

NOTES

STUDIES ON THE ABUNDANCE OF FISH EGGS AND LARVAE IN COLEROON ESTUARY, SOUTHEAST COAST OF INDIA

ABSTRACT

The distribution and relative abundance of fish eggs and larvae encountered at the mouth of Coleroon Estuary has been studied.

Eggs of *Stolephorus* sp., *Cynoglossus* sp., *Mugil cephalus*, *Thryssa* sp., *Sardinella* sp. and the larvae of *Stolephorus* sp., *Ambassis commersoni*, *Therapon* sp. and *Alectis indicus* have been collected and identified.

Hydrographical parameters such as temperature, salinity, pH, rainfall and dissolved oxygen were also recorded simultaneously to understand the influence of these parameters on the distribution and abundance of Ichthyoplankton.

The results of the present study indicate the abundant occurrence of fish eggs and larvae during March and April; however an inverse trend was earlier observed by Venkataramanujam and Thangaraja at Vellar Estuary during the same period, which may perhaps be due to the bar-built mouth which is reduced to a small stream during summer, when freshwater inflow is nil. The Coleroon Estuary, on the other hand, is wide open, year-round and hence these two estuaries appear to be distinct from each other hydrobiologically.

THE IMPORTANCE of the study on fish eggs especially the larvae for resource evaluation as most marine fishes have pelagic larval stages, is well emphasised by Ahlstrom (1968). Studies on the seasonal occurrence of fish eggs and larvae are also useful in locating shoals of fish and their breeding grounds.

Information available on the seasonal abundance of fish eggs and larvae from Indian waters are meagre. The distribution of eggs and larvae of fishes from the west coast was studied by Bal and Pradhan (1945, 1946, 1951) and the east coast by Bapat (1955), Ravish Chandra (1964), Kowtal (1967), Solmon Raju and Ganapathi (1967), Venkataramanujam and Ramamoorthi (1974, 1977).

Though the eggs and larvae of commercially important fishes occurring both on the east

and west coasts of India are fairly well known, the occurrence of the same in a number of estuaries has not been documented. There are extensive marshy lands adjacent to Coleroon Estuary suitable for brackishwater fish and shellfish culture. The objective of the present investigation is to survey the available fish eggs and larvae, their identification and their seasonal abundance around Coleroon Estuary so that the information could be used in various ways in aquaculture practices.

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Study area

The present investigation was carried out in the Coleroon Estuarine Complex situated on the southeast coast (Lat. 11°21'N; Long. 79°50'E) of India. The average depth of the estuary is 5.5 metres. Two backwaters called

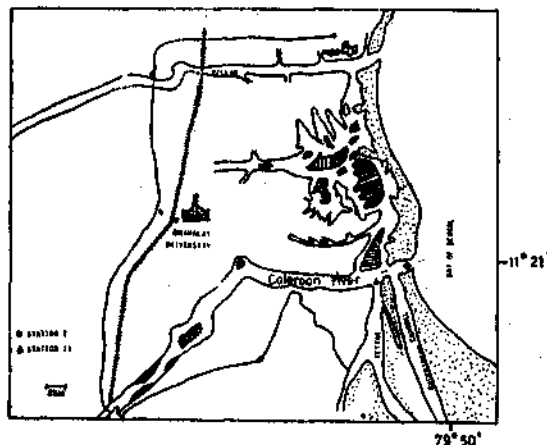


Fig. 1. The sampling stations in the Coleroon River.

Vettar and Buckingham Canal join the Coleroon near its mouth. The Vettar Backwater is again connected to the Chinna Vettar and Semmangadu Channel.

The Coleroon Estuary is supplied with irrigational outlets of the adjacent paddy fields and thus the water is organically enriched. Since the estuary is wide and open type, the tidal influence is felt as much as 15 km in the upstream of the backwater at high tide. The construction of a fishery harbour is in progress at 1.4 km distance from the mouth of the Coleroon.

