भारत सरकार
GOVERNMENT OF INDIA
मत्स्यपालन विभाग
Department of Fisheries

FISHTech Report

"To Explore Technologies in Fisheries and Aquaculture Sector"

20 26 JULY

MANAGE Fisheries Innovation and Startup Hub (MANAGE - FISHub)

(A National Fisheries Incubation Centre Supported by the Ministry of Fisheries, Animal Husbandry and Dairying, Govt. of India)

National Institute of Agricultural Extension Management (MANAGE)

(An Autonomous Organization of Ministry of Agriculture and Farmers Welfare, Govt. of India)

Rajendranagar, Hyderabad – 500 030, Telangana, India

https://www.manage.gov.in/managefishub/

MANAGE-FISHub

MANAGE – Fisheries Innovation and Startup Hub (MANAGE-FISHub) is a national-level incubation and innovation hub hosted at the National Institute of Agricultural Extension Management (MANAGE). It was established at MANAGE in 2025 with the support of the Department of Fisheries (DoF), Ministry of Fisheries, Animal Husbandry and Dairying (MoFAHD), Government of India, to transform the fisheries and aquaculture sector through innovative technology, entrepreneurship, and ecosystem development.

Vision

The Vision of MANAGE-FISHub is to foster sustainable innovation and entrepreneurship in the fisheries and aquaculture sector by nurturing startups, accelerating technology adoption, and promoting inclusive growth across the value chain.

Collaboration Partner

ICAR–Central Marine Fisheries Research Institute (ICAR–CMFRI)

The ICAR–Central Marine Fisheries Research Institute (ICAR–CMFRI) played a central role by collaborating with MANAGE-FISHub for the FISHTech Webinar Series.

Established on 3 February 1947, the ICAR–Central Marine Fisheries Research Institute (ICAR–CMFRI), headquartered in Kochi, Kerala, is one of the world's leading tropical marine fisheries research institutes under the Indian Council of Agricultural Research (ICAR). Renowned for its excellence in marine fisheries, mariculture, biotechnology, and coastal ecosystem research, ICAR-CMFRI develops innovative technologies, scientific knowledge, and skilled human resources to promote the sustainable growth and resilience of India's marine fisheries and aquaculture sector.

FISHTech Webinar

FISHTech Webinar series is a flagship online knowledge-sharing initiative of MANAGE–FISHub, designed to showcase innovative technologies developed by fisheries research institutions, ICAR institutes, State Fisheries Universities, and other academic and R&D organizations across India. The series aims to bridge the gap between technology developers and end users by creating a structured national platform for technology dissemination.

Objective of the Webinar

- To disseminate knowledge on emerging fisheries technology developed by fisheries institutes.
- To facilitate technology awareness among budding aquapreneurs, innovators, rural youth, students and fisheries professionals.
- To showcase commercialization pathways and startup opportunities linked with institution-developed fisheries technology
- To strengthen capacity building through expert-led sessions.
- To facilitate interaction among scientists, startups, aspiring aquapreneurs and students, thereby fostering collaborative learning and innovation ecosystems.

Program Schedule

The MANAGE-FISHub Webinar Series was organized as a structured 15-day intensive program, with each day dedicated to covered cutting-edge technologies and emerging trends within the fisheries sector.

INAUGURAL SESSION
Setting the context for the topics

TECHNICAL PRESENTATION
Detailed lecture by a subject matter expert from ICAR-CMFRI

Q & A SESSION
Interactive Forum for participants queries

Promotional Activities

The outreach focused on both institutional and public digital platforms

Regular updates and speaker profiles shared across social media handles

Short coming soon posters were used to redirect the participants

A key collaborating partner, **CMFRI** promoted the series through their internal WhatsApp Group

Information brochures and daily session links were shared through all WhatsApp groups

Formal invitation and program posters were sent to various fisheries colleges, KVKs and participants of MANAGE-FISHub Program

