

**SOURCE:**

Jayapaul Azariah, V. Selvam and S. Gunasekaran, (1992). Impact of past management practices on the present status of the Muthupet mangrove ecosystem. In: The ecology of mangrove and related

ecosystems Jaccarini, V. and E. Martens (eds.). Hydrobiologia, 247: 253-259.

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## PRESENT STATUS OF CORAL REEFS IN GULF OF MANNAR ISLANDS

### PART- 1

#### INTRODUCTION :

Coral reefs are the most diverse marine ecosystems in the world. Typically they contain number of specialised species representing almost all groups of marine animals. One of the reasons for the great diversity of life in coral reef is the diversified habitats they offer. The great number of holes and crevices in the reef provides abundant shelter for fishes and invertebrates. Coral reefs are also important nurseries and are thus a peculiar store house and repository of various animals.

Gulf of Mannar which is situated on the southeast coast of India extends from the Adams bridge to the cape comorin. These are about 21 islands covering an area of 625 ha and the reefs which extend from Rameswaram to Tuticorin (8° 50' - 9° 10' N lat.; 78° 10' 79° 10' E long.) are about 140 kms. in length. The reefs are mostly fringing reefs arising from the shallow seafloor and are not more than 6 metres depth. This area is remarkable for its richness and variety of fauna and flora in the inshore sea bottom which also sustain a good fishery. Knowledge concerning the natural resources of this area is inadequate and over exploitation of coral resources is a serious problem here. For conserving and managing the coral reefs of the Gulf of Mannar area, a detailed survey was undertaken in the 21 islands and the present status of the coral reefs in these islands is elaborated here.

#### MANDAPAM GROUP OF ISLANDS

##### (i). KRUSADAI ISLAND :

The Krusadai island is lying near Mandapam and Pamban (9° 14'N lat. and 79° 13'E long). This island is having a length of 2050 metres and width of 700 metres, spreading over an area of 67 hectares. Fringing type of reefs are noticed in this island. Towards the southeast side of this island, there lies a coral reef which is exposed at the low tide known as Galaxea reef. In the northern side of this island, the bottom area is muddy in nature, where marine corals of *Porites* species occur and therefore this bay is appropriately called as Porites Bay.

Every year students and scientists from various parts of the country visit the Krusadai island and collect large number of corals and other specimens. During the southwest monsoon period the strong winds inflict serious damage to the corals present on the southern side. Small country boats are clandestinely operated for the collection of seaweeds and fishes. Sedimentation also causes mortality among corals. The Porites Bay now consists of only little pit of Porites species which are found in the muddy area. Most of the corals which were present here have been dredged out by local fisherman for building their houses and for industrial purposes and it is still continuing.

A small area on the southern side only has luxuriant live corals now.

#### (ii) SHINGLE ISLAND :

The shingle island (9° 15' lat. and 79° 14' E long.) has an area of 13 hectares. This island is composed of coral rubbles on the reef patch and all are low sand structures. Extensive coral reefs are found on the eastern side as well as on the southern side of the island. In the eastern side, the reef consists of foliaceous corals as *Montipora foliosa* and *Echinopora larnellosa*. The *Acropora* species are also more in this area. The local fisherman have done great damage to the reefs. Coral reef fishes are more in the reef area and are caught by the special fish traps. Small country boats are used in the fishing activities and the reefs get damaged due anchoring of these crafts. The island is also under serious threat due to sea erosion. The southeast side, of the island has sunk in most places under the sea. Gulf of Mannar National Marine Park Authorities have erected a sea wall here to protect the island from sea erosion.

#### (iii) PULLIVASAL ISLAND :

This island (9° 14' N lat. and 79° 11' E long.) spreads over an area of 30 hectares. Coral reefs occur only on the southern side of the island. The reef extends to about 300 m from the southern shore. *Montipora* species are mostly seen in this area. During the low tide, the coral reefs are exposed and most of the exposed part of the reefs seems to be dead. Seaweeds are mostly seen in the reef area and the reefs are heavily damaged and the fisherwomen who are engaged in collecting the seaweeds are responsible for this. The island is divided into two parts by a channel.

#### (iv) PULLI ISLAND :

This island (9° 14' N lat. and 79° 11' E long.) covers an area of 17 hectares. Coral reefs occur only on the southern and western sides of the island. Western side reefs are better than the reefs present on the southern side. Once upon a time, the northern side of the island had massive

corals. But these were dredged out completely and now only small sized *Porites* species are seen here. Sedimentation and siltation also account for the heavy damage to the reefs.

