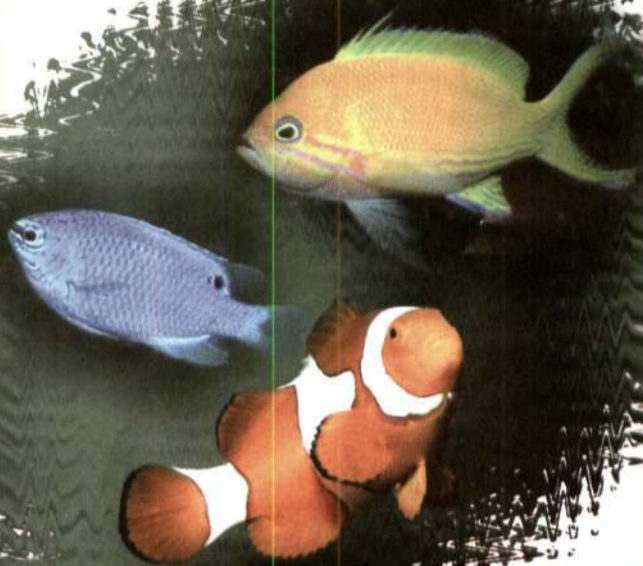


Technology Information Series - 3  
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# MARINE ORNAMENTAL FISHES



**CENTRAL MARINE FISHERIES  
RESEARCH INSTITUTE**  
(INDIAN COUNCIL OF AGRICULTURAL RESEARCH)  
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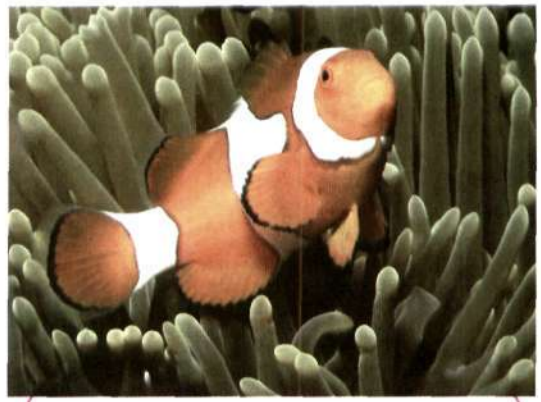


## Marine Ornamental Fishes

Ornamental fishes are fascinating for their brilliant and attractive colouration/pattern, tiny size and their ability to adapt in confined aquarium tanks. These fishes are a fancy for the people all over the world and aquarium fish keeping has been developed as a hobby by many. The world ornamental fish industry has been growing rapidly over the years. The total turnover, has been estimated over 5 billion US \$, of which India's contribution is less than 1%.

The marine ornamental fishes are mostly associated with the coral reef ecosystem. The coral reefs provide a variety of ecological niches, which are the abode of extremely varied and beautiful ornamental fish species. The peculiar shapes and brightly coloured patterns have made these fishes very attractive. The major oceanic reef areas of coral fish distribution in India are the Lakshadweep Islands and the Andaman-Nicobar groups of islands. The other areas of coral fish distribution are the coastal areas of fringing or patch reefs of Gulf of Kutch to Mumbai, areas of central west coast between Mumbai to Goa, certain locations of southwest coast (Thirumullavaram, Vizhinjam to Kanya-kumari), Gulf of Mannar, Palk Bay and Visakhapatnam area. More than fifty reef fish families consisting of nearly 175 genera and about 400 species of ornamental fishes are distributed in the Indian seas.

Recent technological achievements in the field of marine aquarium gadgets coupled with the scientific knowledge on biological filtration and solving the problem of new tank syndrome have contributed greatly to the marine aquarium hobby. These scientific and technological achievements have led to an increased demand for tropical marine aquarium fishes in recent years and this opens up the possibility of developing the marine ornamental fish trade in India.



