

A PRELIMINARY ACCOUNT ON THE DISTRIBUTION OF DECAPOD LARVAE IN KONKAN WATERS

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ABSTRACT

Decapod larval distribution in Konkan coastal waters was studied during the premonsoon season (March-April). Sergestid was the largest group forming 80.55% of the total decapod crustacean larvae. Penaeid larvae constituted only 0.65% and *M. dobsoni* was the most common species. It was observed that Ratnagiri area was rich in decapod larvae (40.97%) followed by Rajapur (26.48%). Penaeid larvae were totally absent between Kalbadevi and Pavas during the period of study. Distribution of different groups of decapod larvae in different regions of Konkan coast and species-wise distribution of penaeids and sergestids are given.

The decapod larval distribution in the Indian Ocean has been studied by Menon and Paulinose (1973) based on the zooplankton samples collected during the International Indian Ocean Expedition. Although the larval development of various species of decapod crustaceans are well known, our knowledge on their distribution along the Indian coasts is very little. Recently, Nair and Paulinose (1980) have studied the decapod larval abundance in the inshore waters of Karwar. The present paper deals with the distribution of various groups of decapod larvae in the Konkan coastal waters.

The observations were made in March-April, 1979, covering a stretch of about 80 km between Jaigarh in the north and Rajapur in the south. Surface zooplankton samples were collected from 5, 10, 15 and 20 m isobaths from 9 transects (Fig. 1) by towing a HT net (0.25 m² mouth area and 300 μ m mesh size for 5 minutes, attached with a flow meter. Decapod larvae were sorted out from the samples. Adult *Lucifer* being holoplanktonic were also included in this study. The general distribution of decapod larvae during the same period in this area has been given by Nair, Achuthankutty, Nair and Devassy (1980).

Distribution (average No./100 m³) of various groups of decapod larvae in different regions of the study area, percentage contribution of each group to the total decapod larval population and percentage contribution of each region are tabulated in Table I. It could be seen from the table that sergestids (including *Lucifer*) were the single largest group contributing to 80.55% of the total decapod larvae collected. This was followed by brachyuran zoea (11.5%), palaemonids (2.55%) and alpheidids (2.1%). Penaeid larvae formed only 0.65% of the total larvae. All the other groups together constituted an insignificant portion of the total decapod population during the period of investigation. The dominance of sergestid larvae in the decapod population was also reported by Menon and Paulinose (1973) in the Indian Ocean.

It was observed that 40.97% of the total decapod larvae was encountered in Ratnagiri followed by 26.48% at Rajapur and 13.24% at Mirya (Table I). The lowest contribution of 0.2% was noted at Undi. The data were pooled according to the depth zones and it was found that 47.95% of the larvae were collected from 20 m zone followed by 23.75% from 10 m zone, 15.25% from 15 m zone and 13.05% from 5 m zone.

The group-wise distribution in different regions (Table I) showed that penaeid larvae were distributed in small numbers only in the area north of Ganapathipule and at Rajapur. Relatively higher density was observed at Ganapathipule (144/100 m³) and Jaigarh (138/100 m³). Sergestids, on the other hand had a wider distribution. In Ratnagiri and Rajapur, they were very abundantly distributed (22358/100 m³ and 11373/100 m³ respectively). In all the other regions, except between Undi and Ganapathipule, they were moderately abundant. Of the carideans, palaeomonid and alpheid larvae were collected from all the areas in small numbers. The former was relatively abundant at Jaigarh (596/100 m³), Ratnagiri (318/100 m³) and Rajapur (299/100 m³).

The latter sustained higher densities at Mirya (348/100 m³), Rajapur (291/100 m³) and Ratnagiri (293/100 m³). Larvae of hippolytids were collected from Tiwri (2/100 m³) and Mirya (58/100 m³) while pasiphaeids were collected from Tiwri (2/100 m³) and Rajapur (237/100 m³). Larvae of *Leptochela robusta* was the only species of pasiphaeid encountered during this period. The larval stages of this species has been previously reported from off the Kerala coast (George and Paulinose, 1973).

Anomurans were represented in the collections by larval stages of callianassids, upogebiids and porcellanids. Callianassid was represented only by the larval stages of *Callianassa tyrrhena* (Petagna) which has been reported earlier from Gulf of Kutch

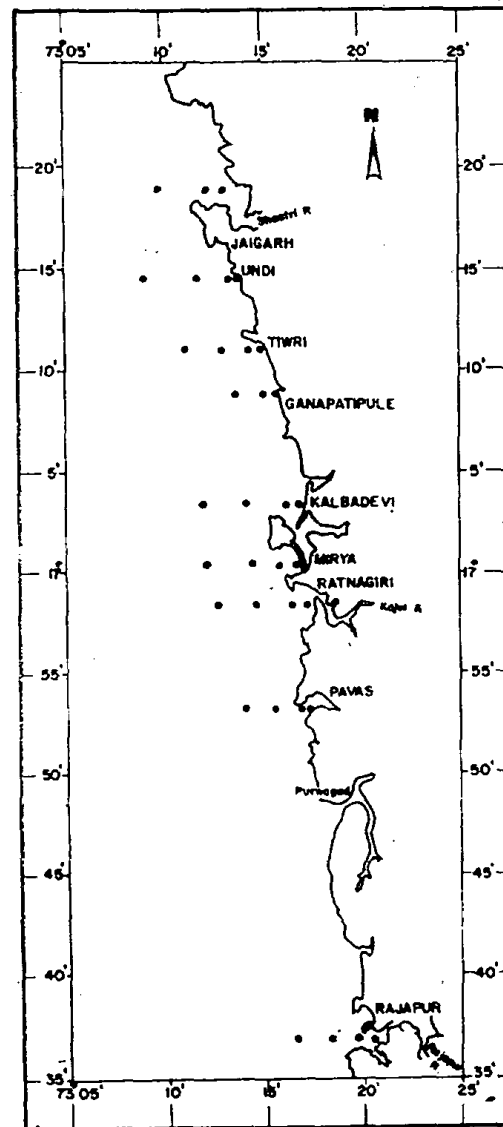


Fig. 1. Locations (mouth of the estuaries indicated by arrows) where zooplankton collections were made.

along the west coast of India (Patel and Mahyavanshi, 1974). Brachyuran zoeae were collected from all the stations. Their relatively larger number was encountered in samples from Rajapur (2533/100 m³) and Mirya (2062/100 m³). Decapod larvae other than the ones mentioned above have contributed to 1.4% of the total.