#### (v) MANAULIPUTTI ISLAND :

This island (9° 13' N lat. and 79° 7' E long.) spreads over an area of 0.34 ha. The northeast side of the island is shallow and the coral reefs are present over an area of 10 sq. km. The corals rocks rise upto the surface from bottom in the entire shoreward portion of the island. Most luxuriant growth of corals is observed on the southern side (approximately 600 - 1200 m from the shore to the sea). Most of the corals present in these area are *Montipora* species. The seaweed *Sargassum turbinaria* mostly cover the coral reefs. This area is the best collection ground for the coral associated animals. During low tide the reefs are exposed for a short duration. Due to the abundance of seaweeds in this area; the fishermen come here with country boats and cause heavy damage in the reef area.

#### (vi) MANAULI ISLAND :

This island (9° 14' N lat. and 79° 7' E long.) covers an area of 26 ha. Among all the islands present in Gulf of Mannar region, only this Manauli island exhibits more diversity among the corals. The northeast region of Manauli island is exposed during low tide and a small stretch of sandy shoul formed in between the Manauli island and Manauliputti island leads to the western beacon point. Extensive reefs are occurring on the northern side of the Manauli island. The outer edge of the reef dips gradually to over 1 am depth where the zones of *Montipora foliosa* and *Acropora* species occur. The seaward reef drops to 4 - 5 metre depth and is characterized by massive corals. The massive corals (*Porites* and *Favia* species) present in these areas have dried due to sedimentation which inturn is the result of massive dredging. This area is also a

remarkable collection ground for the coral reef fishes.

**(vii) HARE ISLAND :**

This island (9° 12' N lat. and 79° 5' E long.) spreads over an area of 129 ha. This is the largest island in the Gulf of Mannar and is also called Musal Thivu. Extensive coral reefs are found from the southwest end of this island to the northeast end of Manauli island. The coral bed present between the Hare and Manauli islands is approximately 6 km in length and 2 km in

breadth. Most of the massive corals in these areas have been dredged out completely and it is also a very good collection ground for the coral reef fishes. The reefs are also heavily damaged due to continuous fishing and boat anchoring activities.

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## **MANGROVES OF TAMIL NADU : A REVIEW**

### **INTRODUCTION:**

Even a glimpse of the mangroves would show that vast mangrove areas all over the world are being denuded of their forest cover either intentionally or as a secondary result of other activities. The mangrove forests of India are no exception to this general trend, although the 'Forest Statute Books' will confer on them protection on paper. We usually follow the rules more in their breach.

### **REGIONAL DISTRIBUTION ALONG INDIA'S COASTLINE:**

Mangrove forests are spread along the Indian coast and on islands. They are estimated to be about 674,000 ha (Status Report, 1987). They were even in the last century widespread and luxuriant. Some regional mangrove surveys have also been undertaken (Mathauda, 1957). The Ganges delta and Andaman & Nicobar islands together constitute 85% of the Indian mangroves. Mangrove swamps are also found along the river deltas of the Mahanadhi, the Godavari, the Krishna and the Cauvery and along the west coast of India (Sidhu, 1965; Banerjee, 1964; Navalkar, 1951, '56, '59; Rao *et al.*, 1972; Blasco, 1975, '77). It has been

estimated that about 82% of the total mangrove forest cover is along the east coast (including Andaman & Nicobar islands), while the west coast (of India) has only 18% of mangrove cover (Status Report, 1987). The list of mangrove flora on the Indian sub-continent is also given therein (Status Report, 1987) with many references to relevant literature on the subject. A rich diversity of the mangrove biota is thus evident. The limited distribution of some species such as *Rhizophora stylosa*, *Hersteria fomes*, *H. littoralis*, *Nypa fruticans*, *Xylocarpus*, *Phoenix*, *Sonneratia apetala*, *S. caseolaris*, *Kandelia kandal*, *Avicennia alba* and *Acanthus ebractates* on some of the coastal areas alone is also highlighted.

Of about 70 mangrove species found worldwide, more than 30 species are found along the east and west coasts of India and on Andaman & Nicobar islands. The gangetic Sunderbans is one of the largest mangrove forests of India where an area of about 400,000 ha area is covered by these tidal forests. (The Sunderbans of India and Bangladesh put together constitute the world's largest single mangrove block, followed by the Mekong delta mangroves of