The national parks of Maharashtra are full of variety of plant species that include Jamun, Palas, Shisam, Kate sawar, Neem, Teak, Dhawada, Kalam, Saja/Ain, Bija, Shirish, Mango, Acacia spp, Awala, Kadamba, Moha, Acacia spp, Terminalia spp, Hedua, Ficus spp and many more.

**Fauna of Maharashtra:** Maharashtra has a migratory species and many more exclusive wildlife species of the various national parks giant Indian squirrel, tiger, spotted deer, sambhar, Blackbuck, wild dog, butterflies, python, barking deer, flying fox, Rhesus macaque, crocodile, wolves, Indian antelope, neelgai, hyena, fishes, Bonnet Macaque, Black napped hare, etc.

**3.4. Wildlife in Maharashtra:** Maharashtra is known for some of the best national parks and the wildlife species that attract the people. You will come across several sanctuaries to explore the rich flora and fauna. The efforts of the state government to preserve the wildlife species has definitely paid off with numerous species being still alive. Adequate measures have been taken to protect the wildlife as well as other unique species. In order to explore national parks or sanctuaries, you can easily hire jeeps, night safaris or go for the audio visual services to enjoy a wonderful experience. Other transportation options are also available to explore these parks in a different way and catch the excitement and adventure. You can also enjoy the natural beauty as well as the green environment. Some of the most visited national parks include Chaprala Wildlife Sanctuary, Tipeshwer, Tadoba National Park, Navegaon National Park Tipeshwer, Chikhaldhara, Dajipur, Bharmragarh Wild Life Sanctuary, Bor Wildlife Sanctuary and many more.

**3.5. Forest in Maharashtra:** The forest of Maharashtra covers a huge area of 61,939 sq km thus covering about 21% of the total land. In order to preserve the wildlife, 33% of the land is given to the state government so that it can utilize the area to create more national parks as well as sanctuaries. Nagpur is said to have the largest forest area while

Aurangabad has the least forest area. In terms of the district, Gadchiroli is said to have 13000 sq km of the forest area.

### 3.6. Types of Biodiversity

**Genetic Diversity:** Animal or plant species differs widely from other individuals in its genetic makeup because of the large number of combinations possible in the genes that give every individual specific characteristic. This genetic variability is essential for a healthy breeding population of a species. If the number of breeding individuals is reduced, the dissimilarity of genetic makeup is reduced and in-breeding occurs. The diversity in wild species forms the 'gene pool' from which our crops and domestic animals have been developed over thousands of years.

**Species Diversity:** The numbers of species of plants and animals that are present in a region constitutes its species diversity. This diversity is seen both in natural ecosystems and in agricultural ecosystems. Some areas are richer in species than others. Natural undisturbed tropical forests have much greater species richness than plantations. A natural forest ecosystem provides a large number of non-wood products that local people depend on such as fruit, fuel wood, fodder, fiber, gum, resin and medicines.

**Ecosystem or Community Diversity:** There are a large variety of different ecosystems on earth, which have their own complement of distinctive inter linked species based on the differences in the habitat. Ecosystem diversity can be described for a specific geographical region, or a political entity such as a country, a state or a talukas.

### 3.7. Legislation

Major central acts relevant to biodiversity include Environment Protection Act-1986, Fisheries Act- 1897, Forest Act,-1927, Forest Conservation) Act, 1980, Wildlife (Protection) Act 1972 and Wildlife (Protection) Amendment Act 1991 The various central Acts are supported by a number of state laws and statutes Concerning forests and other natural resources. The policies and strategies directly relevant to biodiversity include National Forest Policy amended in 1988, National Conservation Strategy and Policy Statement for Environment and Sustainable Development, National Agricultural Policy, National Land Use Policy, National Fisheries Policy, National Policy and Action Strategy on Biodiversity, National Wildlife Action Plan and Environmental Action Plan.

**In-situ Conservation:** Conserving the animals and plants in their natural habitats is known as in situ Conservation. The established natural habitats are: National parks and sanctuaries, Biosphere reserves, Nature reserves, Reserved and protected forests, Preservation plots, reserved forests. The first such initiative was the establishment of the Corbett National Park in 1936. National Parks are highly protected by law. No human habitation, private land holding or traditional human activity. Biosphere Reserves are another category of protected areas. Under this, a large area is declared as a Biosphere Reserve where wildlife is protected. The Government of India has set up seven biosphere reserves: Nokrek (Meghalaya), Nilgiri (Karnataka, Kerala, and Tamilnadu Namdapha (Arunachal Pradesh), Nanda Devi (Uttar Pradesh), Sundarbans (West Bengal), Great Nicobar etc. Several special projects have also been launched to save certain animal species. These projects are designed to protect

the species in situ, by protecting and conserving their natural habitat. Project Tiger, Project Elephant, Save the Barasingha campaign are best example.

