

Distribution and Seasonal Abundance of Carangid Larvae in the Arabian Sea and Bay of Bengal

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Abstract

Carangid larvae were recorded from 8.8% of the International Indian Ocean Expedition (IIOE) stations in the Arabian Sea and 13.2% in the Bay of Bengal. Their total contribution was 1.1% of the total larvae collected. The highest number of larvae (141 per haul) was from a station at 20°32'N - 59°55'E in the Arabian Sea. From Bay of Bengal the highest number was 40 per haul from a station at 11°49'N - 92°53'E. Carangid larvae were mainly represented by the genera *Decapterus*, *Megalaspis* and *Caranx*. Larvae were recorded throughout the year except February and September in the Arabian Sea whereas in Bay of Bengal their absence was noticed in October and November suggesting a prolonged breeding season of adults.

Introduction

Information on the carangid larval resources available at present in the Indian Ocean is mainly from the results of the International Indian Ocean Expedition (IIOE) which has been studied by Peter (1982) and the survey conducted by the Pelagic Fishery Project under the FAO/UNDP programme during 1971-79. Other published records on carangid larvae from this area are restricted to that of coastal waters, reported by Gopinath (1946), Bapat and Prasad (1952), Bapat (1955), Vijayaraghavan (1957), Kuthalingam (1959), Basheeruddin and Nayar (1962), Rao (1963), Subramanyam (1964, 1969), Nellen (1973) and Premalatha (1977).

Material and Methods

During the IIOE vertical hauls of zooplankton from 200 - 0 m numbering 535 were collected from the Arabian Sea and 362 from Bay of Bengal. The carangid larvae sorted out from these samples (480 day and 455 night hauls) formed the material for this study. The actual number of carangid larvae from each station has been estimated numerically and frequency of occurrence calculated.

Results and Discussion

Distribution of carangid larvae in the Arabian Sea and Bay of Bengal is presented in Fig. 1. The larvae of carangidae were represented in 8.8% of the stations in the Arabian Sea and 13.2% in the Bay of Bengal. Their total contribution was only 1.1% of the total larvae. The major genera represented in the collections were *Decapterus*, *Chorinemus*, *Megalaspis*, *Caranx*, *Alectis* and *Atropus*. The larvae were recorded in most of the months (Fig. 2). In the Arabian Sea their absence was noticed in the months of February and September. Two peaks of abundance a primary one in June-July and a secondary one in November were observed. In the Bay of Bengal except for the months February, October and November the larvae were collected throughout the year. Two peaks of abundance of equal magnitude were noticed one in March and the other in August. A similar observation has also been made by Peter (1982) in the pattern of distribution and abundance of fish larvae in general. The Arabian Sea during Southwest monsoon period recorded the highest peak in the number of larvae in July and minor peaks in the Northeast monsoon period. Whereas in Bay of Bengal the abundance noticed was during Northeast monsoon period with the highest peak in February and minor ones in the Southwest monsoon season. In both the areas the larvae in the night collections outnumbered that of the day collections.

The larvae were distributed in the coastal, offshore and oceanic waters (Fig. 1). The stations at the central part of Arabian Sea did not record any carangid larvae, thus exhibiting a patchy and discontinuous distribution. Along the western boundary of the Indian Ocean, the coast of Kenya recorded the larvae only from a small area, whereas at the southern Somalia region the distribution was offshore. In the Red Sea area the concentration was noticed at the central part. Along Arabian coast they were found distributed at the extreme north and south coast in addition to a patch in the central part which continued to the northern tip of Somali coast. Along the eastern boundary of the Arabian Sea the waters off Pakistan, Gujarat, Maharashtra, Karnataka and Kerala recorded larvae both in the coastal as well as in the offshore regions. At the equatorial region there were isolated areas of larval abundance. From 53 stations, 355 larvae were collected, the highest number of 141 larvae per haul being from the northern tip of Arabian Sea coast. In the Arabian Sea 35% of larvae were recorded from waters of surface temperature 23°C, although it ranged between 16°C and

29°C. The surface salinity was between 34‰ and 36‰, but 86% of the larvae collected was from waters of surface salinity 35‰.

In Bay of Bengal also the major concentrations were in the offshore and oceanic region (Fig. 1). At the southern part of Sri Lanka the distribution was coastal. Along the coasts of Orissa and West Bengal the distribution extended to the offshore and oceanic regions. Off Tamilnadu and Andhra Pradesh, the distribution was oceanic. From the southwest coast of Burma to the coasts of Malayasia and Thailand covering the northwest and southwest Andaman Nicobar Islands there was an area of abundance of larvae. From 48 stations in the Bay of Bengal a total of 226 larvae were collected with the highest number of 40 larvae per haul from the northeast Andaman Nicobar Sea. The areas from where the larvae were collected recorded the surface temperature ranging from 22°C to 30°C and salinity from 31‰ to 34‰. Forty five percent of the larvae were collected from waters of surface salinity 32‰. In both Arabian Sea and Bay of Bengal the surface temperature exhibited a wider range than the surface salinity.

