

**CREDIT SEMINAR
ON
MARINE ORNAMENTAL FISH TRADE IN INDIA**



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INTRODUCTION

Globally ornamental fish production is a multibillion dollar industry. Since 1985 the value of international trade in exports of ornamentals has increased at an average growth rate of approximately 14 percent per year. Ornamental fish keeping was initially considered as one of the attractive hobbies practised in the developed countries but recently it is gaining impetus in developing countries too as they now contribute for about two thirds of the total export value. 1.5 to 2 million people worldwide are believed to keep marine aquaria. The trade which supplies this hobby with live marine animals is a global multi-million dollar industry, worth of US\$200-330 million annually. Ornamental marine species (corals, sponges, fishes and other invertebrates and fish) are collected and transported mainly from Southeast Asia, but also increasingly from several island nations in the Indian and Pacific Oceans.

The Philippines, Indonesia, Solomon Islands, Sri Lanka, Australia, Fiji, the Maldives and Palau supplied the major share of marine ornaments during the recent years. The main destination markets: The United States, The European Union (EU) and, to a lesser extent, Japan. Nearly 98 % of the marine ornamental species marketed are wild collected mainly from coral reefs of tropical developing countries. Trade is mainly contributed by wild collection unlike inland ornamental industry. Furthermore, rapid changes in husbandry technologies have allowed for marine aquarist to move from normal fish tanks to aquariums that replicate living ecosystems (reef aquariums).

Unlike freshwater ornamental fishes, where the trade is mainly contributed by species that are farmed, the marine ornamental fishes are obtained from wild collections. Since the tropical marine aquarium fish and invertebrates in the trade are directly exploited from the coral reefs, long term sustainability of the aquarium industry is a controversial aspect. The damaging techniques such as the use of sodium cyanide used for wild collection, the over harvesting of target organisms and the high level of post harvest mortality are the major constraints associated with the trade of marine ornamentals based on wild collection. But if managed properly, the aquarium industry could support long term conservation and sustainable use of coral reefs. Management of marine ornamental fisheries has to be implemented in such a way that they are biologically sustainable, do not conflict with other resources and keep post harvest mortalities to the minimum. Habitat damage and negative impact to the ecosystem have to be avoided. Species that are unsuitable to aquaria should not be collected. It is evident from the global scenario of the marine ornamental trade that even though the trade is very lucrative and is expanding rapidly, the problems involved are complex and requires appropriate management strategies.

COMMON MARINE ORNAMENTAL FISHES OF INDIA

India is endowed with more than 200 varieties of export oriented marine ornamental fishes and it is widely accepted. The Gulf of Mannar is the First Marine Biosphere Reserve not only in India but also in South and Southeast Asia. The recorded marine ornamental fishes come under 24 families, of which the family Acanthuridae, Balistidae, Chaetodontidae, Haemulidae, Labridae, Pomacanthidae, Pomacentridae, Scaridae and Syngnathidae have a very rich biodiversity perspective in Gulf of Mannar. A total of 1,471 species of fish are traded worldwide. Damsel fish (Pomacentridae) make up almost half of the trade. Species of angelfish (Pomacanthidae), surgeonfish (Acanthuridae), wrasses (Labridae), gobies (Gobiidae) and butterflyfish (Chaetodontidae) accounts for approximately another 25-30 per cent.

The most traded species are the blue-green damselfish (*Chromis viridis*), the clown anemonefish (*Amphiprion ocellaris*), The whitetail dascyllus (*Dascyllus aruanus*), The sapphire devil (*Chrysiptera cyanea*) and The threespot dascyllus (*Dascyllus trimaculatus*). Two species known not to acclimatize well to aquarium conditions are nonetheless very commonly traded. They are the bluestreak cleaner wrasse (*Labroides dimidiatus*) and the mandarin fish (*Synchiropus splendidus*). Data further indicate that species characterized as 'truly unsuitable', mainly due to their restricted dietary requirements, such as the foureye butterflyfish (*Chaetodon capistratus*), the harlequin filefish (*Oxymonacanthus longirostris*) and the Hawaiian cleaner wrasse (*Labroides phthiophagus*).

