

**PROMOTING ORNAMENTAL FISH CULTURE IN RELATION TO WOMEN  
EMPOWERMENT**

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**ABSTRACT:**

Aquaculture is a means to fight malnutrition and poverty is being adopted on a large scale in developing countries. Both public as well as private sector have been actively involved in promoting small scale aquaculture among women through training and demonstration with a view to empower them socially as well as economically. There are certain policies related to infrastructural issues that come in the enhancing women's role in aquaculture. Recently it is argued that organising women into groups and linking them with microfinance institutions will go long way in empowering women to undertake aquaculture.

Andhra Pradesh ranks first in aquaculture production but in ornamental fisheries it is still infancy. It can be a promising alternative for many women entrepreneurs by providing livelihood in newly formed Andhra Pradesh. To ensure that women utilise their full potential, it is necessary to provide capacity building and support which will lead to their empowerment. Backyard ornamental fisheries provide a lot of scope for improving their income. More opportunities must be created for women in this sector.

**OBJECTIVE OF THE STUDY:**

This study shows the importance of the ornamental fish industry and identifies the most valuable species in the trade for potential domestic culture, protection in the wild as well as increase in women empowerment.

**KEY WORDS:** Empowerment, Small scale aquaculture, micro finance institutions.

**INTRODUCTION:**

Basic objective of involving women in fisheries development is to make them equal partners to men. This will enable them to participate productively and independently to improve their families nutritional and living standards. They need appropriate knowledge, adequate skills, and appropriate technologies to contribute socially and economically to their community's welfare. These needs should be provided directly to them and not through theme, as was done before.

Women in fishery activities have carried out significant impacts and have brought about greater awareness. Traditionally, the work of rural women is mostly confined to the homestead due to cultural, religious and social restrictions.

The concept behind our presentation is that women entrepreneurships have been carried out in many countries that have become successful, so by promoting such entrepreneurships in our country which helps women a lot and uplifts and adds to the economy, as women does not focus on regulations and gives importance to operational activities.

**ROLE OF WOMEN IN AQUACULTURE ACTIVITIES:**

Aquaculture can ensure the nutritional security to the rural women population who are deprived of such things under prevailing rice- based farming systems prevailing in south East Asia. Fish farming provides the family with an additional source of income and gives women options on how they want to manage their farms. With this increased power, it gives women a voice in the household and also in the community; women can form organisations for fish farming and have meetings to voice their options in society (Bhujel *et al.*, 2008)

### **WOMEN ENTREPRENEURS:**

About 600 women entrepreneurs from west Bengal were taken for exposure visit to learn from the rich experience of kollathur counterparts in Tamil Nadu.

"Today a visit to Howrah and south 24 paraganas districts in the state will prove that there are thousands of families practising ornamental fish rearing. Krishivigyan Kendra, Mysore, organised training for youth from the region with assistance from the board. Similarly, KrishiVigyan Kendra, Karda, in Maharashtra, availed funding from us and conducted skill development programmes for 100 entrepreneurs in breeding and rearing of ornamental fishes, aquarium fabrication and maintenance. We also recently assisted 10 entrepreneurs from Andhra Pradesh to visit the ornamental Kerala Aqua show in Kochi," explains Dr.Rao, Chief Executive NFDB.

The facilities include establishment of 250 backyard ornamental units exclusively for women SHGs along with training and exposure visits for the members.

Plans are on to set up five ornamental fish retail outlets for better marketing. In addition, 10 transport vehicles are to be provided for each of the ten hubs. The board receives a number of applications regularly from Karnataka and Kerala.

### **DISEASE MANAGEMENT:**

Like other captive animals, aquarium fish are vulnerable to a range of disease, many of them triggered by stress such as overcrowding, excessive noise, aggression from other fish, poor water quality or changes in temperature or water chemistry. Commonly experienced problems in aquaria include "Ich" or white spot disease, a skin infection caused by the protozoan parasite *Ichthyophthirius multifiliis*, which Manifests as small white spots over the body and fins; 'fin rot', where fishes fins turned whitish and die back, often following damage or injury, which is caused by bacterial or fungal infection; and various internal or external parasites.

The names commonly given to disease problems encountered by ornamental fish hobbyists, such as 'dropsy', 'pop-eye', and 'fin rot' and so on, are mostly description of Symptoms rather than specific diseases. They may be caused by wide range of disease agents, most of which poorly understood. Although some diseases, such as white spot disease, can cause grossly visible signs in fish, the actual cause may not be determined without suitable training and the aid of microscope, or other specialist diagnostic tests. A veterinarian should therefore be consulted for disease diagnosis, and gross signs alone should not be used to diagnose disease in fish.

The keys to minimizing disease problems in ornamental tanks and ponds are to manage in fishes environment to minimize stress, to maintain water quality.

Ensure there is no over-crowding, and to always quarantine live foods and new fish before adding them to the tank.