Materials and methods

The material for the present study consisted of 24 samples of Ichthyoplankton collected bimonthly from two stations at Coleroon Estuary during February to July 1986 with the help of a plankton net made up of bolting silk having a mesh size of 0.076 mm and measuring 1.5 metres in length and 0.4 m

wide at the mouth (Fig. 1). The collections were made uniformly early in the morning between 0630 and 0730 hrs during fullmoon and newmoon days. Samples were preserved in 5% neutralized formalin for further study. For the identification of eggs and larvae, Jones's (1950) terminology was adopted in the present study. Hydrographical parameters such as salinity, temperature and dissolved oxygen were also recorded simultaneously. Since the pH showed no significant changes it was not measured.

Observations

Fish eggs and larvae in the Coleroon Estuary, for a period of six months indicated no regular pattern in the distribution of eggs and larvae during the fullmoon and newmoon days from both the stations.

Eggs of *Mugil cephalus*, *Cynoglossus* sp., *Stolephorus* sp. and *Thryssa* sp. and the larvae of *Ambassis commersoni* were observed at Station I during newmoon and fullmoon days of February 1986. Though the eggs and larvae of the same species occurred in both the stations during the newmoon and fullmoon days in March, April and May, the relative abundance of the eggs was more, but no larva was encountered. However, the larvae of *Ambassis commersoni*, *Therapon* sp., *Caranx* sp. and *Stolephorus* sp. were collected, besides the peak occurrence of the eggs of these fishes in both the stations, especially during the fullmoon day in May, 1986. Contrary to this, the eggs of *Thryssa* sp., *Stolephorus* sp., *Cynoglossus* sp., *Sardinella* sp. and *Mugil cephalus* with their respective larvae were observed in fair numbers during the newmoon days of June and July. However, the relative abundance of eggs was exceptionally more during the fullmoon day in July 1986.

From the present study it was evident that in the coastal waters adjacent to Coleroon Estuary, along the southeast coast of India,

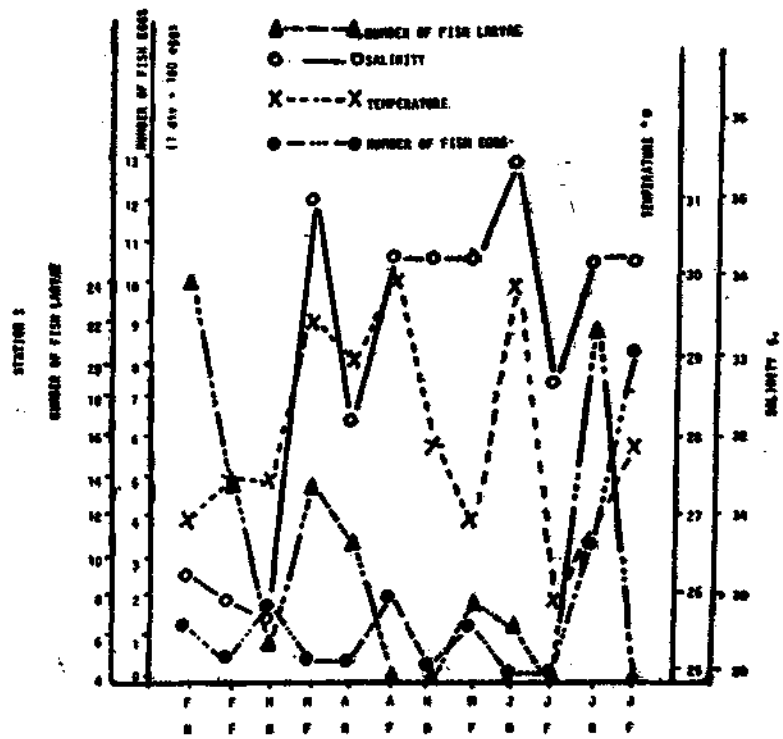


Fig. 2. Fluctuations in salinity, temperature, fish eggs and fish larvae at station I.