Personalized emails were sent to the MANAGE-FISHub participants

Regularly reminder Email were sent to registered participants 12 hours and one hour before each live session

Day - 9

30-07-2026

Breeding and Seed Production Technology for Black-bar Chromis (Chromis retrofasciata)

Mr. Ambarish P. Gop
Scientist
ICAR–CMFRI
Regional Centre, Vizhinjam
gopidas.ambarish@gmail.com

Mr. Ambarish P. Gop presented the breeding and seed production technology of Black-bar Chromis, highlighting its potential as a marine ornamental fish and the importance of captive breeding for developing a sustainable ornamental fisheries sector.

Mr. Ambarish emphasized that hatchery production can reduce dependence on wild collection, minimize pressure on coral reef ecosystems and provide a reliable supply of aquarium fishes. The speaker explained the importance of broodstock management and captive maturation for successful breeding. Black-bar Chromis is a small marine ornamental fish with distinct territorial behaviour. Providing suitable shelters, such as small perforated pots, helps the fish establish territories and facilitates pair formation. Potential breeding pairs can be identified based on their behaviour and swimming patterns and subsequently transferred to dedicated breeding tanks. The speaker noted that Black-bar Chromis is a strictly marine species, requiring approximately 33–35 ppt salinity during broodstock maintenance and breeding.

The session covered the spawning and egg-management process in detail. Once a compatible pair is established, eggs are deposited on the surface or inside the shelter provided in the tank. The eggs are carefully collected from the substrate and transferred for larval rearing. In Black-bar Chromis, the eggs generally hatch after approximately four days or more than 90 hours of incubation. The speaker highlighted the importance of accurately recording spawning and incubation periods and monitoring egg development to improve hatchery management.

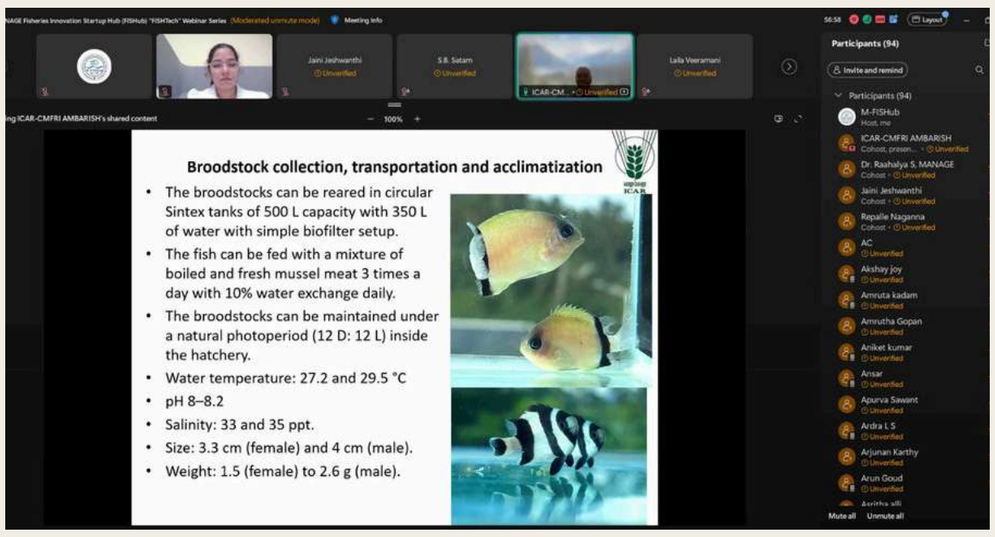
A major focus of the presentation was live-feed management during larval rearing, which was identified as one of the most critical stages of marine ornamental fish seed production. While rotifers are commonly used in marine hatcheries, the very small mouth size of Black-bar Chromis larvae makes them unsuitable for feeding exclusively on rotifers.

