



DIVERSITY AND DISTRIBUTION OF ORNAMENTAL FISHES ALONG GULF OF MANNAR

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Abstract: Corals and coral reefs consists a rich variety of food and ornamental fishes of various types, colours and designs. This paper presents an inventory of ornamental fishes along Gulf of Mannar region which lies between India and Sri Lanka. It has a chain of 21 islands stretching from Mandapam to Tuticorin covering a distance of 140 kms along the coast. The survey was conducted in five regions of Gulf of Mannar namely Tuticorin, Vembar, Keelakarai, Mandapam and Rameswaram (8° - 09° 17' N and 78-79°19'E) to record the resource potential during March 2012 to October 2012. Traps were used for fish collection in the reef areas such as Keelakarai, Mandapam and Rameswaram. In Tuticorin and Vembar regions fishes were collected from the trawl bycatches. Immediately on capture the fishes were thoroughly cleaned and photographed. A total of 51 species belongs to 38 genera, 29 families and 5 orders were collected during the study period. The species-rich families were Pomacentridae (damsel fishes), Lutjanidae (snappers), Siganidae (spinefoot), Theraponidae (therapon perch), Balistidae (file fishes) and Tetraodontidae (blow fishes). These families consist of the major ornamental fishes that have great demand in fish trade and order Perciformes is well represented in this area. Among the five sites selected for the study, Tuticorin and Rameswaram have recorded relatively higher diversity. The findings of this study show that all the sites selected for study maintains a relatively rich assemblage of ornamental fishes. Most of these ornamental fishes enjoy abundance in distribution and offer immense scope for export and development of home aquarium industry in the country.

Key words: Gulf of Mannar, marine ornamental fishes, diversity, resource potential, coral fishes.

The marine aquarium fishes, referred to as 'marine ornamental' or reef fishes, are abundant in the tropical seas particularly in regions which are rich in corals, seaweeds, sea grasses and also in the regions which have rocky bottom. Coral reef fishes comprise the most special assemblage of vertebrates on earth. The variety of shapes, sizes, colours, behaviour and ecology exhibited by reef fishes is amazing. Coral fishes are classified into more than 100 different families. The vast majority is bony fishes and a small minority is cartilaginous. Reef fishes are the most diverse elements in the reef fauna and because of their wider ecological significance, some families of reef fish are valuable groups for monitoring the health of reefs and for investigating factors underlying the high species diversity characteristics of reef ecosystem. Some

fishes such as species of butterfly fish have been proposed as useful indicator species of reef development as well as health (Reese, 1981; Ohman *et al.*, 1998). Our resources in the reefs are fast dwindling; hence the study of diversity in the coral reef ecosystem is of great significance to assess the changes over a period of time. The strength of association between organisms and their habitat can provide an indication of the level of habitat change (Jones and Andrew, 1993) and an array of studies have documented positive relationships between fish abundance as well as diversity and coral cover (Bell and Galzin, 1984; Findley and Findley, 1985; Hart *et al.*, 1996). Studies on the most diverse element i.e., fish species in the coral reef ecosystem help to understand the presence status and the changes taking place over a period of time. Gulf of Mannar

Diversity and distribution of ornamental fishes along Gulf of Mannar

in the Southeast coast of India extends from Rameswaram Island in the North to Kanyakumari in the South. It has a chain of 21 islands stretching from Mandapam to Tuticorin covering a distance of 140 km along the coast. Gulf of Mannar is endowed with a rich variety of marine organisms because it includes ecosystems viz., coral reefs, rocky shores, sandy beaches, mudflats, estuaries, mangrove forests, seaweed stretches and sea grass beds. Gulf of Mannar is considered as 'Biologists paradise' for it has 3600 species of flora and fauna.

After analyzing the diversity of species and species richness, five stations were fixed for sampling of specimens, which include such as Tuticorin, Vembar, Keelakarai, Mandapam and Rameswaram. The survey was conducted during March 2012 to August 2012. Trap fishing was done in Keelakarai, Mandapam and Rameswaram and traps were kept in water for a minimum period of 24 hours to a maximum period of 120 hours. The traps were covered with a nylon mesh of 10 mm size to prevent the escape of small fishes. Traps, the best environment friendly gears, do

not cause any destruction to corals. In Tuticorin and Vembar, fishes have been collected from trawl by catches as there was no scope for trap fishing. Immediately on capture, fishes were thoroughly cleaned, the fins were well spread and fixed with needles on cardboard and few drops of 10% formalin to prevent the fins from folding back. After completing the photography work, specimens were preserved in 10% formalin and transported to the laboratory in suitable containers for detailed investigations.

A total of 51 species belonging to 38 genera, 29 families and 5 orders were recorded along the five stations of Gulf of Mannar regions (Table 1). The species rich family Pomacentridae (24%) dominated in all four sites followed by Lutjanidae (20%), Scaridae (12%), Theraponidae (12%), Balistidae (12%), Tetraodontidae (12%) and Siganidae (8%). As the order wise distribution is concerned, Perciformes is the largest with maximum number of fishes. Among the five locations selected for the study Tuticorin and Rameswaram have high abundance of ornamental fishes.

Table 1. Major ornamental fish families and species collected from Gulf of Mannar

Family Pomacentridae (Order- Perciformes)	Family Scaridae (Order- Perciformes)
<i>Amphiprion sebae</i>	<i>Callyodon oktodon</i>
<i>Chromis caeruleus</i>	<i>Callyodon dussumieri</i>
<i>Dascyllus trimaculatus</i>	<i>Callydon ghoban</i>
<i>Pomacentrus cyanomos</i>	
<i>Abudefduf septemfasciatus</i>	
<i>Abudefduf biocellatus</i>	
Family Lutjanidae (Order- Perciformes)	Family Theraponidae (Order- Perciformes)
<i>Lutianus rivulatus</i>	<i>Pelates quadrilineatus</i>
<i>Lutianus fulviflamma</i>	<i>Eutherapon theraps</i>
<i>Lutianus russelli</i>	<i>Therapon jarbua</i>
<i>Lutianus kasmira</i>	
<i>Lutianus lineolatus</i>	
Family Balistidae (Order- Tetraodontiformes)	Family Tetraodontidae (Order- Tetraodontiformes)
<i>Odonus niger</i>	<i>Chelonodon patoca</i>
<i>Abalistes stellaris</i>	<i>Arothron immaculatus</i>
<i>Balistoides viridescens</i>	<i>Arothron hispidus</i>
Family Siganidae (Order- Perciformes)	
<i>Siganus oramin</i>	
<i>Siganus javus</i>	

Ornamental fishes are important to the biological processes occurring in the marine environment and its loss would affect the health of the ecosystem (Sujitha Thomas *et al.*, 2011). Findings of this study show that the sites selected support relatively rich assemblage of ornamental fishes and most of the species are abundant in distribution thereby offering immense scope for the export and development of aquarium industry in the country. But a policy for sustainable exploitation of the resources is yet to be formulated as breeding of coral fishes in captivity has not been fully successful till date. Unlike freshwater ornamental species in which over 90% of the species are produced in farms, the marine ornamental species are collected from the coral reefs and adjacent habitats, which are natural ecosystems. Hence, sustainability of this industry is controversial as overexploitation may lead to sudden resource depletion, making several species endangered. The ultimate solution to a long term sustainable trade of marine ornamental fishes can be achieved only through the development of fool proof aquaculture technologies.

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