

The Fundamental Essence of the Biodiversity of Two Major Indian Archipelagoes

T. P. Dubey*

UP-PFMPAP, Aranya Bhawan, Shisam Bagh,
Sector-19, Indira Nagar, Lucknow-226016,

*E-mail:- trivenidb@gmail.com

Introduction

Lands attract, islands amaze while archipelagoes captivate and fascinate. India is blessed with two significant biologically diverse and distinct archipelagos namely the Andaman and Nicobar and the Lakshadweep Islands. Both the groups are possessed of rare and matchless vegetative and faunal diversity, beautifully augmented by the various varieties of habitat formations. The corals, coral reefs and the lagoons demand deep awareness for the present and the posterity. Let us attempt a vivid description and analysis of their intrinsic biodiversity with an analytical human vein.

The fascinating locations

The Andaman and Nicobar Islands are located at the juncture of the Bay of Bengal and the Andaman Sea. Its territory is 150 km north of Aceh (Indonesia). It is separated from Burma and Thailand by the Andaman Sea. It comprises two island groups namely the Andaman Islands and the Nicobar Islands, separated by the 10° north parallel. Andaman lies to the north of this latitude and the Nicobar lies to its south.

The Lakshadweep Islands exist in the Arabian Sea. Its shortest distance from the mainland is about 108.78 km. The southern most island of this group is separated from the group by the 9° channel. In the south it is separated from the Maldives Island by the 8° channel.

The island units

The Andaman Group has 325 islands which cover an area of 6170 km² while the Nicobar Group has only 24 islands with an area of 1765 km²

The Lakshadweep Group comprises of 36 islands with an area of 108.78 square km². Of these islands only 10 are inhabited.

The vegetative diversity of Andaman and Nicobar Islands

The group of Andaman and Nicobar Islands is

characterized by Tropical Rain Forest Canopy made of a mixed flora with elements from Indian, Myanmar, Malaysian and endemic floral strains. So far, about 2200 varieties of plants have been recorded out of which about 200 are reported to be endemic. The diverse forest cover of its different parts is quite noteworthy. The **North Andamans** is characterized by the **wet evergreen type**, with plenty of woody climbers whereas the **south Andaman forests** have a profuse growth of epiphytic vegetation mostly **ferns** and **orchids**. In contrast to the status of these two, the Middle Andamans harbours mostly moist deciduous forests. The North Nicobar Islands are marked by the complete absence of evergreen forests while such forests form the dominant vegetation in the central and southern island of the Nicobar group. Out of the entire group of Andaman and Nicobar Islands, only the Nicobar group harbours grasslands.

The forest cover is atypical which is made of 12 Forest types. The floral constituents comprise mainly of the medicinal plant resources, the indigenous orchids, the agro biodiversity and the economically imported plant species. The medicinal plants form an integral part of plant diversity of the island. In this respect the two species *Alstonia macrophylla* and *Morinda citrifolia* deserve special mention as they are used by ethnic tribes and local people of Bay Islands in treatment of stomach ache, joint pain and fractured bones.

The indigenous orchids have emerged as the leader in international market. They exhibit natural prominence through their intricately designed spectacular flowers carrying brilliant colours, exquisite appearances, myriad sizes and long lasting qualities.

There are about 200 species of timber plants in the islands. The **Marble Wood** (*Diospyros marmorata*), **Padauk** (*Pterocarpus dalbergioides*), **Silver Grey**, **Chooi** (*Sagera elliptica*) and **Kokko** (*Albizia lebbek*) are the prominent ones.

