

Conservation of Flora and Fauna in (Andaman & Nicobar) India

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ABSTRACT

The survival of mankind is only possible with the protection of environment which is invaluable. It is the responsibility of every human being to work for the protection and conservation of natural resources because only clean and pollution free environment is the key for conservation of ecosystem. Focus of this research paper is, how to conserve the flora and fauna of two islands Andaman - Nicobar, what policies have been implemented by government of India and how much work has yet to be done for protection of biodiversity of these islands.

Keywords: Environment, Flora, Fauna, Pollution, Conservation.

INTRODUCTION

The total coastline of the islands are one thousand nine hundred sixty-two kilometres which is near about six lakh square kilometres of water zone and seven thousand one hundred seventy-one square kilometres of tropical rain forests, which contain two main types of ecosystems with many microhabitats.

- 1) Coastline and forests.

2) Coral reefs and other part of sea.

Apart from it there are at least one hundred seventy-nine coral species, one hundred forty-seven coelenterate species, hundred species of molluscs and sponges are near about seventy in this particular area.

Table 1.1: Land Use Pattern Andaman & Nicobar Islands

Land Use Types	Area (in 000' ha)	Percentage
Geographical Area	825	-
Forests	716	94.68
Not available for land cultivation	9	1.16
Land under misc. tree crops and groves	4	0.54
Cultivable wasteland	3	0.41
Fallow land other than current fallows	3	0.43
Current fallows	3	0.35
stable pasture and other grazing domain	4	0.49
Net area sown	15	1.94

Source: Land Use Statistics, Ministry of Agriculture, GOI, (2014-15)

There are two island groups of India, one of them are most beautiful islands first one is andaman and nicobar which are located in the bay of bengal and extended up to Sumatra (Indonesia) and other is Lakshadweep Islands are situated in the Arabian sea just opposite the coast of Kerala state and extend very close to Maldives which is our neighbour. Andaman and nicobar are scattered over a distance of 350 kilometres. They are at a greater distance from the coast of the mainland. These Islands are submerged hill ranges whereas some are of origin through volcanic process. These Islands are very numerous as they belong to two groups like Andaman group and Nicobar group. These are nearly two hundred Islands in the group of andaman and 19 Islands in Nicobar group. Some of the Islands have length of sixty to hundred kilometres. The south most point Indira Point of India lies in the Great Nicobar which belongs to Nicobar group and is too far from Sumatra of Indonesia. These Islands are of enormous tactical significance for our country because many of these Islands are having coral deposits.

Figure 1.1: Physical map of andaman & nicobar islands (India)



Source: <https://lotusarise.com>

LITERATURE REVIEW

Several important themes peculiar to these islands did come up during the entire process. One of the most important issues identified was the continued immigration, which is taking a major toll of the natural resources and the ecosystems of the islands. Tourism was also identified as a cause for concern, and steps needed to be taken to ensure that it is done in an environmentally sustainable fashion (Andaman and Nicobar Environmental Team, Port Blair 2000). The Islands of Andaman and Nicobar even though possess an apparently uniform tropical humid warm climate, shows considerable variation in the species diversity and vegetation pattern. The occurrence of over 2500 indigenous and 500 non-indigenous angiospermic species in these Islands makes it unique to Indian flora. In addition to cultivated species (plantation, fruit and vegetable crops, cereals and pulses. Orchids and medicinal plants etc.), natural relations of produce flora having agricultural, medicinal and industrial value have an impressive array of