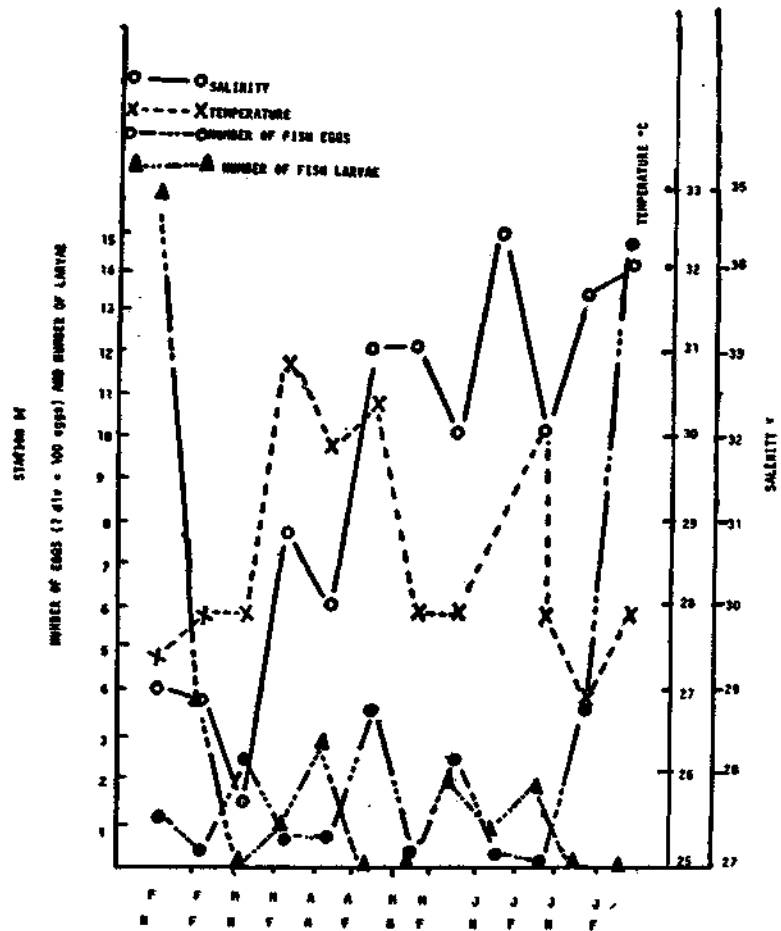


Fig. 3. Fluctuations in salinity, temperature, fish eggs and fish larvae at station II.

spawning of majority of fishes, especially *Mugil cephalus*, *Thryssa* sp., *Stolephorus* sp., *Cynoglossus* sp., occurred when the water temperature was between 28.0°-30.0°C and the salinity between 29.0-32.5‰. Further, no definite relationship either in the occurrence or distribution between the hydrographical parameters such as salinity and temperature and the distribution of eggs and larvae in both the stations, of this estuary (Figs. 2, 3) indicating that the hydrographical features did not seem to influence the distribution of eggs and larvae in these stations. However, at

station I the number of eggs and larvae were relatively more with increasing salinity and temperature (Fig. 2). But at Station II though the number of larvae were more at times of moderate salinities, fairly abundant eggs were noticed at higher temperature (Fig. 3). Since the present observation is based on limited number of samples collected during a period of six months, observation must be continued for a prolonged period for a better understanding of the availability of eggs and larvae in the Coleroon Estuary and their distribution in space and time.

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SPECTRAL ANALYSIS OF THE CRYSTALLINE STYLE IN SOME INTERTIDAL BIVALVE MOLLUSCS

ABSTRACT

Aqueous homogenates of the crystalline style of bivalve *Anadara rhombea*, *Crassostrea madrasensis*, *Katelysia opima*, *Meretrix meretrix*, *Meretrix casta* and *Donax cuneatus* were scanned in both ultraviolet and visible ranges of light spectrum. A prominent peak recorded in the UV range at 275 nm in all species indicated the high protein content of the style. In the visible range three absorption peaks were obtained between 392 nm and 562 nm in all species tested. A major peak recorded at 430 nm was accompanied by two minor peaks. The pattern of absorption spectra in the visible range was in general agreement with the spectrum obtained for carotenoid pigments. The results suggested that carotenoid pigments were present in the style and responsible for the colour of the style.

THE CRYSTALLINE style is a long thin rod of mucoprotein lodged in the midgut of most bivalves and a few gastropods. It aids in the extracellular digestion in the stomach by releasing carbohydrases and lipases (Morton, 1983). Doyle (1966) scanned the aqueous solution of the style of *Mya* in the ultraviolet range of light spectrum and obtained a peak at 280 nm