BREAKTHROUGH IN MARICULTURE: ICAR-CMFRI ACHIEVES SUCCESS IN CAPTIVE SEED PRODUCTION FOR THE GIANT TREVALLY - *CARANX IGNOBILIS*

Breakthrough in Mariculture: ICAR-CMFRI achieves success in induced breeding and captive seed production for the giant trevally - *Caranx ignobilis*

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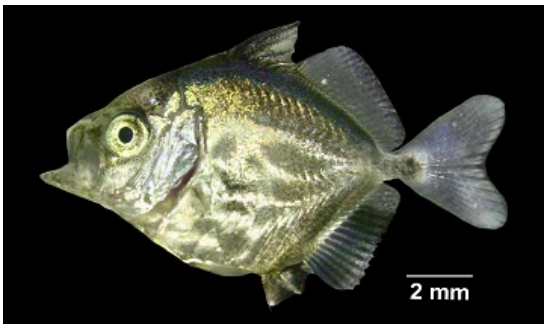
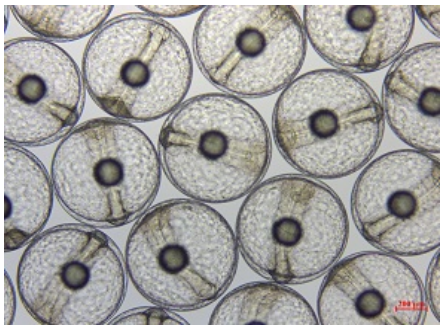
In a landmark achievement for mariculture research, ICAR-Central Marine Fisheries Research Institute successfully induced the breeding and seed production of the giant trevally (*Caranx ignobilis*).

Giant trevally, a fast-growing food fish, can be farmed in marine and estuarine cages, pens, and coastal ponds. It can grow faster than pompanos and tolerate wider salinity ranges and water quality conditions, making it a promising species for sustainable management and conservation in the mariculture sector.

The captive breeding of Giant trevally, a species with a preference for open waters, specific breeding requirements, and complex reproductive biology, has been successfully achieved in July 2024, through extensive research and trials by the experts at the Vizhinjam Regional Centre, ICAR-CMFRI, Kerala. The research was funded by the Department of Biotechnology, Ministry of Science and Technology, Govt. of India. The scientists, Shri. Ambarish P. Gop, Dr. M. Sakthivel, and Dr. B. Santhosh carried out the research.



The successful breeding of the species involved meticulous monitoring, hormone administration, and environmental control, with the research team documenting spawning and larval rearing, marking a significant milestone in understanding reproductive biology and seed production techniques.

The giant trevally is a highly valued game fish and is commercially valued for its firm and excellent flesh quality preferred across the Indo-Pacific region. Belonging to the Carangidae family, this fish is well known for its large size and has immense potential in the mariculture sector, typically found in coastal reefs, lagoons, and open seas. The giant trevally is characterized by its silvery coloration with a series of small dark spots and faded vertical bars along its body, often growing up to 1.7 meters long and weighing over 80 kilograms in the wild. This is a much sought-after popular marine fish and its price ranges from Rs 300 to Rs. 700/kg.

Initial cage farming trials with pellet feed indicated that this fish reaches a marketable size of up to 500 gm in 5 months and around 1 kg in 8-month culture.

Juveniles of size 20–35 g were collected from the Barmouth area using a Chinese dipnet and stocked in ICAR-CMFRI's Interim Broodstock Rearing Facility located in the Prakkulam area of Ashtamudi Backwaters in Kollam district of Kerala. The fish were reared on a special broodstock diet and attained a 2.2–3.5 kg size in two years. The maturity stages were determined by cannulation biopsy, and the broodstock fish (mature male and female) were identified and transferred to broodstock cages. When the female fish had an ova diameter of 200–280 µm, a few fishes were transferred to the indoor hatchery facility of the Vizhinjam Regional Centre, ICAR-CMFRI, Kerala. At this hatchery, the fish were reared in three RAS systems of 10-tonne capacity at a sex ratio of 1:1 (female: male), and an LHRH analog was used to induce the broodstock. Hormone administration was done in females at a stage with an ova diameter of 420–450 µm, and the fish spawned 48–52 hours after the second dose of hormone injection. The eggs were hatched after 14–16 hours post-fertilization, and the larval mouth opening was recorded between 64-65 hours. Successful initial feeding was achieved using a calanoid copepod, Parvocalanus crassirostris as a live feed, and from five dph onwards, shifted to a mixed diet with rotifer, and from nine dph onwards, with Artemia. The larvae started to metamorphose at 18-20 dph and were weaned to pelleted feed during this stage with a good survival rate.

ICAR-CMFRI focuses on optimizing the breeding protocols to scale up the production efficiency and refine the larval rearing protocols of this species. Giant trevally is a fast-growing, hardy species that can be easily farmed using pellet diets throughout the culture period. The initial success of the giant trevally's captive seed production is expected to pave the way for large-scale fish seed production and farming of this marine fish.

[Source: ICAR-Central Marine Fisheries Research Institute (CMFRI), Kochi, Kerala]