diversity (D. B. Singh et al, 2000). Our country is endowed with very rich flora and fauna. The two islands andaman & nicobar being the hotspot of natural variety which need our attention. The total land area of all these islands is only about 8249 sq. km of which about 86 % is covered with lush green rainforests. These islands are a vast repository of plants. Around 52 species are being used by the sub aboriginal groups. Out of over 2500 angiospermous species so far known from these islands about 246 are endemic. More than 1,500 plant species in the Indian subcontinent are on the verge of extinction and most of them are endemic Therefore adequate endeavours are needed for the conservation of such invaluable biodiversity and their sustainable use (M. Balakrishnan et al, .2008). The Andaman and Nicobar Islands (ANI) (total 349 islands; area=8249 km²) are an internationally acknowledged biodiversity hot spot, of the Indian mainland and lying isolated in the Bay of Bengal. ANI encompasses a very high degree of endemic city in all taxa, especially in plants, reptiles, fishes and corals and bears close biogeographical affinities with Myanmar, Indonesia and Southeast Asia. 86 percent area of the ANI exists as a legally notified forest. The area, design and distribution of PAs however do not cover the range of biological diversity present in ANI. The PAs in ANI have been established in an ad hoc manner considering either the remoteness or inaccessibility of the area or influenced by the presence of some charismatic species e.g., Narcondum Island Sanctuary for Narcondum Hornbill (V B Mathur et al,.). The Andaman and Nicobar Islands have a rich variety of flora and fauna with many rare and endemic species. Realizing the importance of the need for conservation of the biodiversity of this fragile island ecosystem, the Salim Ali Centre for Ornithology and Natural History undertook several studies with a focus on birds and their habitats (Lalitha Vijayan 2009). The Andaman and Nicobar Islands by unique climatic factors and location are considered as one of the hotspots of the world's biodiversity. Situated between the two major biodiversity hotspots namely the Indian sub-continent and the Malaysia-Indonesian region it is hardly surprising that the islands manifest biodiversity of extraordinary range within a limited geographical area. These islands are situated close to the equator and exposed to oceanic impacts having a tropical humid climate with the temperature ranging between 18°C to 35°C. About 84.4% of the total geographic area of Andaman and Nicobar Islands is under forest cover. Of the total forest cover, 42.1% area is covered with dense forest, 34.1% by moderately dense forest, and 8.2% by open forest while mangrove constitutes 9.6% of the total area (Sankaran et al., 2015).

OBJECTIVES

- To know the concept of Conservation of ecosystem.
- To recognize flora and fauna in (islands of Andaman & Nicobar).

MATERIALS AND METHODS

In the present study Conservation of Flora and fauna in (Andaman & Nicobar) India data collected from different government agencies, it is based on secondary source of data, which has been collected from different books, journals, newspapers, and various search engines are also used. Mostly reports and surveys of national and international bodies are employed. Mostly the data is taken from Ministry of Environment and Forests, GOI. The National Biodiversity Action Plan NBAP (*is a cross-sectoral plan that aims to conserve India's biodiversity. It was adopted in 2008 and came into effect in the same year. The NBAP was developed to meet India's commitments under the Convention on Biological Diversity CBD*)

Main idea

India, known for its rich heritage of biological diversity, has so far documented over 91,200 species of animals and 45,500 species of plant life in its 10 bio-geographic areas. In addition, it is renowned among the 8 Vavilovian centres of beginning and multiplicity of produce vegetation, having supplementary 300 feral intimates and close relatives of cultivated flora, which are at a standstill developing beneath natural circumstances. Our country India is moreover a gigantic depot of Traditional Knowledge (TK) connected with biological assets. India lies between the apex of ten species-rich nations and shows towering endemism. In our country India there are four worldwide hot spots of biodiversity like (Western Ghats and Sri Lanka, Indo-Burma, Eastern Himalaya and Sunderland). The diverse climatic and topographic situation and years of environmental constancy have resulted in a extensive series of ecosystem and habitats such as forests, grasslands, wetlands, deserts, and coastal and marine ecosystem (*Ministry of Environment and Forests, Government of India, 2009*). As we see the Mangrove vegetation in India account of about 5% of the world's mangrove vegetation and are spread over an area of 4,445 km² along the coastal States/UTs of the country as shown in table 1.1 below. West Bengal has the most of mangrove forest cover in the country, followed by Gujarat and Andaman & Nicobar Islands.

