



समुद्री मात्स्यिका सूचना सेवा MARINE FISHERIES INFORMATION SERVICE

No. 167

January, February, March 2001



तकनीकी एवं TECHNICAL AND
विस्तार अंकावली EXTENSION SERIES

केन्द्रीय समुद्री मात्स्यिकी CENTRAL MARINE FISHERIES
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INDIAN COUNCIL OF AGRICULTURAL RESEARCH

956 The early development of the star fish *Pentaceraster regulus* (Muller and Troschel) from Tuticorin

Although more than 20 species of star fishes are known from the Gulf of Mannar, except for the observations on the development of the star fish *Asterina burtoni* Gray, no development of any star-fish has been studied from the region. The star fish *Pentaceraster regulus* (Muller and Troschel) is a widely distributed and common species in the Gulf of Mannar and Palk Bay in shallow waters. Though this species was maintained for a number of years in an aquarium at Mandapam (Gulf of Mannar), no spawning could be observed as they were reared in running sea water. This species was first noticed to spawn in November '97 and again in November '98 in FRP tanks in the hatchery of TRC of CMFRI, Tuticorin. Rao (J. Mar. Biol. Ass. India. 8(2): 254-272, 1968) studied the reproductive and nutritional cycles of the same species from Mandapam came to the conclusion that this species spawns in November.

The males and females were found to spawn simultaneously in the tanks. The sperms and eggs were released from five gonopores situated in the interbrachial areas on the dorsal side. The sperms were released in thin streams whereas the eggs were released in thick streams at an interval of two to three minutes. The star fish bent the arms ventrally to exert pressure to release the sperms and eggs. The eggs were spherical, bluish green in colour and measured 120 μm in diameter on an average (Fig.A). Due to the difficulty in maintaining all the eggs, only three lakhs eggs were reared in one tonne tank. Cleavage was total and indeterminate. After 24 hours, blastula was formed. This was oval and ciliated all over the body with a single blastopore.

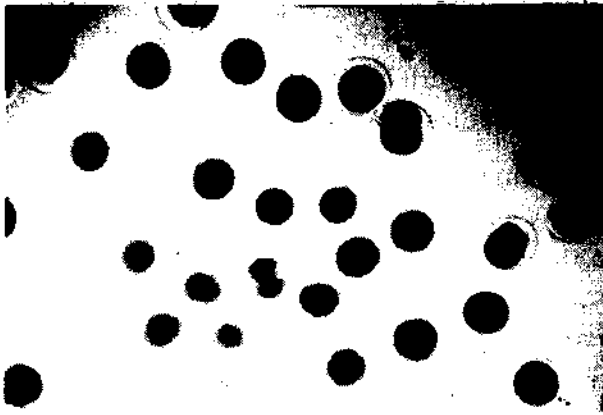


Fig. A : A group of eggs (some of them are fertilized and some in two celled stage)

Dipleurula stage with a single ciliated band measuring 270 μm in length and 115 μm in breadth were noticed after 48 hours. Early bipinnaria (Fig. B) was observed on the third day in which the single ciliated band was divided into a small pre-oral band and a large post-oral band. At this stage, the larva measured 390 μm in length and 214 μm in breadth. It had a distinct mouth and a digestive tract. The late bipinnaria larva (Fig. C) resembled an auricularia of the holothurians. The stomach was sacciform with a coelomic sac on either side of the digestive tract. After 15 days, the bipinnaria transformed into brachiolaria (Fig. D). The anterior end was

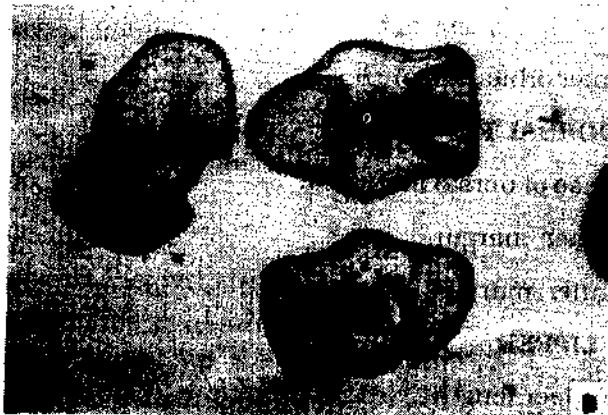


Fig. B: Early bipinnaria



Fig. C. Late bipinnaria

somewhat elongated with three pairs of long projections on either side. At this state the length was 625 μm and the breadth was 426 μm .

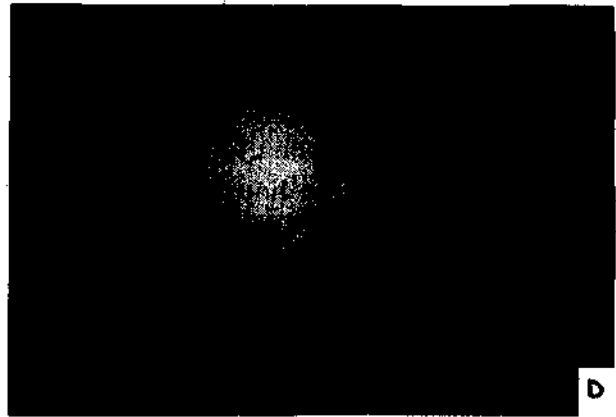


Fig. D: Brachiolaria

The larvae were fed with the micro algae *Isochrysis galbana* (1 million cells / ml) daily. The water in the rearing tank was exchanged completely on alternate days. After 15 days, the culture medium was infested with copepods and ciliates rendering further development impossible and therefore the experiment was terminated.

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