Nellen (1973) recorded carangid larvae only in very few numbers from the oceanic regions of the Arabian Sea, whereas in the present study they were recorded from extensive areas in the offshore and oceanic waters of the Arabian Sea and Bay of Bengal. For the offshore and oceanic waters of Bay of Bengal no report is available for this group other than the present work. George (1979) as well as the present study indicate the occurrence of carangid larvae almost throughout the year in the continental shelf waters of the southwest coast of India.

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References

- Bapat, S.V. 1955. A preliminary study of the Pelagic fish eggs and larvae of the Gulf of Mannar and the Palk Bay. *Indian J. Fish.*, 2 (1):231-255.
- Bapat, S.V. and Prasad, R.R. 1952. On some developmental stages of *Caranx kalla* Cur. & Val. *J. Bombay nat. Hist. Soc.*, 51:111-115.
- Basheeruddin and Nayar K.N. 1962. A preliminary study of the juvenile fishes of the coastal waters off Madras city. *Indian J. Fish.*, 1961, 8(1):169-188.
- George, K.C. 1979. Studies on the distribution and abundance of fish eggs and larvae with special reference to Scombroids. Ph.D. Thesis, University of Cochin, 197 pp.
- Gopinath, K. 1946. Notes on the larval and postlarval stages of fishes found along the Trivandrum coast. *proc. Nat Inst. Sci. India*, 12 (1): 7-21.
- Kuthalingam, M.D.K. 1959. Contribution to the life histories and feeding habits of horse mackerel, *Megalaspis cordyla* (Linn.) and *Caranx mate* (Cur & Val) and notes on the effect of absence of light on the development and feeding habits of larvae and postlarvae of *Megalaspis cordyla*. *J. Madras Univ.*, 29 B(2):79-86.
- Nellen, W. 1973. Kinds and abundance of fish larvae in the Arabian Sea and Persian Gulf. In: *Biology of the Indian Ocean*, B. Zeitzschel (Ed.), Springer-Verlag, Berlin,; 415-430.
- Peter, K.J. 1982. Studies on some fish larvae of the Arabian Sea and Bay of Bengal. Ph.D. Thesis, University of Cochin, 349 pp.
- Premalatha, P. 1977. A study on the development and distribution of larvae of leather-skin, *Chorinemus sanctipetri* (Cuv. & Val.) along the southwest coast of India. *Proc. Symp. on Warm Water Zoopl. Spl. Publ. UNESCO/NIO, Goa*: 450-459.
- Rao, K.S.P.B. 1963. The eggs and early development *Caranx* sp. from Porto Novo coast. *J. Zool. Soc. India*, 14 (2):198-202.
- Subrahmanyam, C.B. 1964. Eggs and early development of a carangid fish from Madras. *J. Mar. biol. Ass. India*, 6 (1):142-146.
- Subrahmanyam, C.B. 1969. Eggs and early development of two carangids from Madras. *J. Mar. Biol. Ass. India*, 8 (1):188-192.
- Vijayaraghavan, P. 1957. Studies on the fish eggs and larvae of Madras coasts. *Publ. Madras Univ. Madras*, 79 pp.