The vegetative diversity of Lakshadweep

The warm tropical climate and high relative humidity of the islands are conducive for good plant growth. They have a striking absence of hills and river systems and are characterized by the shallowness of soils. Nearly 400 species have been reported from the islands which does not include any endemic plant. The vegetation comprises of Sri Lankan, African, American, Australian, Burmese, West Indies, Chinese and Polynesian varieties. The green cover of the islands is mainly due to coconut groves which occupy about 80% of the green cover. The vegetation of the island is described as 'STRAND CORAL'. It comprises algae, fungi, lichens, mosses, pteridophytes and angiosperms. The shallow reefs are dominated by algae elements and seaweeds. Nearly 400 species of flowering plants have been documented including three sea grass species namely *Cymodocea isoetifolia*, *Syringodium isoetifolium* and *Thalassia hemphillii*. Other angiosperms such as *Pandanus*, *Heliotropium foertherianum*, *Tournefortia argenta* and *Pemphis acidula* as well as fungi, algae, lichens are also found. The foreshore is sandy and free from vegetation while the backshore is composed of creepers and herbaceous plants intermixed with shrubs and tree lets in coconut groves. Broadly speaking these plants may be grouped into herbs, shrubs, climbers/twiners, tree lets and trees. Many of these are exotic. The common flora of the coral sands include coconut groves and coconut shrubs as *Pemphis acidula*, *Cordia subcordata*, *Scaevola taccada*, *Suriana maritima*, *Dedonia viscosa*, *Guetarda speciosa* and sea weeds such as sea lettuces *Codium* and *Hypnea*. The islands are also home to many medicinal plants.

The faunal diversity of Andaman and Nicobar Islands

The islands are the abode of **fifty varieties of mammals** comprised of 26 species of rodents and 14 of bats some of them are endemic of which the **Andaman Wild Boar** is a concrete illustration. The largest mammal varieties are the two endemic varieties of wild boar namely the *Sus scrofa andamanensis* from Andaman and *Sus scrofa nicobaricus* from Nicobar which are protected by the Wildlife protection Act 1972. The State animal of Andaman is Dugong which is also known as the **Sea-cow**. **Saltwater Crocodile** (*Crocodylus*

porosus) is also found in abundance in the island regime.

The territory has about two hundred and seventy species of birds out of which fourteen are reported to be endemic. The majority belongs to the Nicobar Island Group. Many caves of the islands are resting grounds for the edible-nest Swiftlet. The territory is also home to about **225 species of butterflies and moths**, some of which are spectacular in colour, behaviour and constitution. 10 species have been reported to be endemic to these islands. The Swallow Tail Butterfly (*Lepidopetra: Papilionidae*) is a prominent member.

The faunal diversity of Lakshadweep Islands

There are over 600 species of marine fish, 78 species of corals, 82 of sea weeds, 52 of crabs, 2 species of lobsters, 48 species of gastropods, 12 bivalves, 41 species of sponges, 10 species of ethinoderms, four species of turtles. It is one of the four coral reef regions of India. Pitti Island is an important breeding place Sea Turtle and for a number of pelagic birds such as the Brown Noddy (*Anous stolidus*), Lesser Crested Tern (*Sterna bengalensis*) and Greater Crested (*Sterna bergii*).

The corals and coral reefs of Andaman and Nicobar Islands

Andaman and Nicobar Island are the richest of the Indian region in coral diversity with as many as 179 species belonging to 61 genera. The common genera contribution to the reef formation are Acropora, Montipora, Pocillopora, Porites, Goniopora, Favia, Fungia, Millicpora, Helipora etc. A prominent feature of these islands is the abundance of non-soft coral (Sarcophyton species) at certain localities. Some important soft coral species are Sarcophyton species, Lobophytum species and Sinularia species, Boulder shaped corals are common corals found on reef flats. Some important boulder corals are Pore Coral (Porites), Larger Star Coral, Lesser Star Coral and Knob Coral. The Pure Coral (Porites species) has very small polyps and can grow into large colonies on reef edge and upper slope. The larger star Coral (*Favites abdita*) looks like an irregular shaped colony with adjacent large polyps sharing common walls. The Lesser Star Coral (*Goniatrea retiformis*) has small polygonal polyps. The Knob Corals (*Favia speciosa*) has distinct rounded polyps with its own distinct low walls. The Valley Coral (*Platygyra Sp.*) has

individual polyps merging to share common wavy elongated walls with the mouth situated in a single row within the valleys.