ORGANIZATION OF TRADE

It is complex and extremely dynamic. In exporting nations it is likely to involve a series of collectors/ fishers, wholesalers, middlemen and exporters, while in importing nations it involves a number of importers, wholesalers, retailers and, more recently, transshippers. It involves the following steps

COLLECTION:

Collectors tend to be small-scale fishermen from tropical countries who work alone or in small groups, often composed of family units, and who are either self-employed or working for a wholesaler/exporter. Fish are collected using nets (e.g. hand nets, cast nets) and fishing lines. In Sri Lanka and the Maldives collectors catch most of their fish using hand nets. In Australia the Pacific region and Florida fishers often use much larger barrier, drop or fence nets. Upon collection, fish, corals and invertebrates are placed separately in plastic containers or individual bags. Coral pieces tend to be covered with plastic wrap to prevent injury. To avoid the fishes' air bladders rupturing due to decreasing hydrostatic pressure, individuals caught on deeper parts of the reef are often placed in a dark mesh cage and lifted to the surface very slowly (3 m every

30-40 minute) to allow their bladders to decompress. Once ashore, fish and invertebrates are placed in separate holding tanks, or immediately packaged for transport and/or export. Collectors are usually paid for the number of fish/invertebrates they have collected and prices for individual species vary greatly depending on their popularity on the market.

TRANSPORT:

Fish are quarantined and starved for at least 48 hours prior to shipment. To avoid putting the health of fish at risk, a recommended maximum travel time of 40 hours has been suggested for shipments. For each consignment a licence has to be issued allowing it to leave the exporting country. Cartons of coral species and giant clams need to be accompanied by the relevant CITES permits. Transport associations such as the International Air Transport Association (IATA) and the Animal Transportation Association (ATA) organize and manage the transport of live marine ornamentals. At the receiving end, importers must clear the shipment with customs and the consignment undergoes another veterinary check

TRANSHIPPING:

Transshipping is an activity that emerged during the 1970s and 1980s. It involves grouping the orders of several retailers and/or wholesalers and placing them with an exporter, collecting the shipment at the airport, clearing customs and redistributing the boxes without opening them. The responsibility for the entire shipment falls onto the retailer. Where additional services, beyond picking up the consignment, clearing customs and transport are required, the activity is referred to as 'consolidating'. Particularly in Europe, transshippers are required to hold a licence in order to operate. However, no skills with respect to fish handling are necessary to obtain such a licence