Finally, great care must be taken in disposing of dead fish, waste water or other materials from fish tanks, as many diseases of ornamental fish can spread into the wild and affect native fish populations. For example, in 2005 Murray cod were found to be highly susceptible to a dwarf gourami iridovirus, an outbreak of which caused 90% losses in farmed Murray cod in Victoria. Similarly, outdoor fish ponds should be carefully sited and built to prevent overflows from reaching natural waterways.

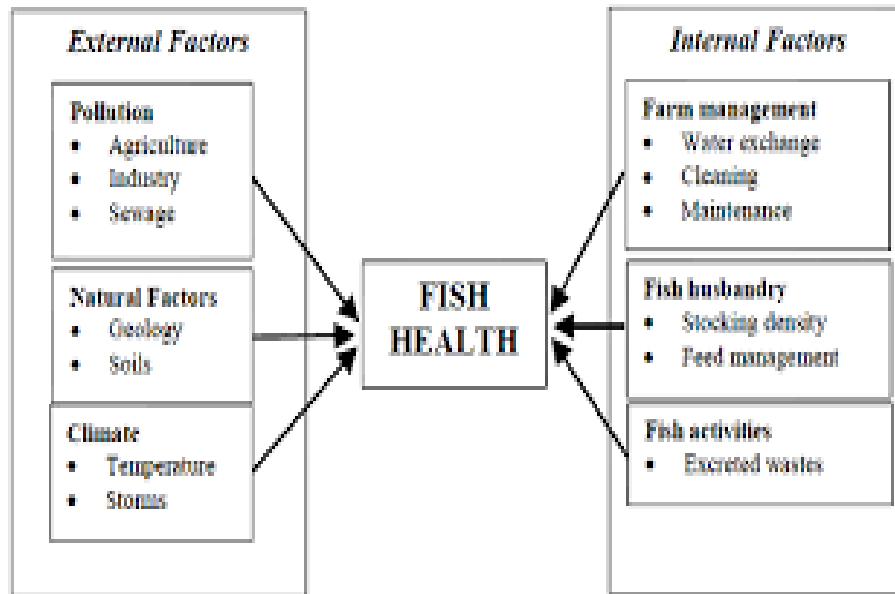
### **Tips for ornamental fish owners**

Dispose of dead fish and all waste from aquarium tanks responsibly, ensuring that no water or waste enters any drain or waterway.

Give unwanted fish to a friend or a pet-shop, or dispose of humanely.

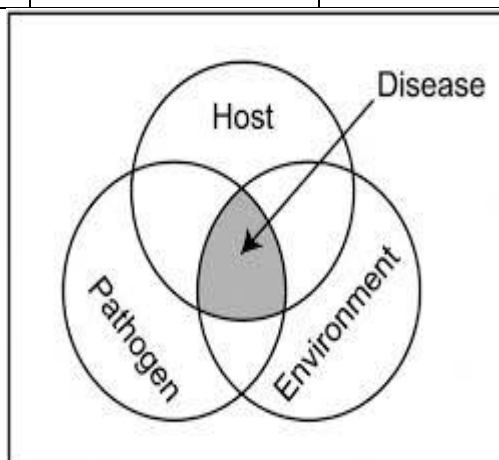
Design fishponds so that plants, snails, fish or eggs can't escape during heavy rains, and screen all overflow areas. Consider keeping species native to your local area.

If you have unhealthy looking fish, seek appropriate treatment advice from your local aquarium shop or veterinarian. During Quarantine period lives food prior to introduce into your aquarium or pond, to ensure that any diseases or parasites are not spread to your fish.



SYMPTOMS	DISEASE	CAUSATIVE AGENT	TREATMENT	OBSERVATION
• Pinhead size white spots on the body and fins	Ichthyophthyriosis	Protozoan parasite	Increase temperature and treat with 5% methylene blue (1 drop/ litre), treat the fish for 1 week	Contagious observed during sudden drop of water temperature
• White spots smaller than above	Oodinium	Unicellular parasite (mono flagellate)	Copper sulphate 0.1mg/litre for 10-15 min bath	Contagious
• White clumps with cotton like appearance	Saprolegnias	Fungi including Saprolegnia	1 tsp salt/ 2 litres water 1-2 drops of 5% methylene blue or malachite green 2mg/ litre for 30 min dip or 0.1 mg/ litre for permanent bath	Favoured by wounds
• Swollen eyes	Exophthalmus	Bacteria, virus fungi, sometimes together	1% silver nitrate on popped eyes followed by 1% potassium permagnate	Treatment is difficult
• Gradual disintegration of fins	Pseudomoniasis	Bacterial disease	Surgical removal of ragged portion by a fine sterilized scissors, paint the cut wounded portion by iodine solution. Repeat same at 12 & 24hrs	Unusual swimming behaviour
• Swollen abdomen erected scale	Dropsy	Bacterial disease	No known cure antibiotic may be tried	Contagious difficult to treat

• Opercula sticking out, unusual swimming, tiny flukes on the gills	Gyrodactylus is	Parasite fluke, Gyrodactylus	Formaldehyde 5-6 drops/litre water dip treatment for 10 min. repeat for 3 days	Not east to detect
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### **BREEDING OF ORNAMENTAL FISHES**

Most of the ornamental fish activities concentrated in 5 states West Bengal, Maharashtra, Karnataka, Tamil Nadu and Kerala. Indian exports are mainly to South East Asia, China, Middle East, USA and Japan.