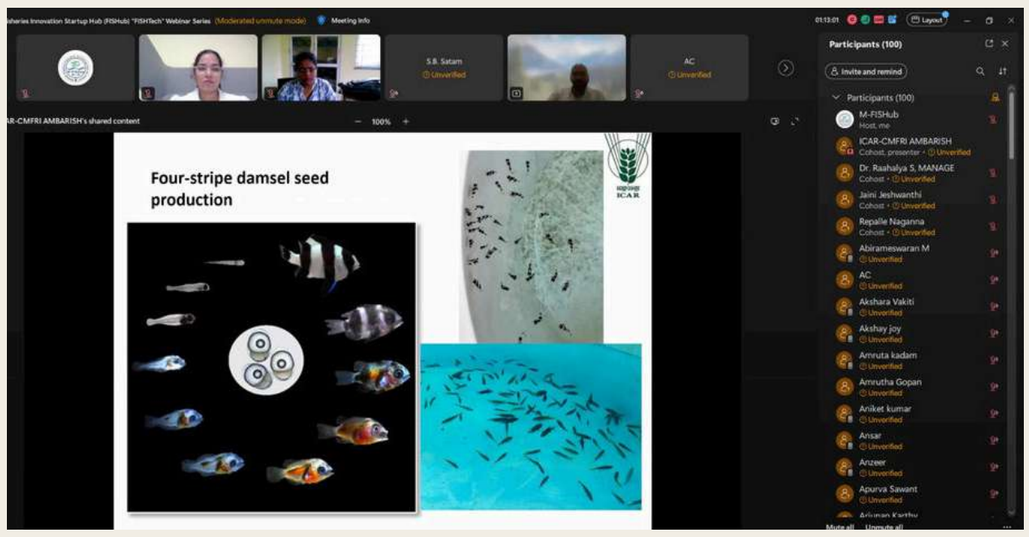
The speaker further emphasized that larval rearing requires careful water-quality and feeding management. Gentle aeration should be maintained, while water exchange is avoided during the initial period and gradually introduced as the larvae develop. Particular attention is required during the 4–7 DPH stage, when swim bladder inflation occurs.

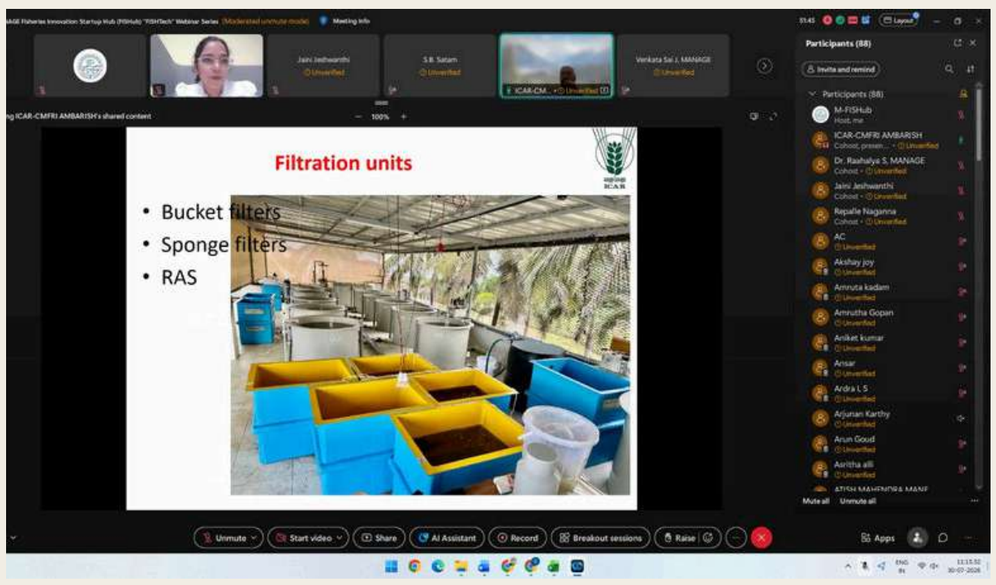
Another important challenge discussed was weaning from live feed to artificial feed. Poor acceptance of artificial feed can result in low survival and increased production costs if live feed has to be continued for a longer period. The speaker recommended introducing artificial feed gradually from around 16 DPH, combining it with live feed so that the larvae progressively adapt to the formulated diet. Appropriate feed size and nutritional quality are essential for successful weaning.