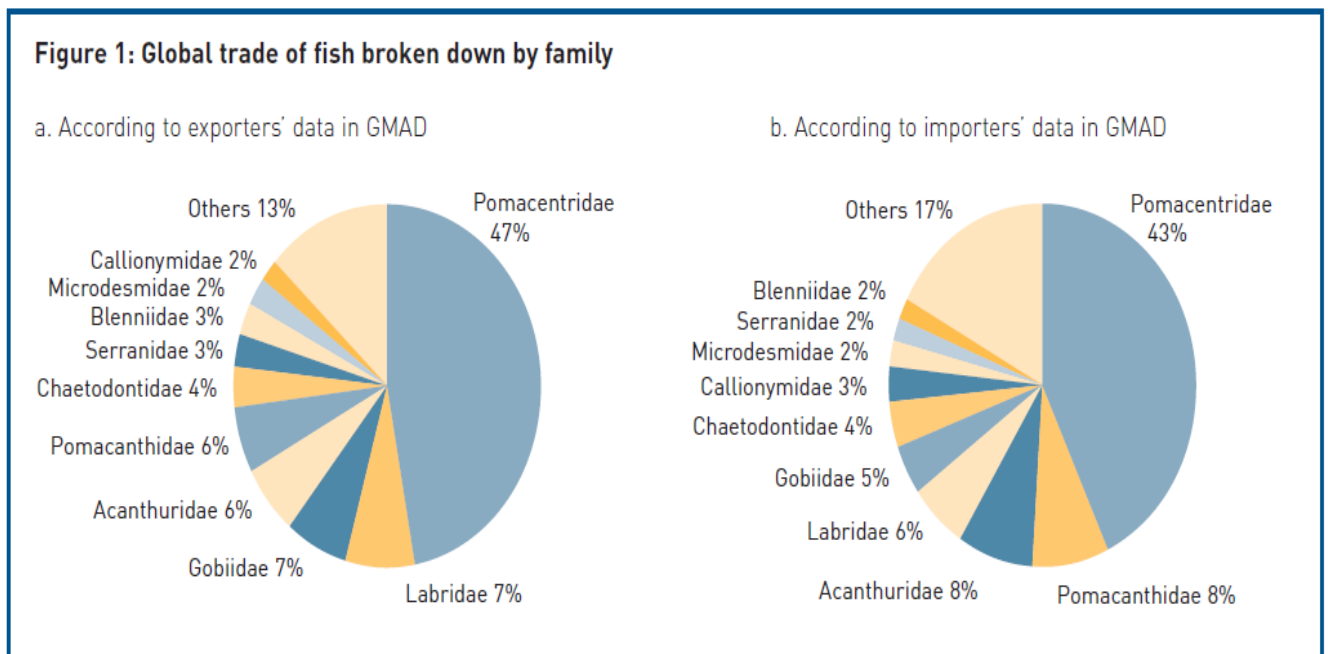
GOVERNMENTS AND ASSOCIATIONS

- ▶ Governments of many exporting countries often play an important role in the trade of marine ornamentals, ranging from financial assistance to improved management schemes and trade regulations
- ▶ Certain countries/ states set fishing quotas (e.g. Florida), prohibit collection from certain sites (such as designated restricted areas in Hawaii) or prohibit certain capture methods (such as cyanide in Indonesia).
- ▶ Individuals involved in the marine ornamental industry often join forces and form associations or syndicates
- ▶ Examples include The Singapore Aquarium Fish Exporters' Association (SAFEA), OFI, OATA (Ornamental Aquatic Trade Association) and the Pet Industry Joint Advisory Council (PIJAC).

- ▶ The PIJAC is the world's largest pet trade association, representing all segments of the pet industry

THE GLOBAL MARINE AQUARIUM DATABASE (GMAD)

- ▶ Since April 2000, UNEP-WCMC and MAC have been collaborating with members of trade associations such as SAFEA, OFI and OATA to establish GMAD as a freely available source of information on the global aquarium industry.
- ▶ The common objective of GMAD is to gather, integrate, collect, standardize and provide fast and easy access to data on the trade of individual species by placing this information in the public domain, through a web-searchable interface (<http://www.unep-wcmc.org/marine/GMAD>).
- ▶ GMAD trade data are linked to two external databases:
 - ▶ FishBase for photographs of fish species, and fish distribution and taxonomy, and
 - ▶ The Species Conservation Database for information on invertebrate taxonomy, distribution, relevant legislation, conservation status and associated literature and common names
- ▶ GMAD was designed to allow for import and export data to be queried separately



MAC CERTIFICATION AND AQUARIUM TRADE

- ▶ The Marine Aquarium Council (MAC) is a not-for-profit organization working to protect coral reefs worldwide.

- ▶ The Marine Aquarium Council (MAC) has developed internationally approved standards and a third-party certification system for the trade in marine aquarium organisms to ensure they remain healthy.

- ▶ MAC Certification delivers sustainable livelihoods and poverty reduction to rural villagers in developing countries

- ▶ It transforms an industry that has been responsible for environmental destruction into a positive force for conservation and sustainable use

- ▶ Provides an assessment and monitoring protocol for reefs from which marine aquarium organisms are collected

- ▶ Provides training to collectors on proper collecting and post-harvest handling techniques

- ▶ MAC has undertaken the following: developed standards for quality products and sustainable practices; established a system to certify compliance with these standards and label the results; and begun creating consumer demand and confidence for certification and labelling

- ▶ Requires the use of non-destructive fishing methods by collectors

- ▶ Improves the occupational health conditions of collectors

- ▶ Improves business relationships

CERTIFICATION AND LABELING

The MACSM Certification system was launched in November 2001 along with the unveiling of the MACSM Certified label. Following the launch, 70 marine aquarium companies in more than a dozen countries worldwide publicly stated their commitment to become certified. MAC has accredited five independent certifiers to audit compliance of marine aquarium operators to the MACSM Standards. The first implementation of MACSM Certification took place in the Philippines in June 2002. Three export companies, three collector associations and three collection areas were audited by a MACSM Accredited certifier. The exporters were located in Metro Manila. The collector associations and collection areas were located in Palauig (province of Zambales in Luzon) and in Tubigon and Clarin (province of

Bohol in the Visayas). Informal communications from the certifier sound promising. The results will be made public after the certifier's formal audit reports are finalized.