Aquarium fish are grouped into two categories I. EGG LAYERS II. LIVE BEARERS.

A. Egg layers with no parental care Fertilization internal.

B. Egg layers with parental care Ex. Guppy, Platyand Mollies

Egg depositors – Rasboras, Sword tail

Egg buriers – *Aplocheilupanchax*

Egg Anchorers – Angel fish

Nest builders – Betta, Gourami

Egg carriers – Tilapia, other Cichlids

I a. EGG LAYERS with no parental care: With adhesive eggs – Barbs, Tetras and Gold fish (*Carassius auratus*).

- About 126 breeds of fancy gold fish – Shubunkin, Comet, Fringe tail, Telescope moor, Oranda, Lion head and Veiltail.
- **Sexual dimorphism:**
- Tubercles on head, operculum, and on pectorals on males.
- Belly bulging female.
- Genital opening rounded and protruded in female, long, oval in male Brood stock development.
- 8-15 month old fish (40-100gms).
- Feeding thrice daily, Tubifex during morning and evening and formulated feed in the afternoon.
- Feeding @ 10% BW/day. Larval rearing – water temp: 27-28 degree Celsius
- 1 female: 2 males ratio.
- Male and female move in pair, snout or the male will be near the vent of the female-courtship.
- Female releases eggs, fertilised by the milt released by the male.
- Eggs adhesive –egg collectors are used.
- Fertilised eggs transparent, dead eggs opaque.

- Separate the egg collectors into a different container.
- Hatching within 3 days.
- Infusoria, boiled egg yolk, microworms. Daphnia, Tubifex.
- EGG LAYERS with no parental care and non-adhesive eggs – Danio, Brachydanios.

**I b. EGG LAYERS WITH parental care,**

- Egg depositors – Rasboras
- Egg buriers – *Aplocheilichthys*
- Egg Anchorers – Angel fish
- Nest builders – Betta, Gourami
- Egg carriers- Tilapia, other cichlids
- Egg Anchorers – Angel fish
- Angel Pterophyllus
- Cichlid, native of Amazon River basin.
- Grows upto 6 inches in length.
- Laterally compressed body, thread like filaments from the tail fin, dorsal, ventral and pectoral
- Female with larger vent
- Introduce a mature pair into an aquarium
- Ideal water quality –pH 6.8, alkalinity 50-100 CaCO<sub>3</sub> mg/litre
- Live feed-brine shrimp adult, mosquito larvae tender earthworms
- Provide aquatic plants/flat surface for attachment of eggs
- Parents attach the eggs in rows, fanned.
- Incubation period is 4 days.
- Remove parents.
- Hatchlings attached to the surface by a sticky thread on the head
- Yolk absorbed within 3-4 days, fry drops to bottom.
- Fed on Paramecium, then Artemia nauplii.
- Siamese fighting fish *Bettasplendens*.

**Nest builders –*Bettasplendens***

1. Native to Thailand, adult 6cm
  2. Anabantoid fish- labyrinth organ
  3. Males are very aggressive
- Sexual maturity at 3 months
  - Distinguished from female by the larger, longer fins and brighter colour
  - Breeding tank with partition. Male and female separate
  - As soon as the male starts building bubble nest, the partition removed. Nuptial embrace, eggs released and fertilized
  - About 15 eggs released in one embrace, this continues for many hours
  - Final brood- 200-300 eggs.
  - Male fish collects the eggs, spits them into the bubble nest.
  - Female is removed; male stands guard, removed after 3 days.
  - Eggs hatch after 36-48 hrs.
  - Fry become free swimming after 5 or 6 days; accept infusoria/egg yolk milk.
- I. LIVE BEARERS:**
- Molly *Poecilia* sp. Guppy *Poecilia reticulata*
  - Platyfish *Xiphophorus maculatus* Sword tail *Xiphophorus helleri*
  - Lower part of the anal fin modified into a thick rod-like structure
  - Gonopodium-The female stores the sperm for long periods, uses it to fertilize ovum.

- Female has a tendency to eat its own young ones, gravid female shifted into breeding traps with perforations.
- After about 4 weeks of gestation, the young ones are capable of swimming, searching for food and taking refuge.
- Guppy 20-100 young ones; Play 10-100 young ones; sword tail 20-100 young ones.

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Untapped potential in ornamental fisheries

Article – 6764401

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BREEDING: Ornamental fish breeding

By DevikaAntharjanam

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DISEASE MANAGEMENT: NSW

(Department of primary industries)

Disease management in ornamental fisheries