**Ex-situ Conservation:** Ex-situ conservation of plants and animals preserve/ or protect them away from their natural habitat. This could be in zoological parks and botanical gardens or through the forestry institutions and agricultural research centers. A lot of effort is under way to collect and preserve the genetic material of crops, animal, bird and fish species. This work is being done by institutions such as the National Bureau of Plant Genetic Resources, New Delhi, the National Bureau of Animal Genetic Resources, etc. Reintroduction of an animal or plant into the habitat from where it has become extinct is another form of ex situ conservation. E.g. Gangetic gharial has been reintroduced in the rivers of Uttar Pradesh, Madhya Pradesh and Rajasthan where it had become extinct. Seed banks, botanical, horticultural and recreational gardens are important centers for ex- situ conservation.

**Recording Indigenous Knowledge:** The lives of local communities are closely interwoven with their environment, and dependent upon their immediate resources for meeting their needs. These communities have a vast knowledge about local flora and fauna which is very important for biodiversity conservation. Much of this knowledge is orally passed on from generation to generation. Such indigenous knowledge needs to be recorded and preserved before it is lost.

**Community Participation in Biodiversity Conservation:** It is being recognized that no legal provisions can be effective unless local Communities are involved in planning, management and monitoring conservation Programmers. There are several initiatives to do this, both by government as well as non-governmental organizations.

**International Conservation Strategies:** Conserving biodiversity is not an issue confined to any one country or community. It is a crucial global concern. Several international treaties and agreements are in place in the attempt to strengthen international participation and commitment towards conserving biodiversity. Some of these are:

**The Convention on Biological Diversity:** This was signed during the Earth Summit in 1992. It focuses not only on conserving biodiversity but also on sustainable use of biological resources and equitable sharing of benefits arising from its use. The Convention on International Trade in Endangered Species of Wild Flora and Fauna: This is an international treaty which is designed to protect wild plants and animals affected by international trade. The treaty, in force since 1975, controls the export, import and re-export of endangered and wildlife.

**The Convention on Wetlands of International Importance:** It provides a framework for international cooperation for the conservation of wetland habitats which have been designated to the 'List of Wetlands of International Importance'. Twenty one wetlands, and mangrove areas mangroves and four coral reef areas have been identified for intensive conservation and management purposes. Mangroves conservation is one of the thrust areas of the Ministry of Environment and Forests. Wetlands are areas of

land where the water level remains near or above the surface of the ground for most of the year.

**Conservation of Medicinal Plants:** In India, 7,000 species of plants found in various ecosystems are used for medicine. In 1978, the World Health Organization (WHO) drew up a list of 240 absolutely essential medications. All these medications can be obtained only from plants. Every year, nearly two hundred Indian medicinal plants are being tested in the research laboratories of several prestigious drug companies the world over. In the past people generally collected medicinal plants from forest areas because a variety of medicinal plants were found there. Due to urbanization and also for cultivation, these forests have dwindled. The present immediate need is to conserve the medicinal plants.

**Green India Mission:** The National Mission for a Green India, recently announced by the Prime Minister, is one of the eight National Missions under India's National Action Plan on Climate Change. Its major focus is to increase cover and density of India's medium density forests and degraded forests. This mission will have repercussions for livelihoods of people and biodiversity.

### 3.8. Saving Bio-Diversity Saving Life

Grow native species of plants where possible, this would attract local wildlife such as birds, butterflies and insects. Grow local vegetables in your school garden that are not usually available in the markets. This would allow help conserve them for generations to come. · Initiate, organize and participate in responsible citizen action against existing or proposed activities that harm or are likely to harm local biodiversity. Make use of sustainable technologies like smokeless chulhas, ground water recharging unit, wind energy, solar power, etc

### 4. Results and Discussion

In the recent years the awareness regarding conservation of flora and fauna among the local community and in peoples residing in the forest has helped in a large extend in protecting the forest of this area. The tendency of the people have changed as they conduct sacred groves conservation programme in Northern Western Ghats, i.e. eco-restoration of sacred groves, revival of traditional forest conservation practices, conservation assessment of rare medicinal plants, the great hornbill- a flagship species for forest conservation instead of destroying forests for various uses.

### 5. Conclusion

Biodiversity conservation is an important part of the State Government's policy agenda, The language in which this commitment has been expressed has changed, broadening from a focus on wildlife to flora and fauna conservation, and now to addressing the whole range of biodiversity, Improving our knowledge of biodiversity and developing more robust approaches to sustaining it will be a long but rewarding process. Ultimately, the best outcomes for biodiversity will be achieved if all members of the community are proactive in building the goal of sustaining our living wealth into their thinking, planning, actions and lifestyles. and Students can inventory and maintain records of all living beings in their locality. A biodiversity register is a compilation of day-to-day observations of the immediate environment. It is a documentation of knowledge of diversity

of life known to local people. It is a means of recording the wealth of biodiversity of a region.

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