Clownfish- *Amphiprion percula*

### Resources

1. **Clownfishes and Damselfishes** : The clownfishes and damselfishes of the family Pomacentridae are small hardy fishes and are brilliantly hued. Many are territorial and fight with their own species. The major genera of damselfishes are *Chromis*, *Dascyllus*, *Abudefduf*, *Pomacentrus* and *Neopomacentrus*. The anemonefishes (clownfishes) belong to the genus *Amphiprion* are capable to live with sea anemones since they possess mucous coating over their body by which they are resistant to the stinging of sea anemones. The sea anemone - clownfish association (commensalism) is very attractive and hence they are in good demand in the marine aquarium trade.
2. **Wrasses** : There are many colourful species of wrasses which belong to the family Labridae in the Indian rocky coasts and reef areas. A characteristic of wrasse family is its swimming style, using only the pectoral fins to row itself along, but shooting suddenly ahead by body motion if it feels like it. The major genera of labrids available in our waters are *Gymphosus*, *Halichoeres*, *Stethojulis*, *Thalassoma*, *Labroides*, *Cheilinus* and *Bodianus*.
3. **Parrotfishes** : Parrotfishes of the family Callyodontidae have striking colours. Their name comes from their heavy parrotlike beak which is formed of their fused teeth. Parrotfishes of the genus *Callyodon* are abundantly distributed in our reef areas.
4. **Gobies and Blennies** : They are attractive small bottom living fishes which are commonly found in tidal



pools of rocky coasts. The common genera of gobies and blennies in our waters include *Acentrogobius*, *Aspidonotus*, *Istiblennius* and *Salarias*.

5. **Triggerfishes and Filefishes** : Triggerfishes come under the family Balistidae. The triggerfishes are so named because of a locking device on the dorsal fin that triggers it into a stiff, erect spine, fixing the fish in position in a crevice in coral. The common genera of triggerfishes in Indian waters are *Balistapus*, *Odonus*, *Canthidermis* and *Rhinecanthus*. The filefishes belong to the family Monacanthidae. Here the dorsal fin consists of a single long spine. The most common genus of ornamental value in this family is *Pervagor*.
6. **Cardinalfishes** : They are small red or brown, coloured fishes of the family Apogonidae. The common genera in our waters include *Pristiapogon*, *Ostorhynchus*, *Archamia*, *Apogon* and *Paramia*.
7. **Pufferfishes and Porcupinefishes** : The pufferfishes of the family Tetradontidae have the ability to inflate their bodies with water and then turning upside down so that they float to the surface. The common genera found in Indian coasts include *Arothron* and *Canthigaster*. The porcupinefishes of the family Diodontidae are also able to inflate their bodies. They have long sharp spines over the body. When inflated, the body is round and spines



Blue Damsel-*Pomacentrus*

protrude formidably. The common genus of our coast is *Diodon*.

8. **Angelfishes**: These fishes which belong to the family Pomacanthidae have grace and beauty. The Koran angel *Pomacanthus semicirculatus* and the emperor angel *P. imperator* are very impressive species in the marine aquarium.

9. **Butterflyfishes** : Butterflyfishes of the family Chaetodontidae are small, swift and surprisingly well patterned, and bright coloured fishes which are abundantly represented in the Indian coasts. The most common species are *Chaetodon collare*, *C. auriga*, *C. decusatus* and *C. lunula*. Relatives of the genus *Chaetodon* are the bannerfishes of the genus *Heniochus*. *H. acuminatus*, the poor man's Moorish Idol is a very attractive aquarium fish. The body has black and white stripes and yellow on the dorsal and tail fins.
10. **Surgeonfishes** : These fishes of the family Acanthuridae have oval body shape because of the identical rounded shapes of soft dorsal and anal fins. Their name is derived from the sharp knife like spine on each side of the caudal peduncle. Many species of the genus *Acanthurus* are common in our rocky coasts and reef areas.
11. **Moorish idol**: *Zanclus canescens* is the only species of the family Zanclidae. The snout is projected tube like and there are horn like protuberances over the eyes.
12. **Batfishes** : They belong to the family Ehippididae. They grow very fast. When young, they are most attractive, but tend to lose some of their beauty as they rapidly grow. The common species available along our coasts are *Platax teira* and *P. orbicularis*.
13. **Groupers**: Groupers of the family Serranidae are widely distributed in the rocky Indian coasts. The colourful species of the genus *Epinephelus* include *E. merra*, *E. fuscoguttatus*, *E. tauvina* and *E. malabaricus*.
14. **Tigerfishes** : They belong to the family Theraponidae. The name is derived from the typically striped body. The three striped tigerfish *Therapon jarbua* is very common along Indian coasts.
15. **Frogfishes** : Frogfishes of the family





Antennaridae are found in our coastal areas. The best known frogfish is the *sargassum* fish *Histrio histrio*. It is seen wherever *sargassum* weed is found. The body is brownish yellow mottled with darker colour. The fish becomes perfectly concealed among the *sargassum* weed where it lives.

