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Fish and Fisheries of Gulf of Mannar

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Introduction

India has an extensive coastline length of 7150 km. The Gulf of Mannar region occupies the southeast coast of India (Latitude - 8° 55' - 9° 15' N Longitude - 78° - 79° 16' E). The entire coastline of Gulf of Mannar from Thoothukudi to Dhanuskodi is sheltered from the fury of wind and waves by the existence of a chain of islands or sand cays. The Island system and coral reefs spread over this region offer shelter for a variety of marine fauna and flora. Both mechanised trawlers and non-mechanised vessels carry out the fishing throughout the year. But the shore seine fishing is seasonal in certain areas particularly in the southern region. When the Gulf of Mannar covering its southern portion becomes rough during April to September, the shore seine operations shift to Palk Bay and when the Palk Bay become rough during October-March, the units migrate to Gulf of Mannar. There are eight trawl fish landing centres such as Pamban (Therkuvadi), Mandapam (boat building yard side), Kilakarai, Ervadi, Valinokkam, Mundal, Vembar and Thoothukudi.

Infrastructure facilities

The infrastructure facilities along the Gulf of Mannar coast include boat building yard, fishing jetty, ice, fish meal and processing plants and dry docks. There are three fishing jetties each at Mandapam, Kilakarai and Valinokkam. At Thoothukudi, one minor small jetty and a major fisheries harbour are available. The cargo boats are berthed in the minor jetty and all the fishing boats are berthed in the fisheries harbour at Thoothukudi. The ice plants are available at Pamban, Mandapam, Kilakarai, Ervadi and

Thoothukudi. Except Mandapam and Thoothukudi, there is no fish processing plant in between. The Mandapam jetty with a breakwater in the Gulf of Mannar side is a well-developed one in all weather conditions. It can accommodate larger vessels and provide shelter for small trawlers during heavy winds. About 50 vessels can be berthed at a time.

Fishery resources

Pelagic fisheries

Several species of fish inhabiting the pelagic zone contribute to the fishery in the Gulf of Mannar. The major groups are sardines, anchovies, mackerel, carangids, tunas and seerfishes. Majority of them are caught by gillnet, drift gillnets, drift nets and hook and line. The anchovies are caught both by trawlnet and shore seine. The dominant species are *Sardinella albella* and *S. gibbosa* among lesser sardines and *Stolephorus commersoni* and *S. indicus* in anchovies. *Ethynnus affinis* is a common species in tunas. The oil sardine *S. longiceps* is a seasonal fishery caught by pair trawl from Rameswaram and Pamban. Apart from this, the rainbow sardine *Dussumiera* spp. *Hilsa* spp. and *Chirocentrus* spp. are occasionally caught and form the minor pelagic fishery. The shark is another important pelagic resource in the Gulf of Mannar.

Demersal fisheries

The major demersal fish groups consist of silverbellies, rays, perches, goatfishes, sciaenids and barracudas. Besides, groupers, catfishes, flatfishes and sandwhitings are also caught in appreciable quantities. The silverbelly is the most dominant demersal fishery resource

around Mandapam Region, which is used in fishmeal industry. They exhibit a diurnal migration resulting in large catches during day time and full moon periods.

There are about thirteen species of silverbellies contributed in the fishery in which *Leiognathus dussumieri* is the dominant one. *Himantura* spp, *Dasyatis* spp. and *Gymnura* spp. are the common species among the rays. The major perches are *Lethrinus* spp., *Lutjanus* spp. and *Psammoperca* spp. These are caught by gillnets, Hook and Line and occasionally in traps around the islands. *Cynoglossus macrolepidotus*, *C. bilineatus* and *C. puncticeps* are the major species in flatfish. Among the goatfish, *Upeneus sundicus*, *U. sulphureus* and *U. tragula* in trawl and *U. oligospilus* and *Parupeneus indicus* in shore seines are common in Gulf of Mannar.

One of the traditional indigenous gear fishing in Gulf of Mannar is the 'Stakenet' locally called as 'Kalam Katti valai'. It is operated throughout the year in the intertidal areas in the islands around Mandapam and Thoothukudi taking advantages of the tides and lunar phases. The fishes, which entangle in the net during high tides, are harvested in the receding tide. The duration of operation varies from 5-6 hours depending upon the starting of raising and receding tide. The dominant fish groups caught in this gear are the grey mullets (*Liza macrolepis*; *Valamugil seheli* and *Mugil cephalus*), followed by sandwhittings (*Sillago sihama*), silver biddies (*Gerres* spp.), *Elops* spp., the milkfish (*Chanos chanos*), *Rhynchoramphus* spp, *Belone* spp., *Tachysurus* spp., *Lactarius* spp. and crabs.

Crustacean fisheries

The crustacean fishery resources of this region include shrimps, crabs and lobsters. About 95% of the shrimp resources comprise of penaeid prawns. Pamban and Mandapam based trawlers fish off Ervadi and trawlers from Kilakarai, Ervadi, Valinokkam, Mundal fish

prawns in the area between off Ervadi and off Vembar. The trawlers have limited approach in the Gulf of Mannar stock, as the fishing grounds are deep when compared to Palk Bay. But along the southern flank trawling is done both by mechanised and non-mechanised vessels. The area between the chain of islands and mainland is trawled by non-mechanised boats taking advantage of the wind force and direction particularly during northeast monsoon. But good catches are obtained from the open sea beyond the islands.