Table 1.2: State/UT wise mangrove cover (KM²) assessment since 1987

State/UT	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005
Andhra Pradesh	495	405	399	378	383	383	397	333	329	329
Goa	0	3	3	3	3	5	5	5	16	16
Gujarat	427	412	397	419	689	901	1031	911	916	936
Karnataka	0	0	0	0	2	3	3	2	3	3
Maharashtra	140	114	113	155	155	124	108	118	158	158
Orissa	199	192	195	195	195	211	215	219	203	203
Tamil Nadu	23	47	47	21	21	21	21	23	35	35
West Bengal	2076	2109	2119	2119	2119	2123	2125	2081	2120	2118
Andaman - Nicobar Islands	686	973	971	966	966	966	966	789	658	637

Source: Forest Survey of India, 2005

Table 1.3: Legislations relevant to biodiversity conservation

Relevant key legislation	Key features
Wildlife (Protection) Act, 1972	Deals with protection of wildlife and habitats and provides for the protection of wild animals, birds and plants and related matters, with a view to ensuring the ecological and environmental security of the country.
Indian Forest Act, 1927	Designed for forest management and protection, the transit of forest and the duty liveable on timber and other forest produce.
Forest (Conservation) Act, 1980	Designed for the conservation of forests and related matters
Biological Diversity Act, 2002	Provides for conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and related matters.
Biological Diversity Rules, 2004	Deals with operationalizing the

Protection of Plant Varieties and Farmers’ Rights Act, 2001	Biological Diversity Act. Provides for the establishment of an effective system for protection of plant varieties, the rights of farmers and plant breeders, and to encourage the development of new varieties of plants.
The Scheduled Tribes and Dwellers (Recognition of Forest Rights) Act, 2006	Recognizes and vests the traditional rights to forest dwelling communities Other Traditional Forest over access to forest goods and occupation in forest lands.

Source: national legislations, policies and plans relevant to convention on biological diversity

Table 1.4: A brief outline of policies, plans and strategies dealing with conservation of biodiversity

Policies, plans & strategies	Brief outline of priorities
National Forest Policy, 1988	Provides for national goals and guidelines relating to areas under forests, afforestation, social forestry and farm forestry, management of state forests, rights and concessions, diversion of forest lands for non-forest purposes, wildlife conservation, tribal people and forests, shifting cultivation, damage to forests from encroachments, fire and grazing, forest-based industries, etc. The policy also covers forestry education, research, management, survey and database, legal support, infrastructure development and financial support.
National Conservation Strategy and Policy Statement for Environment and Sustainable Development, 1992	Outlines the nature and dimensions of environmental problems in India as well as actions taken and constraints and agenda for action.
National Policy and Macro- level Action Strategy on Biodiversity, 1999	Outlines a series of macro-level statements of policies, gaps and strategies needed for conservation and sustainable use of biodiversity.

National Agricultural Policy, 2000	Seeks to actualize the vast untapped growth potential of Indian agriculture, rural infrastructure, value addition, secure a fair standard of living for the farmers and agricultural workers, discourage migration to urban areas and face the challenges arising out of economic liberalization and globalization.
National Seeds Policy, 2002.	Thrust areas include varietal development production, quality assurance, seed distribution and marketing, infrastructure facilities, etc.
National Wildlife Action Plan (2002-2016)	Calls for adoption and implementation of strategies covering strengthening and enhancing the PA network, effective management of PAs, conservation of wild and endangered species and their habitats, restoration of degraded habitats outside PAs, control of poaching, and illegal trade in wild animal and plant species, monitoring and research, HR development, ensuring peoples’ participation, awareness and education, wildlife tourism, domestic legislation and international conventions, enhancing financial allocation and integration with other sectoral programmes.
Comprehensive Marine Fishing Policy, 2004	Aims to maximize yield from marine fishery resources while balancing the development needs of the various categories of fishing communities.
National Environment Policy, 2006	Stated objectives include: i) conservation of critical environmental resources; ii) intra-generational equity: livelihoods security for the poor ; iii) inter-generational equity; iv) integration of environmental concerns in economic and social development; v) efficiency in environmental resource use; vi) environmental governance; and vii) enhancement of resources for environmental conservation.
11th Five Year Plan (2007-2012)	Calls for a development strategy that is sensitive to growing environmental