The corals and coral reefs of Lakshdweep Islands

The Lakshadweep Archipelago consists entirely of coral reefs. The mucus produced by corals play a significant role in the coral ecosystem. These form important food item for reef invertebrates, fish and shrimps. Coral genera such as *Montipora*, *Pavona*, *Porites*, *Favia*, *Favites*, *Goniastrea*, *Platygyra*, *Hydnophore* and *Symphillia* are common here. Some subgenera like *Psammocora* (*Plessiosieris*) and *Psammocora* (*Stephamaria*) are found only in Lakshdweep. The various habitats in the reefs and lagoons of Lakshadweep show coral association and assemblages which are unique. The three distinct coral communities that have been identified are *Porites*, *Acropora* and *Heliopora*. *Porites lutea* and *Porites solida* are found in the inner lagoon reef community while the faviids like *Favia*, *Favites*, *Platysyra* and *Goniastrea* are found along with *Pocillopora* and *Acropora* species. Various species of *Acropora* predominate the lagoon coral diversity. This community constitutes the most ideal habitat for many reef fishes. *Heliopora* is a common coral both in lagoon reef and open reef flat. Several fungiids and faviids are also found herein.

The lagoons

The natural stretches of salt water separated from the sea by low sand banks or coral reefs are designated as lagoons. They deserve to be watched, observed and appreciated. The lagoon shoals and windward sides of the reefs is an abode for genera such as *Pocillopora*, *Acropora*, *Porites*, *Goniastrea* among the Scleractinians and the Blue Coral *Heliopora*. In some of the lagoon reefs and shoals at least 80% of the reef surface and lagoon floor is gracefully occupied by Blue Coral, which forms large hemispherical colonies. Minicoy and Chetlat are the two specific illustrations of such entities. The lagoons of Minicoy show species found in Maldives like *Lobophyllia* and *Diploastrea*. The reefs and the lagoons provide the islanders with their basic energy needs. The lagoons and atolls of Lakshadweep are abound in a variety of marine macrophyte or algae. They belong to Chlorophyta (Green Algae), Phaeotophyta (Brown Algae) and Rhodophyta (Red Algae). The sea grass community of the lagoon contributes to the benthic plant biomass of islands. The predominant seaweeds

observed are *Enteromorpha*, *Ulva*, *Codium*, *Laminaria*, *Turbinaria*, *Sargassum*, *Padina*, *Gelidium*, *Gracilaria*, *Hyphen* and *Ceramium*. These are potentially useful seaweeds. Blue-green algae like the *Lynbya majuscula*, *Anabaena* and *Oscillatoria* species have been observed in the lagoon in many islands associated with sea grasses.

The lagoon is also home to a wide variety of organisms such as crabs, lobsters and molluscan fauna including gastropods and bivalves, octopuses, sponges, turtles, surface living holothurians, cowries, sea cucumbers and dolphins.

The pressures and challenges

The pollution of the oceans owing to the discharge of wastes and fumes from the navigating shipping canals is a major menace. The over exploitation of the fishery resources in the adjoining reaches is another grave hazard. The reefs and lagoons face a pollution onslaught from the ferry boats. Poaching by foreign vessels augments the problems. The main natural causes for the destruction of corals include siltation, cyclones, local tectonic upheavals, tsunami, pests and predators and El Nino.

The concluding essence

The biodiversity manifested by the two fascinating archipelagos is a natural boon for the sake of human existence and ecological balance. The prominence of indigenous orchids of Andaman and Nicobar Islands thrives with the diversity of the rice cultivars. The forests fascinate while the trees and the shrubs rejuvenate the hidden treasures of human hearts. The corals astonish, the coral reefs amaze while the lagoons surprise and gladden human minds. The flora, fauna and basic ambience of Andaman and Nicobar Islands and Lakshadweep Islands occupy definite, distinct statures for the causes of conservation of biological diversity and profound research. The two archipelagos nourish and display realistic fascinations for the hearts of all human beings. Before concluding, it becomes basically imperative upon the heart and mind, to conclude with the following maiden poetic lines, that have germinated and emerged just a few moments before:

Finite Islands having infinite charms,
Beauty and thrill for celestial arms;
Trees, corals and lagoons as open farms,
Human bliss away from mortal alarms.

Herein, it is intended to conclude with the belief and conviction, that the end always preserves and construes a new beginning.

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