The major species contributing in the prawn fishery are *Penaeus semisulcatus*, *Parapenaeopsis maxillipedo*, *P. coramandelica*, *P. uncta*, *Trachypenaeus pescadorensis* and *Metapenaeus burkenrodi*. The dominant contribution in the fishery is by *P. semisulcatus*. The juveniles of *P. semisulcatus* form the main fishery in thalluvalai. The dominant species that form in crab fishery is *Portunus pelagicus*. They are caught in trawl and non-mechanised vessels. In trawlers, *P. pelagicus* form by-catch and *Scylla serrata* form part of fishery in non-mechanised vessels. The other two species of crab *P. sanguinolentus* and *Charybdis cruciata* sporadically occur in the catch. Prawns are readily purchased by the agents of the processing companies right on the beach and taken to the factories in insulated vans. They are exported to European and Gulf countries, U.S.A. and Japan.

Molluscan fisheries

The molluscan fishery resource consists of cuttlefish, squids, chanks, pearl and edible oysters and clams. In cuttlefish, *Sepia aculeata*, *S. inermis*, *S. pharaonis* and *S. brevimana* are the major species. *Sepioteuthis lessoniana* and *Loligo duvaucelli* are common squids available in Gulf of Mannar. Both cuttlefish and squid are export commodities. Cuttlefishes are cleaned and their viscera, cuttle bones and tentacles are removed. The white fleshy portion of the body is deep freezeed and exported. The edible oyster

Crossostrea madrasensis, the great clam *Meretrix meretrix* and blood clam *Anadora granosa* are commonly occurring at Thoothukudi.

The Gulf of Mannar is of very great importance for pearl and chank fisheries. The submarine plateau of the inshore areas affords excellent habitat for the growth of pearl oyster *Pinctada fucata* and the sacred chank *Xancus pyrum*. Chanks prefer fine and soft sandy areas locally called 'Poochimanal' or 'piral' and the oysters are attached to hard rocky substrata called 'paar'. There are more than 65 well-known 'paars' and lesser in number of good chank grounds in the Gulf of Mannar known to fishermen by their depth and location fixed by land bearings.

The pearl oysters and chanks are fished by the age-old skin diving by expert fishermen. The craft and accessories used for fishing both chanks and pearl oysters are identical. Fishing by skin diving is possible only in clear waters and the season depends on the locality. The chank fishing is done at Vedalai, Periapattinam, Kilakarai, Mundal, Kannirajapuram and Thoothukudi when the Gulf of Mannar is calm and the waters clear from November to middle of May. The oyster fishing is done only at Thoothukudi.

Other fishery resources

The holothurians commonly known as sea cucumbers are one of the commercially important marine resources and are exploited on a large scale along the Gulf of Mannar region. The holothurians, locally called 'Atta' are boiled and sundried after repeated processing side Beche-de-mer, the dried product of this animal is exported to Indonesia, China and Singapore which form one of delicacy in the food items in these countries. The intertidal areas of the islands in the Gulf of Mannar are rich in holothurians such as *Holothuria scabra* and *H. atra*. They support a well-established Beche-de-mer industry in India.

The Gulf of Mannar is also a grazing ground for the sea cow Dugong dugon.

The *Cymodocea* beds (seagrass) offer a good grazing ground for the dugongs. Dolphins, another marine mammal also occur in the Gulf of Mannar sea. Though these are protected animals under Indian Wild Life Protection Act, 1972, they are hunted indiscriminately for their flesh.

Another unique feature of island ecosystem in the Gulf of Mannar is the cultivable fin and shellfish seed resources. The tidal streams and tidal creeks in the islands as well as in the coastal region at Pamban offer vast potential grounds for the collection of seeds. Seed of milkfish (*Chanos chanos*), grey mullets (*L. macrolepis* and *L. seheli*), the sandwhiting *Sillago sihama*, the rabbitfish (*Siganus* spp) and the prawn (*P. indicus*) are occurring in Krusadai, Pullivasal, Poomarichan, Manoli, Manoli-puti and Hare islands and also at Chinnapalam and Thoppukadu of Pamban. Milkfish fry and fingerlings can be collected from March-July and mullets throughout the year.

In recent years, the ornamental fishes have assumed importance due to its great market potential. They are caught and exported to foreign countries. A wide variety of these fishes occur in Gulf of Mannar. The coral reef beds provide shelter for these fishes. To mention some of the ornamental fishes are *Amphiprion sebae*, *Monodactylus argenteus*, *Holocentrus rubrum*, *Chaetodon collaris*, *Abudefduf septemfasciatus*, *Callyodon ghobban*, *Pterois volitans*, *Cephalopholis boenak*, *Lutjanus* spp. *Scatophagus argus*, *Acanthurus* spp. *Lethrinus* spp. *Hippocampus* spp. and *Syngnathus* spp.

Conclusion

Nature conservation of marine resources and habitats has assumed great significance in the context of the role of conservation in socio-economic development and the execution of its functional role. The Central Marine Fisheries Research Institute with its centres at Mandapam and Thoothukudi has conducted a detailed survey of all the islands in the Gulf of Mannar extending from Rameswaram to Thoothukudi for the establishment of marine park. Due to the rich faunal and floral assemblage, the Gulf of Mannar Biosphere has been declared as 'National Marine Park'.