MARINE AQUARIUM TRADE IN INDIA

- ▶ It is well understood that India has a wealth of marine ornamental fishes in our island ecosystems of Lakshadweep and Andaman Nicobar, besides many areas of mainland.
- ▶ Ornamental fish trade is mostly with fresh water fishes (90%) of which 98 percent are cultured and two per cent are captured from wild. The rest 10 per cent of total ornamental fish trade are with marine fishes of which 98 per cent are captured and two per cent from cultured
- ▶ World trade of ornamental fish is estimated to be about Rs. 2000 crores, but, India's share is only Rs. 15 crores, which is very insignificant.
- ▶ The marine fish and invertebrate resources from the Andaman, Nicobar and Lakshadweep Islands are reported to be the greatest in Asia.
- ▶ More than 500 species of fishes and 200 species of invertebrates are available in these islands.
- ▶ The actual potentials of the ornamentals are remarkable that India can annually export marine ornamental fishes to the tune of 340 millions US\$
- ▶ About 90% of Indian aquarium fish exports from Kolkata, followed by 8% from Mumbai and 2% from Chennai (Felix, 2009).
- ▶ In Bangalore, the number of outlets selling ornamental fish was nearly 700 a decade ago. Now more than 1,200 outlets sell ornamental fish there, and the monthly turnover is around ₹1.5 crore in Bangalore alone.
- ▶ A total of 400 species (250 indigenous fresh water fish and 150 marine fish) have been identified as potential and suitable for tropical climate of India
- ▶ Potential marine ornamental fish species resources found in India are: Clown fish, Damsel fish, Moorish idol, Lion fish, Parrot fishes, Box fishes or trunk fishes. Marine angels, Butterfly fish, Cleaner wrasse, Cardinal fishes, Surgeon fishes, Hawk fishes, Bat fishes, Puffer fishes and Seahorses .
- ▶ The public and private sector entrepreneurs who have approached for the technology were given training under Consultancy Processing Cell (CPC) of the CMFRI.
- ▶ This has resulted in the emergence of several marine ornamental fish trade shops all over the country.

- ▶ The National Fisheries Development Board (NFDB) has also developed schemes to fund for marine ornamental fish culture

- ▶ Some institutions have taken species of their interest.....

1. CMFRI - marine ornamental fishes and invertebrates:

- ▶ Clown fishes (*Amphiprion chrysogaster*; *A. sebae*), Sea horse (*Hippocampus kudu*), Star fish (*Peataceraster regulus*), Cuttle fish (*Sepiella inennis*). Abalone (*Haliotis larria*), Sea cucumbers (*Holothuria scabra* and *H. atra*).

2. CAS-MB, Annamalai University, Parangipettai

- ▶ Sabae clown fish (*Amphiprion sebae*), Orange clown fish (*A. percula*), Clown anemone fish (*A. ocellaris*), Yellow tail clown fish (*A. carkii*), Spinecheek anemone fish (*Premnas biacueatus*), Coral demoiselle (*Neopomacentrus nernurus*), Caerulean damsel (*Pomacentrus caeruleus*), White tail dascyllus (*Dascyllus aruanus*) and Three spot dascyllus (*D.trimaculatus*).

Management strategies for a sustainable marine ornamental fish trade

- ▶ Biologically sustainable
- ▶ Habitat damage and negative impact to the ecosystem have to be avoided
- ▶ Setting up of quotas and size limits , temporary closures and restricting access to the ornamental fishery through the use of permits
- ▶ MAC certification
- ▶ Policy intervention
- ▶ Exploitation of species which are not suited for aquarium should be avoided

CONCLUSION

If managed sustainably, the trade could support jobs in predominantly rural, low-income coastal communities and so provide strong economic incentives for coral reef conservation in regions where other options for generating revenue are limited. Most of the traded marine ornamental fishes are being collected from the wild and so, the development of marine ornamental hatchery technology and production of young ones to fulfill the increasing demand in the export market is necessary.

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