

Technological
Breakthrough

Captive Breeding and Larval Rearing of Marine Ornamental Fishes

Participatory Approaches in Open Sea Mariculture

A. percula with eggs

P. biaculeatus with eggs

A. percula

P. biaculeatus

A. sebae

N. nemurus

Juveniles of cobia in the cage

India is endowed with more than 200 varieties of export oriented marine ornamental fishes

CMFRI achieved breakthrough in developing a package of technologies on broodstock development, captive breeding and larval rearing of 19 species of marine ornamental fishes (Clown fishes : 9, Damselfishes : 9 and Dotty backs: 1)

Clown fishes bred under captivity

1. Sebae clown (*Amphiprion sebae*)
2. False clown (*Amphiprion ocellaris*)
3. Maroon clown/ Spine cheek anemone fish (*Premnas biaculeatus*)
4. True percula/ clown anemone fish (*Amphiprion percula*)
5. Orange anemone fish (*Amphiprion sandaracinos*)
6. Tomato clown (*Amphiprion frenatus*)
7. Clarkii clown (*Amphiprion clarkii*)
8. Red Saddleback anemone fish (*Amphiprion ephippium*)
9. Pink anemone fish (*Amphiprion perideraion*)

Damselfishes & Dottyback bred under captivity

1. Three spot damselfish (*Dascyllus trimaculatus*)
 2. Striped damselfish (*Dascyllus aruanus*)
 3. Blue damselfish (*Pomacentrus caeruleus*)
 4. Peacock Damselfish (*Pomacentrus pavo*)
 5. Yellow tail damselfish (*Neopomacentrus nemurus*)
 6. Green chromis (*Chromis viridis*)
 7. Filamentous tail damselfish (*Neopomacentrus filamentosus*)
 8. One spot damselfish (*Chrysiptera unimaculata*)
 9. Sapphire devil (*Chrysiptera cyanea*)
1. Redhead Dottyback (*Pseudochromis dilectus*)

Complete package of practices were developed for their hatchery production as an alternative livelihood option for small and large scale fish farmers.

The only alternative for development of a long term sustainable trade of marine ornamental fishes is through hatchery production. Ornamental fish production is more lucrative when compared to other mariculture species, due to their high unit value.

The transfer of technology to public and private sector entrepreneurs is by imparting hands on training through different modes under the Consultancy Processing Cell (CPC).

Advantages of hatchery produced juveniles:

- Reaches marketable size within 2 to 3 months
- High survivability (85 to 95%)
- Disease free and more resistant in artificial system
- Retains normal colouration
- Easily accepts formulated diets
- Easily adjust to life in aquaria
- Fetches high unit value

Beneficiaries

Hatchery produced seeds are being sold in marginal rates to the farmers, aquarium hobbyists and traders (more than 300 persons) from various parts of India.

- Alternative economic options and motivation
- Entrepreneurship development through capacity building
- Resolving group conflicts and promoting social coherence
- Sharing of accountabilities and responsibilities
- Least cost combination and economic profitability
- Institutional support for risk and uncertainties
- Remunerations based on revenue
- Encouraging a Public Private Community Participatory Approach
- Providing legal entitlements to primary stakeholders

Phases for cage culture development

- Phase I - Location testing and technology demonstration
- Phase II - Techno economic evaluation with people's participation
- Phase III - Commercialization and promotion of alternative livelihoods