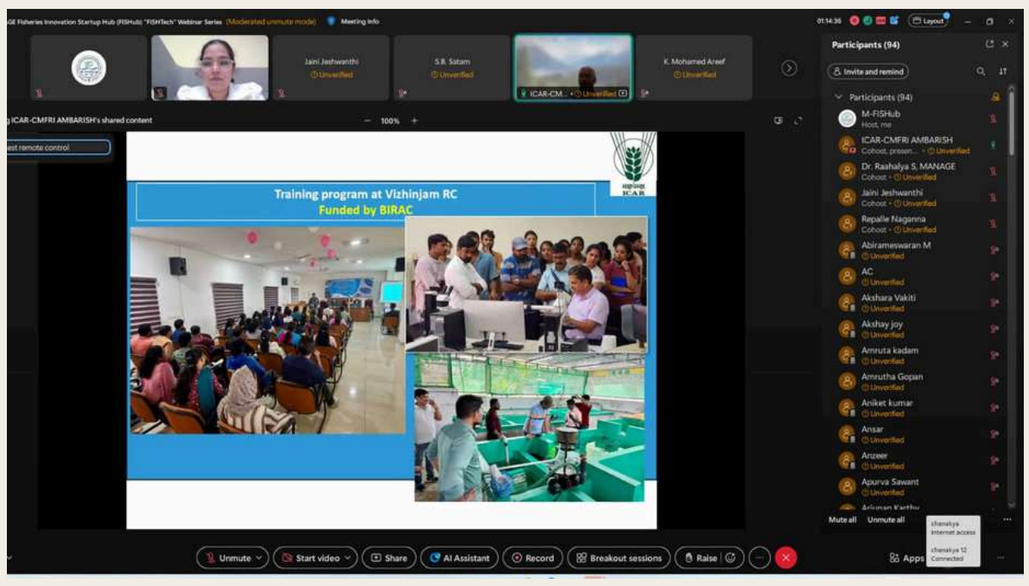
The session also addressed cannibalism, grading and disease management during nursery rearing. Variation in size, often caused by inadequate feeding, can promote cannibalistic behaviour; therefore, sufficient feeding and regular grading are important for maintaining uniform-sized juveniles. Freshwater treatment may be used at an appropriate stage, particularly after around 25–26 DPH, while maintaining good water quality and preventing contamination. The speaker also stressed the importance of maintaining hygiene, quarantine, optimum stocking density and appropriate filtration to reduce disease risks.

Overall, Mr. Ambarish highlighted that successful Black-bar Chromis seed production depends on appropriate broodstock conditioning, territorial pair formation, controlled spawning, specialized live-feed management, careful larval rearing and effective nursery practices. He also emphasized diversification of marine ornamental species in commercial hatcheries, which can improve profitability while reducing dependence on wild reef populations. Training and hands-on programmes can further support the transfer of marine ornamental fish breeding technologies to entrepreneurs, students, researchers and fisheries professionals.









Q & A Session

Q1. What are the steps involved in domestication of wild-collected Black-bar Chromis broodstock?

Ans: Mr. Ambarish explained that wild-collected fish should first undergo at least two weeks of quarantine in an isolated facility, where feeding behaviour, wounds, deformities and external parasites are monitored. Freshwater dips may be used cautiously for parasite removal, considering that the species is stenohaline. After quarantine, the fish should be conditioned for approximately 6–9 months with suitable feeds such as mussels, squids and formulated pellets. Once pair formation is observed, compatible pairs can be transferred to broodstock tanks.

Q2. What live feeds are recommended during different stages of larval rearing?

