

MARINE BIOLOGICAL RESEARCH STATION, RATNAGIRI

(DR. BALASAHEB SAWANT KONKAN KRISHI VIDYAPEETH, DAPOLI)

- **Establishment in 1958**

- **Postal Address:**

Marine Biological Research Station,
Faculty of Fisheries,
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- **Area Details**

Main campus at Pethkilla, Ratnagiri : 0.47 ha

Brackish water Fish-Farm, Zadgaon, Ratnagiri : 9.27 ha

Shrimp Hatchery, Wadamirya, Ratnagiri : 0.57 ha

- **Important link**

<http://ratnagiri.nic.in/DeptInfo/marineBiologicalstn/>

A Profile....

1. OBJECTIVES:

For Scientific and planned development of fisheries on the South Konkan coast, the Government of Maharashtra under the Department of Fisheries had established Marine Biological Research Station (MBRS) in 1958 at Ratnagiri, which is presently attached with Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist.: Ratnagiri. The research station had total 10 ha area as field facility including three floored building at main campus, a well equipped 'Aquarium and Museum', a modernized brackish water fish farm, Seed Production facilities for shrimps and freshwater prawn and various laboratories at its disposal.

The Marine Biological Research Station, Ratnagiri is one of the premier institutes, especially in the South Konkan Coastal Fisheries Zone, having a mandate for development of fish production technologies, transferring the technologies to fish culturists, entrepreneurs and the industry, and generating professionally trained manpower in fish culture.

The main objectives are summarized as:

- To undertake need based research on marine fishery resources of the Konkan region of Maharashtra.
- To investigate the biology of marine and freshwater animals under controlled conditions.
- To develop suitable technology for controlled seed production and culture of candidate species of fishes and shell fishes.
- To undertake extension work for transfer of technology to fish farmers and fishermen in various aspects of fisheries in order to enhance the production and upliftment of livelihood of the community.

2. RESEARCH WORK DONE SO FAR:

The station has been working on the distribution of the marine and freshwater species of the different varieties having academic and commercial importance, followed by demonstrating the different catching methods to obtain sustainable catch of important fishes and shellfishes. Culture biology of commercially important species of freshwater, brackish water and marine animals was also worked on. Extensive farm facilities of the station provide a cradle for conducting research on fish farming and for demonstration of frontline technologies to fish culturists.

The Research station is now emphasizing on the development and management of the need based and eco-friendly coastal fisheries in the vast saline water resources, which exist in the form of estuaries, backwaters, and open seawaters. Special emphasis is being put on the development of technology for the culture and hatchery seed production of freshwater prawn, shrimps and crabs. Innovative techniques have been developed for increasing ornamental fish production as a low cost entrepreneurship activity for the unemployed youth of Konkan.

2.1 OUTCOME OF RESEARCH CARRIED SO FAR:

- The shrimp resources of the Konkan coast were explored and the potential of shrimp fishery on Konkan coast was predicted.
- A survey of the commercially important shrimp seed species along the konkan coast was carried out. *Penaeus merguinsis* and *Metapenaeus affinis* were noted as dominant species.
- The technique of breeding and seed production of *Penaeus merguinsis* under controlled condition has been developed.
- The potential of shrimp farming and fin fish farming along the Ratnagiri coastal area was worked out and suitable sites for these farming were identified.
- The pure cultures of food organisms such as *Chaetoceros* spp, *Isochrysis* spp, *Chlorella* spp, *Branchinus* spp, *Artemia* spp etc. were developed. These were the specific feeds for marine shell fishes, larvae and postlarvae.
- Developed a simple technique to preserve puffer fish menace on the Konkan coast.
- Value-added products from low cost marine fish were prepared
- Developed the technique for seed production of Freshwater prawn, *M. rosenbergii*
- Multi-location grow out trials of Giant Freshwater Prawn *M. rosenbergii* were conducted in Konkan and Ghat region.
- Optimized packing and transportation requirements for *M. rosenbergii* seed.
- The effect of different probiotics on growth and survival of post-larvae of *M. rosenbergii* was worked out.
- Ornamental fish was a new thrust area during the last decade. Station standardized methods of breeding and seed production of Angelfish, Gold fish, Rosy barb and Siamese fighter.
- Studied different varieties of Angel fish (*Pterophyllum scalare*) and other aquarium fishes.
- Studies were carried out on maturation, breeding and post-embryonic rearing of rosy barb *Barbus conchoniuis*.
- Techniques developed for mass breeding and mass culture of gold fish, *Carassius auratus*.
- Developed and commercialized a formulated flake feed (Branded as 'Fifoo) for all types of aquarium fishes.

- Mud crab (*Scylla serrata*) fattening techniques were standardized.
- Short-term monitoring of crabs (*Scylla* species) on the South Konkan coast of Maharashtra was done and it was found that *Scylla tranquebarica* (Green crab) was to be a dominant in Guhagar, Mandangad, Dapoli, Ratnagiri and Rajapur Taluka of Ratnagiri District.
- Successfully bred and reared Seahorse fish (*Hippocampus kuda*) under laboratory conditions.
- Developed fry to fingerling rearing technique of mullet (*Liza Persia*) by incorporating probiotics in artificial feed.
- Studied growth and survival of the *Siganus canaliculatus* fry fed on different protein and lipid sources of plant and animal origin.
- Protocol for raising the brooders of Banana Shrimp, *Penaeus merguensis* under captive conditions was developed.