Species-wise distribution (average No./100 m³) of penaeid and sergestid larvae is given in Table II. Among the penaeids, larval stages of *Penaeus indicus*, *P. merguiensis*, *Metapenaeus dobsoni*, *M. monoceros*, *M. affinis* and *Parapenaeopsis stylifera* were encountered in the collections. Only at Ganapathipule, all these species were present and larvae of *P. stylifera* were relatively abundant in this area (62/100 m³). In Tiwri, except *M. monoceros* the larval stages of all the other species were observed and *P. indicus* larvae had the maximum abundance (60/100 m³). *M. dobsoni* was the only

Table I. Distribution (av. no./100 m³) of various groups of decapod larvae in different regions of Konkan coast, percentage contribution of each group and percentage contribution of each region.

| | Jaigarh | Undi | Tiwri | Gana-pathipule | Kalbadevi | Mirya | Ratnagiri | Pavas | Rajapur | % Contribution of each group |
|-------------------------------|---------|------|-------|----------------|-----------|-------|-----------|-------|---------|------------------------------|
| Penaeids | 138 | 12 | 56 | 144 | — | — | — | — | 67 | 0.65 |
| Sergestids | 1074 | 31 | 457 | 442 | 2699 | 4563 | 22358 | 2932 | 11373 | 80.55 |
| Palaemonids | 596 | 8 | 21 | 62 | 14 | 164 | 318 | 116 | 299 | 2.55 |
| Alpheids | 133 | 44 | 28 | 15 | 12 | 348 | 283 | 50 | 291 | 2.10 |
| Hippolytids | — | — | 2 | — | — | 55 | — | — | — | 0.10 |
| Pasiphaeids | — | — | 2 | — | — | — | — | — | 237 | 0.45 |
| Callianassids | — | — | — | — | — | — | — | 24 | — | 0.05 |
| Upogebiids | — | — | — | — | — | 22 | 13 | 9 | 65 | 0.20 |
| Brachyurans | 813 | 12 | 57 | 100 | 318 | 2062 | 30 | 803 | 2533 | 11.50 |
| Porcellanids | 183 | — | 2 | 33 | 14 | 30 | 17 | — | — | 0.45 |
| Other decapods | 331 | 2 | 37 | 25 | 27 | 297 | 152 | 8 | — | 1.40 |
| % Contribution of each region | 4.35 | 0.20 | 1.20 | 1.09 | 5.51 | 13.24 | 40.97 | 6.96 | 26.48 | |

Table II. Species distribution (av. no./100 m³) of penaeids and sergestids in different regions of the Konkan coast.

| | Jaigarh | Undi | Tiwri | Gana-pathipule | Kalbadevi | Mirya | Ratnagiri | Pavas | Rajapur |
|-----------------------|---------|------|-------|----------------|-----------|-------|-----------|-------|---------|
| Penaeids | | | | | | | | | |
| <i>P. indicus</i> | 36 | — | 60 | 7 | — | — | — | — | — |
| <i>P. merguiensis</i> | — | 5 | 7 | 4 | — | — | — | — | — |
| <i>M. dobsoni</i> | 102 | 2 | 20 | 29 | — | — | — | — | 10 |
| <i>M. monoceros</i> | — | 2 | — | 4 | — | — | — | — | 22 |
| <i>M. affinis</i> | — | — | 8 | 13 | — | — | — | — | 29 |
| <i>P. stylifera</i> | — | 4 | 12 | 62 | — | — | — | — | 7 |
| Sergestids | | | | | | | | | |
| <i>A. indicus</i> | 283 | 12 | 145 | 191 | 2 | 8 | 13 | 9 | 263 |
| <i>A. erythraeus</i> | 126 | — | 20 | — | — | — | — | — | — |
| <i>Acetes</i> sp. | 453 | — | 83 | 109 | — | — | — | — | — |
| <i>Sergestes</i> sp. | — | — | — | — | — | — | 17 | — | — |
| <i>L. hanseni</i> | 212 | 20 | 159 | 142 | 2697 | 4569 | 22328 | 2923 | 11223 |

species whose larvae were represented in all the areas where there was penaeid population and had the maximum number in Jaigarh (102/100 m³). It is interesting to note that the penaeid larval population in the study area was very poor during this period and more so they were completely absent between Kalbadevi and Pavas although spawning activities of penaeid prawns are reported to be at the peak in other regions of the west coast of India during this season and that they are known to spawn in the inshore waters (Rao, 1972; Achuthankutty, George and Goswami, 1977; George and Goswami, 1978).

It is needless to emphasize the importance of detailed investigations on the breeding seasons and grounds, larval ecology and other related aspects of the commercially important species of decapods for a better understanding of their fishery potential. Nevertheless, the dominance of this group in the zooplankton of this region (Nair, Achuthankutty, Nair and Devassy, 1980) by itself is an evidence for their richness in the Konkan coastal waters.

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