Ans: The speaker recommended copepods from the first day after hatching, followed by rotifers from around the 4th–5th day. A combination of copepods and rotifers can be provided during the initial 10 days. After approximately 10 days, Artemia can be introduced as the larvae develop a larger mouth capable of consuming it.

Q3. How can optimum water quality be maintained in marine ornamental fish larval culture?

Ans: For larger hatchery operations with multiple tanks, a Recirculating Aquaculture System (RAS) can be used. The speaker explained that mechanical, biological and chemical/UV filtration can be incorporated. Protein skimmers help remove suspended and organic matter, while biological filters containing MBBR media and beneficial bacteria help convert toxic ammonia into less harmful nitrogenous compounds. UV filtration can also be used for water treatment.

Q4. What is the fecundity of Black-bar Chromis?

Ans: Mr. Gop stated that Black-bar Chromis has comparatively low fecundity, generally producing around 200–300 eggs per spawning, and usually less than 500 eggs. In comparison, some other damselfish species may produce several thousand eggs per spawning.

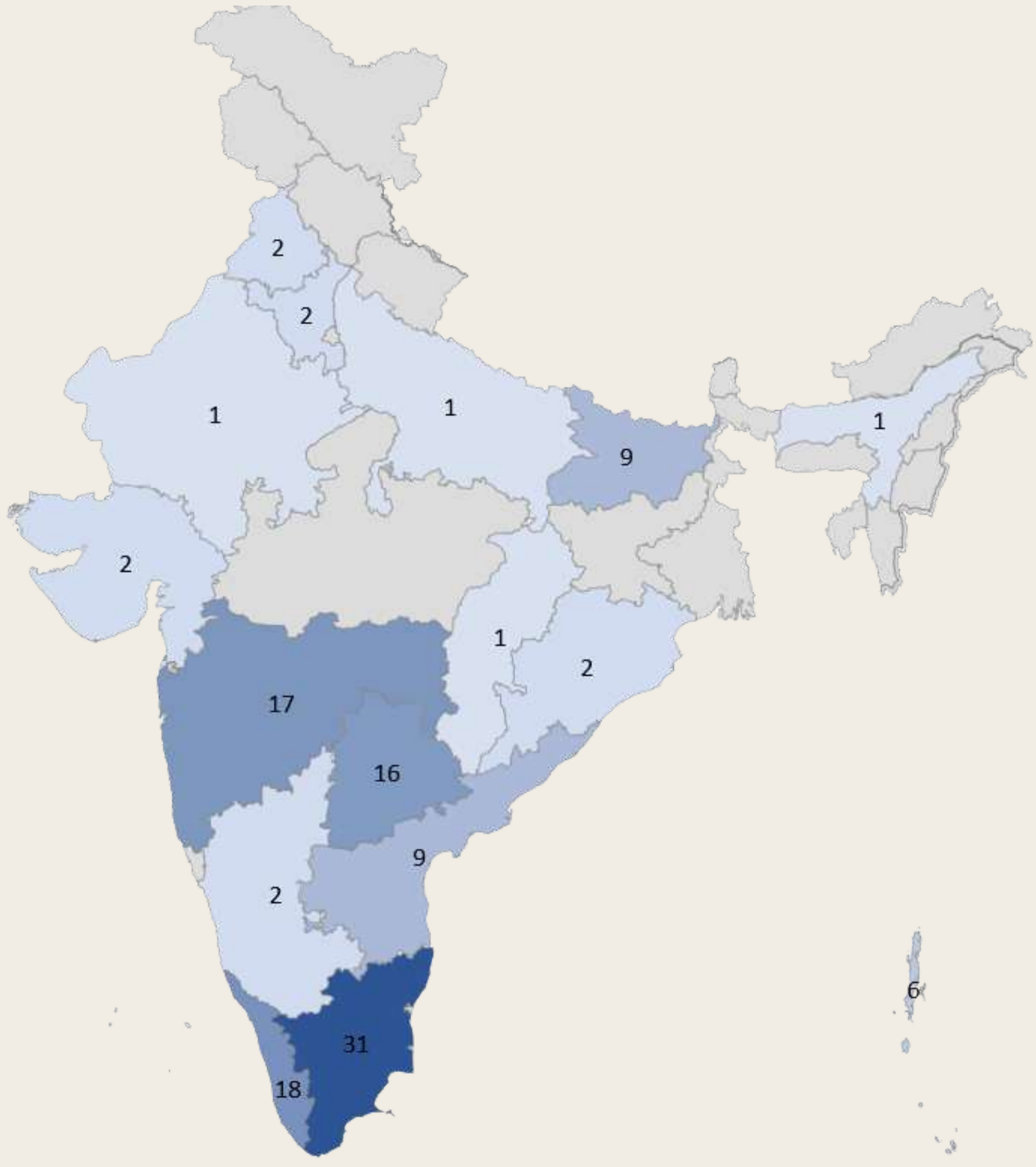
Q5. What is the stocking density for Black-bar Chromis broodstock and larvae?