2.2 EXTENSION:

The technologies developed by the research station, have been successfully transferred among the farmers, fisherman, and unemployed youths of Maharashtra.

Some of the important ones are:

- Demonstration of the different catching method and to obtain sustainable catch of important fishery resources.
- Raft / Stake culture Technology for culture of Green Mussels.
- Preservation of fishing nets from Puffer fish menace.
- Freshwater prawn seed production which led to establishment of a private hatchery at Sawarde, Tal. Chiplun under the technical guidance of this station.
- Breeding and Culture of ornamental fishes (About 500 unemployed youths and prospective entrepreneurs trained through 10 Training Programs on this aspect , with the result that at present, 150 youths are self employed in the aquarium fish trade in the state.)
- Crab culture and fattening

2.3 HUMAN RESOURCE DEVELOPMENT:

Following training programs are being conducted on regular basis (on demand as well as per availability of grants from government) from time to time in the research station for the fish farmers / prospective entrepreneurs:

Name of Training	Duration (Usually)
Culture and breeding of ornamental fishes	5 Days
Shrimp Culture	5 Days
Freshwater fish and prawn farming	5 Days
Preparation of Value Added Products	2 Days

3. NEED / UTILITY OF THE STATION:

- The abundance of marine, brackish and freshwater resources and faunal diversity along the Konkan coastal zone.
- The vast resources in terms of Arabian-sea on west side and 3 – 4 month rainy season are most suitable agro climatic conditions for fish production in the zone. In order to utilize these potential resources for betterment of fishermen, unemployed youths etc the research station had planned to implement extensive research and extension activities.
- In order to utilize the vast water resources of Konkan and in all of Maharashtra, the need based research and extension activities on the below given aspects is already started and will be continued in the future.
 1. Mud crab culture,
 2. Freshwater prawn seed production and its culture,
 3. Ornamental fish culture,
 4. Cage culture in reservoirs,
 5. Brackish water fish culture
- Extension / Demonstration of technologies among the perspective farmers, fisherman, unemployed youths and conduct training programs to generate skilled manpower in fisheries field. The research station is geared up with required facilities to generate the said skilled man power.
- Scientific and technical information on various aspects of fisheries will be made available to general public in marathi language.
- Priorities will be given to research on culture of Mussel, Oyster, Crab etc and value added product development as an income enhancement activity of the fisher community.

- Tourism point of view, the maintenance of marine aquarium and museum (which facilitate to create awareness among general public about the fragile and fascinating aquatic biodiversity) is a developing sector in fisheries. However, very little efforts have been made to commercialize it. The efforts with financial back up needs to be strengthened.

4. Schemes implemented by MBRS, Ratnagiri

4.1 Sponsored Schemes

Sr. No.	Title	Budget Allocation
1.	<p>Govt. of Maharashtra sponsored Plan Scheme entitled 'कोकण विकासाच्या कालबद्ध कार्यक्रमांतर्गत निमखाया पाण्यातील माशांवर संशोधन आणि विस्तार शिक्षण कार्यक्रम' – Continued from 2001</p> <p>Under this project, pilot scale shrimp farming is being undertaken for demonstration of eco-friendly shrimp culture to the farmers. Major research project on development of low cost feed as well as brackish water finfish culture is also undertaken by the station. Regular training programmes on shrimp farming, freshwater prawn culture, Ornamental fish culture etc. are regularly conducted by the station.</p>	Rs. 2.00 Crores.
2.	<p>Implementation of NATP – Modernization of Instructional Fish Farm funded by Govt of India – Completed</p> <p>Instructional brackish water farm of station is strengthened with infrastructure like twin feed extruder (feed preparation), demand feeder (Scheduling feed), auto-analyzer (water analysis), Electron microscope with camera (Research purpose), Recirculatory system (Sea water), Various capacity FRP tanks, Biological filters as rearing & research facility etc has been developed.</p>	Rs. 79.00 lakhs
3.	<p>ICAR – Govt of India Sponsored Scheme “Mega Seed Project on Agriculture Crops & Fisheries – Continued from 2006</p> <p>Under this scheme hatchery unit for seed production of Shrimps & Freshwater Prawn has been developed at Wadamirya & Zadgaon field facility of the station. During last two years approximately 6.5 lac seed of shrimps & 3.0 lac seed of prawn have been produced and some of this seed have been supplied to the farmers; from various corners of the state and also farmers from neighboring state like Karnataka, Goa & Gujrat. Presently, both the hatcheries are in developing stage and are likely to upgrade to its full capacity in near future</p>	Rs. 70.00 lakhs.

4.2 Revenue receipt schemes of the research station

In all, six revenue receipt generation schemes are implemented by the station as listed below and the revenue of about Rs.5 lakh per annum is generated.

1. Exhibition of Aquarium & Museum
2. Shrimp culture
3. Sale of ornamental fish & its seed
4. Sale of various publication
5. Sale of value added products
6. Sale of Aquarium fish food :*Fifoo*

5. FUTURE PLANS OF CAPACITY BUILDING FOR RESEARCH, EXTENSION AND RECEIPT GENERATION:

- Development of 'Aquarium and Museum'
- Cage culture of fresh water fishes
- Establishment of live feed organism culture unit.
- Facility for storage and packaging of low cost fish meat.
- Value added products from low cost fish.
- 'ATIC' in fisheries with sale counter for aquarium fishes, fish/prawn feed, value added products etc.
- On various fisheries aspects, prepare publications in local language.
- Generate skilled manpower by way of conducting regular training programs