	concerns and calls for careful evaluation of threats and trade-offs.
National Forestry Action Programme (2000-2020)	Envisages developing coordinated programme for the sustainable management of forests and forest lands to meet the environmental, socio-economic and cultural needs of the present and the future generations.
National Biotechnology Development Strategy (2007)	Prioritizes key policy recommendations and interventions relating to human resource, infrastructure development and manufacturing and regulatory mechanisms.
National Forestry Commission Report (2006)	Contains over 350 recommendations regarding organizational structure and functions of the forestry sector.
Final Technical Report National Biodiversity Strategy and Action Plan Project (2005)	Identified a detailed set of priority issues for the overall planning and governance as well as for the conservation of wild as well as domesticated biodiversity.
National Action Plan on Climate Change (2008)	Eight national missions envisaged and among these four (National Mission on Water, Sustaining Himalayan Ecosystems, Sustainable Agriculture and Green India) are directly relevant to biodiversity conservation.

Source: national legislations, policies and plans relevant to convention on biological diversity

From the above tables 1.3 and 1.4 it has been observed that government of India done a lot of work regarding protection of flora and fauna from very beginning. Many policies and commissions are come into effect to address the problems regarding ecosystem or environment, so government should enforce such type of policies.

In our country India the flora and fauna has very wide range and having diversity and Islands of Andaman - Nicobar are having hotspot of zoological and botanical diversity which need the attention of people and also government of India. Islands of Andaman and Nicobar are having about 8249 square kilometres of land from which 86% is covered with rain forests. These two beautiful islands have very large vegetation, near about 52 species are used by Aboriginal subgroups, near about 2500 angiospermous species which are identified as indigenous on these islands. And also many plant species are in danger, may be extinct in near future if steps are not taken to prevent them.

The Andaman-Nicobar archipelago is considered a true paradise of plant biodiversity. Which are situated among two of his main biodiversity hotspots, the Indian subcontinent and the Malaysian-Indonesia region, these islands show off an unexpected variety of biodiversity surrounded by a partial geographical area. Geographically, these islands are part of a long arc of islands stretching with the beginning from Arakan Yoma Mountains in Myanmar to the Sumatra Mountains in Indonesia. The unique location of these islands between two major biodiversity regions results in an unparalleled distribution of plants representative of the flora of India, Myanmar, Thailand, Malaysia and Indonesia. Being located between two chief biodiversity hotspots, the subcontinent of Indian and the Malaysia-Indonesia region, it is not astonishing that the islands exhibit biodiversity of extraordinary range within a limited geographical area. The biodiversity of these islands includes medicinal plant property, home-grown orchids, agro biodiversity, and cost-effectively vital plant variety such as timber yielding plants (K. K. Baraik 2023).

The diversity of plants on these islands is divided into many groups given below:

- ✓ Wild and exotic orchids
- ✓ Wild and cultivated plantations and spices
- ✓ Wild and cultivated vegetables
- ✓ Aromatic and Medicinal plants
- ✓ Cultivated food crops
- ✓ Wild and cultivated fruits
- ✓ Oilseed crops

Flora and fauna in Andaman - Nicobar Islands

- Andaman - Nicobar Islands are the habitat of near about fifty varieties of forest mammals, most of them are now on the edge of endemic situation.
- Moths and Butterflies having 225 species have been found in these islands, some largest butterflies of the world are inhabitant in these islands.
- High quality timber is the main product of the green forests of Andaman - Nicobar Islands.
- Andaman - Nicobar Islands also produce many fruits like are mangoes, jackfruit, bananas and coconut palm.
- Many medicinal plants grow in these islands which are used for cure many diseases as a traditional healer. Also, many flowers are growing in this region like Orchids, bougainvillea, and hibiscus.

SUGGESTIONS

Addressing the habitat loss, fragmentation, negative impact of developmental activities on biodiversity, expands protected, sustainable financing, reallocate the villages from critical frosts, conservation of traditional wild varieties, need for increase fruitful and workable national partnerships among all concerned government agencies.

CONCLUSION

The population multiplies geometrically while food supply increases arithmetically (*Thomas Malthus 1798, An Essay on the Principle of Population*). Taking this statement, we come to know that by increasing the population of the world there is an over exploitation of resources which have negative effect on the flora - fauna. Demand for basic needs of the world increase day by day more and more natural resources are exploited by which there is disequilibrium of ecosystem. So, it is the need of hour to address such problem, and conserve the flora - fauna.

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