Current status of biodiversity and health of the coral reef ecosystem of Palk Bay

Sandhya Sukumaran, K. Vinod, K. S. Sobhana, T. S. Naomi, Rani Mary George, Mary K. Manisseri, Laxman Shankar Korabu, N. Jesuraj and M. Seeini
Central Marine Fisheries Research Institute, Cochin, Mandapam Regional Centre of CMFRI
Vizhinjam Research Centre of CMFRI, Tuticorin Research Centre of CMFRI

The coral reefs in Palk Bay run parallel to the shore between longitudes 79°17’ E and 79°8’ E, at the latitude 9°17’ N. It lies in an east-west direction and is about 200 to 600 m away from the shore at different places at a depth of 1 to 5 m.

The western part of this reef which extends westward from Pamban Pass up to Thedai is called Velapertumunai reef and the eastern part which extends up to Pamban Pass is called Kathuvallimunai reef. Both the reefs of Palk Bay were surveyed to assess the biodiversity profile and health of corals and sponges. A drastic reduction in coral cover was found in both the reefs when compared with the results of the surveys conducted in 2004. The live coral cover of Velapertumunai reef declined from 44% in 2004 to 13.6% in 2008. In Kathuvallimunai reef, it declined from 37.8% to 12.9%. Massive corals were dominant in both the reefs in 2004 whereas in
2008, branching corals were found to be dominant. Underwater photographs were taken at locations where the surveys were carried out. In many places the corals were found dead, bleached or covered with sediments and seaweeds (Fig. 1 & 2). Patches of live Acropora sp., Hydnophora sp. and brain coral were also found in these places (Fig. 3, 4 & 5). In most places, visibility was poor due to siltation.

The disease prevalence in hard corals was also studied. Massive corals were found to have more incidences of diseases than branching corals. Brown band syndrome (Fig. 6), Porites ulcerative white spot syndrome, pink line syndrome/Porites pinking (Fig. 7), etc. were noticed. In pink line syndrome, pink colouration was observed around the dead and scarred tissues in colonies of Porites spp. The development of pink colouration could be the symptom of a disease or simply a response of the coral to a variety of competitive, invasive or parasitic interactions including cyanobacteria. Samples were collected for microbiological as well as histological investigations to understand the etiology of these disease conditions.

The surveys conducted also revealed that the sponge population in Palk Bay is highly diverse. The sponges exhibited a variety of shapes and colours. Generally, sponges were found to establish in patches in the intertidal zone, very close to the coral
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Fig. 8. Sponges on sandy substratum

However, there also existed many species among the corals, particularly growing on the dead corals and rocks. Majority of the sponges belonged to the class Demospongiae. Threats like siltation are of serious concern to the survival of sponges and it is therefore necessary to record and document the present sponge faunal diversity as a basic step towards protection of these highly valuable and pharmacologically important resource.

Emergence of triggerfishes (Family: Balistidae) as an alternate lucrative target fishery for trawls along the Tuticorin coast in Gulf of Mannar

E. M. Abdussamad, K. K. Joshi, T. S. Balasubramanian, P. U. Zacharia and K. Jeyabalan
Tuticorin Research Centre of Central Marine Fisheries Research Institute, Tuticorin

Fishes of the family Balistidae are commonly known as trigger fishes. Globally the family is represented by about 40 species belonging to 11 genera. The name triggerfish arose as the second dorsal spine act as a trigger to the first dorsal fin. Locally they are known as ‘Kilathi’ in Tamil. Though they used to occur in trawl catch of Tuticorin coast from time immemorial, they were thrown back into the sea by fishermen mainly due to lack of market demand and also for want of onboard storage space. Trawlers used to avoid areas of their congregation as they considered it a menace leading to wastage of energy and time.

But the scenario changed by mid-nineties, with decline in catches of commercial groups and increased demand for low value fishes for fishmeal preparation for poultry industry. This prompted the fishers to land whatever they get in the net including triggerfishes. Being available in huge quantities at nominal price, some local traders utilized it as a fishmeal substitute in poultry feed. Feed back from traders indicated that triggerfish substituted feed boosted faster growth in poultry. This and its low cost prompted the traders to opt for this resource, whenever available. Regular monitoring of fishery during 2000-’07 shows that balistids became an important constituent representing about 18.6% of the trawl catch at Tuticorin (Table 1). Their production fluctuated widely during the period with lowest annual production of 55 t in 2005 and highest of 26,625 t in 2007. Catch rate (CPUE) and contribution to the total fish production in 2007 was 927 kg/unit and 59.6% respectively as against an average value of 16.4 kg/unit and 18.6% for the period. Small triggerfishes congregate around coral reef areas off Tuticorin round the year and enter the trawl catch in huge quantities with the peak during August-December (Table 2).

Contrary to previous years, trawl catch was relatively poor at Tuticorin after the post-ban period in 2007. This, combined with increased operational cost, prompted many trawlers to abstain from fishing. This lead to shooting up of the price of both food fishes and trash fishes. As of earlier years triggerfish entered trawl catch by early July to become the major component (59.6%) in the trawl catch at Tuticorin (Fig. 1). Each boat landed about 6,000 to 20,000 kg depending on their carrying capacity (Fig. 2). Huge congregation was reported in waters of 25-35 fathom depth about 12-15 km from Tuticorin fishing harbour towards south-east direction having 4-5 h voyage from the shore. From the beginning of the season, traders offered Rs. 300/- per quintal and the catch was loaded directly to trucks which