Ans: For broodstock conditioning, approximately one pair (one male and one female) can be maintained in a 500-litre tank containing about 400 litres of seawater. For larval rearing, approximately one egg per litre was recommended; therefore, a 750-litre tank can accommodate around 750 eggs when filled to the appropriate water volume.

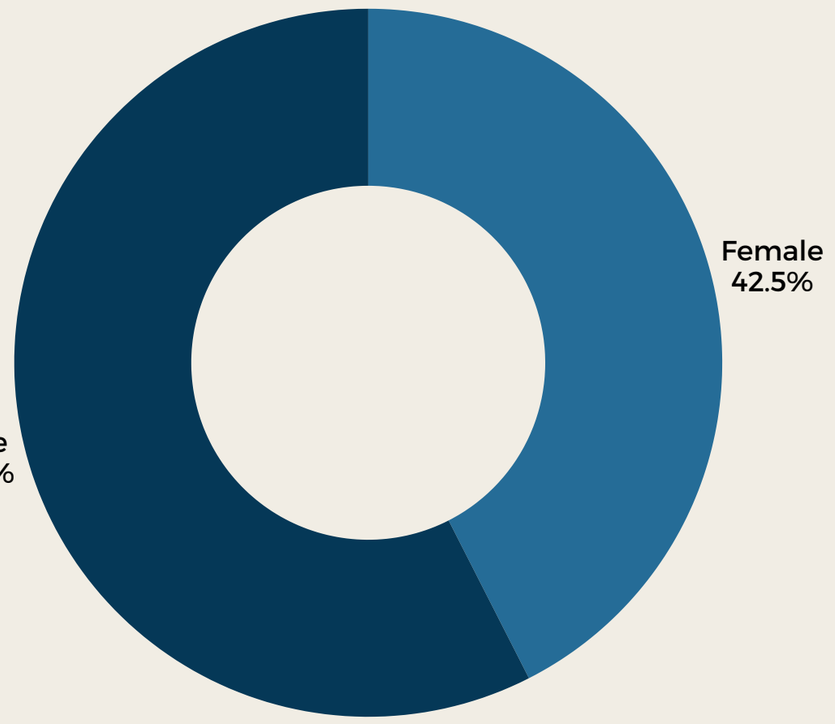
Q6. Are there specific challenges in induced breeding of marine ornamental fishes?

Ans: The speaker explained that induced breeding technology for marine ornamental fishes is still not well established, with limited information and protocols available internationally. Research is ongoing to develop and standardize induced breeding techniques for ornamental species.

Participants Overview



Total Registrations-507
Attended Participants -120
(Male - 69; Female-51)



YouTube Video Link: https://www.youtube.com/watch?v=aoqwnI2FLic&list=PL4G41x3BKm6lUBmHoLiRlGoB_5Efxiaep&index=7&t=129s