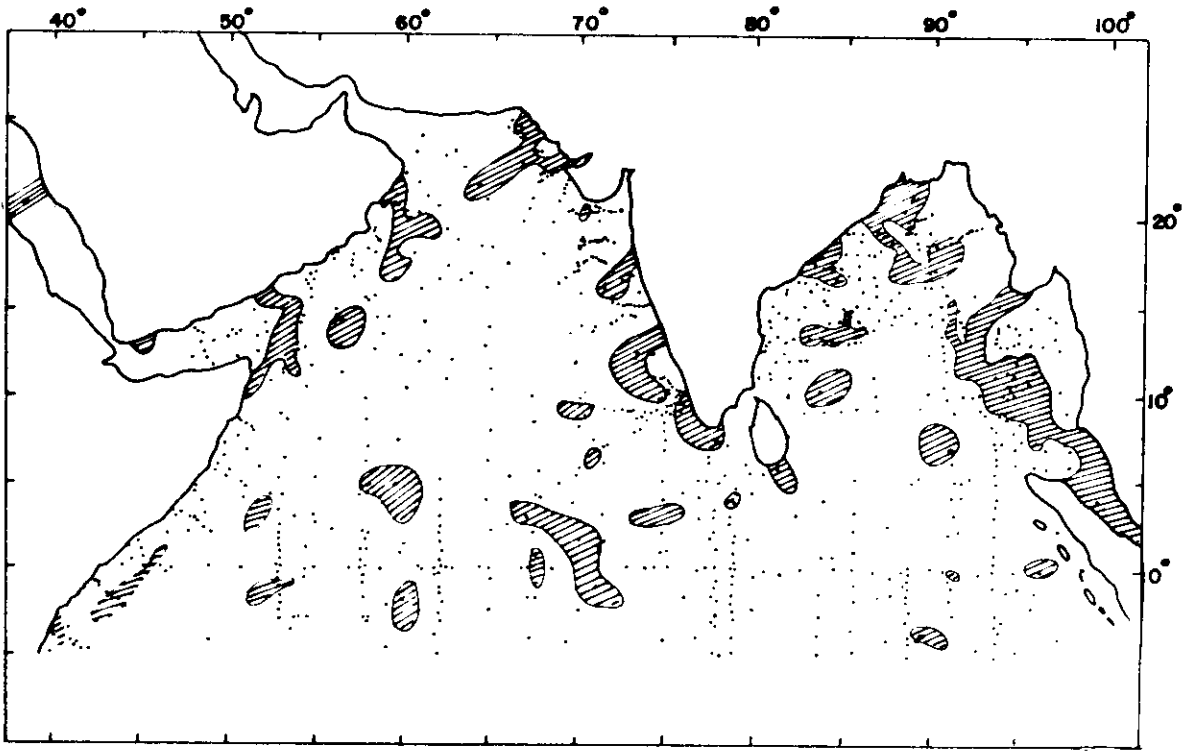


Fig. 1. Distribution of the Larvae of Carangidae in the Arabian sea and Bay of Bengal.

▨ Larvae present ◻ Larvae absent.

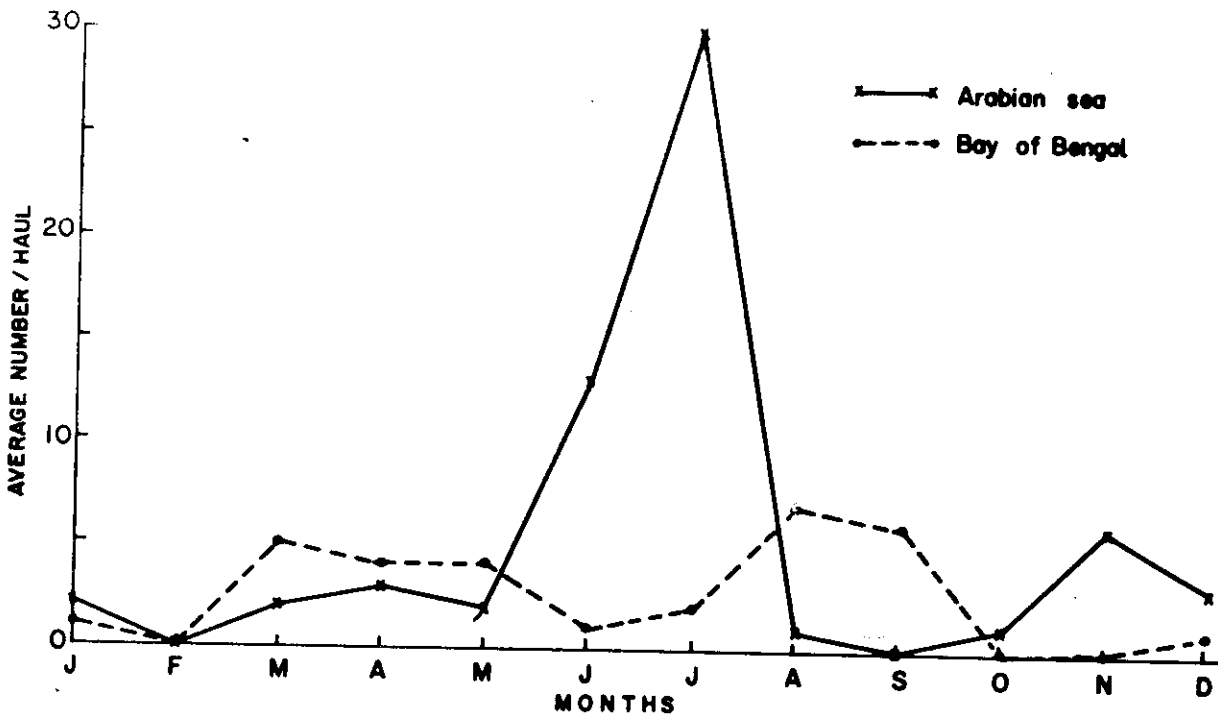


Fig. 2. Monthly variations of Carangid larvae in the Arabian sea and Bay of Bengal.