16. **Lionfishes:** Lionfishes of the family Scorpaenidae owe their names to their spreading pectoral and dorsal fins. It is the wild beauty in a marine aquarium. Occasionally found in our rocky and coral seas and the most popular species in the aquarium is *Pterois volitans*. Although looks beautiful, its spine can inflict wounds and inject poison.
17. **Seahorses and Pipefishes :** They belong to the family Syngathidae. Pipefishes as their name implies are straight. In seahorses the head is bent down, joining the body almost at right angles. Both have tubular snouts and prehensile tails. Seahorses belong to the genus *Hippocampus*. They swim in an upright position, stiff but gracefully. The female lays her eggs in a pouch on the male's underside.
18. **Boxfishes :** They belong to the family Ostraciidae and have hard outer cases that completely enclose their body. Many species of the genus *Ostracion* are available in our rocky coasts.
19. **Eels:** Moray eels are often attractively coloured. Many eels belonging to the genera *Gymnothorax* and *Muraena* are distributed in our reef areas and rocky coasts.
20. **Squirrelfishes :** These are brightly coloured fishes belonging to the family Holocentridae. Typically the body is red and the fins are yellow. The genera available in our coasts include *Holocentrus* and *Myripristis*.



Maypole butterfly fish - *Chaetodon meyeri*

## Conservation

The conservation of the coral growing areas is of prime importance in protecting the marine ornamental fishes. A coral reef habitat is a dynamic and delicate ecosystem with the maximum biodiversity in the marine environment. For a reef to grow and remain healthy, the coral polyps which are maintaining its outermost surface of limestone must be able to grow and reproduce. Its growth is very slow and takes several years to form a reef. Today on a global level, the fascinating communities of coral reef are increasingly at the risk from pressures of man's expanding developmental activities. Living coral polyps are particularly susceptible to sediments which can sometimes smother than clogging up the mouths and tentacles and hindering respiration and feeding. In recent years several incidences of destruction of vast numbers of corals by heavy sedimentation has been reported following dredging activities in harbours and estuaries. Such human intervention to the seabed can often cause new changes in the direction of currents and patterns of sedimentation which can result in destruction of large areas of coral growth. Besides the above, global warming might cause coral bleaching with direct deleterious effects on the coral associates like many ornamental fishes.

The marine ornamental fishes are intimately associated and adapted to the coral reef habitat. Many of these fishes are residents as adults and produce frequent clutches of pelagic larvae over extended breeding seasons. Unless suitable microhabitat requirements are available, the recruitment of reef fishes will not take place. Hence the exploitation of ornamental fishes should be done on a purely scientific basis without inflicting any damage to the coral reef ecosystem. Otherwise we will be facing the risk of converting the coral paradises to the graveyards of these extremely beautiful fishes. The

following measures are suggested for preserving the biodiversity of marine ornamental fishes along the Indian coast.

- Indiscriminate dredging and blasting of coral growing areas or adjacent areas for navigational and harbour activities should be avoided.
- Collection of corals, pitting the ground, removal of surface soil, mining of sandstones for construction purposes, cutting of natural vegetation from the shore, picking of shells and polluting the shore by oil and other substances should be prevented.
- Destructive fishing methods which damage the ecosystem should not be practiced in coral growing areas.
- Collection of marine ornamental fishes from the wild for aquarium fish trade should be practiced only by eco-friendly methods without destroying the corals.
- Overexploitation of ornamental fishes should be avoided.
- Research on captive breeding and rearing of marine ornamental fishes should be promoted which can lead to the supply of hatchery produced marine ornamental fishes to the aquarium fish trade. This can reduce the indiscriminate exploitation of these fishes from the wild.



Powderblue surgeon fish-*Acanthurus leucosternon*

There is enormous scope to develop ornamental fish industry in India. Ornamental fish collection, breeding, seed production and marketing as an industry can create employment opportunities. India can create a substantial additional employment to about 0.5 million people annually in this sector.

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