

A SHOAL OF SERGESTID SHRIMP *ACETES* IN ASSOCIATION WITH A SWARM OF GAMMARID AMPHIPODS IN THE SOUTH-WEST COAST OF INDIA

AN unusually large shoal of sergestid shrimps in association with a swarm of gammarid amphipods was observed in an area extending about $\frac{1}{2}$ km along the close inshore waters of Kuzhupilly, 15 km north of Cochin harbour mouth during the dusk hours of 27th June 1973. Both the appearance and disappearance of the shoal was quite sudden, lasting for about 3 hours. The abundance of the shrimp was so high that local fishermen were found to scoop them up by hand in large quantities. Enquiries revealed that the phenomenon was unprecedented and it was felt that a report about it would be interesting.

Indicating the formation of a temporary mudbank, this region was very calm and the water was muddy. Large quantities of suspended decaying freshwater weeds, *Salvinia auriculata*, were present in the area. The salinity was very low, 23.47‰ and the temperature 28°C. A sample was collected for observation. In the laboratory it was noticed that the shrimps were swimming very slowly, taking rest at intervals while the amphipods were avoiding them. At times amphipods were seen actively feeding on the decaying weeds.

The amphipods belonged to the sub-order Gammaridea and were represented by three genera, *Atylus* Leach (family Atylidae), *Concholestes* Giles and *Corophium* Latreille (family Corophidae), each with a single species among which *Atylus* sp. was dominant, most of them gravid females.

The shrimp was identified as *Acetes cochinensis* recorded only from the inshore seas and backwaters of Cochin, south-west coast of India¹. Though juveniles were present in lesser numbers, gravid females outnumbered adult males.

Swarms of planktonic organisms like dinoflagellates, diatoms, polychaetes, cladocerans, hyperiid and gammarid amphipods and shoals of sergestids have been reported by various authors²⁻⁵ from different coastal and brackish waters of India. But an assemblage of ecologically distinct and taxonomically wide taxa as seen in this shoal is seldom met with. The reason for this strange assemblage does not seem to be 'feeding'. Detailed studies on the food and feeding habits of *Acetes* are lacking. Studies on *Sergestes lucens*⁶ have shown that they feed mainly on copepods and other crustaceans. Analysis of the gut contents of a few of the shrimps collected did not show any clear indication as to their feeding on the amphipods to any great extent.

The decaying weeds that were found in this region were mainly associated with various freshwater systems and were carried into this region along with the heavy efflux of freshwater during the monsoon. The amphipods were found actively feeding on these decaying weeds. So the presence of these weeds would have attracted the amphipods. Another possible explanation for the presence of the gammarid amphipods in large numbers at the surface in association with the muddy water may be some bottom disturbances. The unusual appearance of the shoal of shrimps in this area where the amphipods were feeding on the weeds seems to be just a coincidence. Since the sea beyond this region was very rough, the shoal might have moved into this comparatively calmer region. It is also possible that the shoal which was in the water column outside would have been swept to this close inshore region due to the effect of upwelling taking place in the closer vicinity as suggested by Banse¹⁰. The preponderance of gravid females both in the case of amphipods as well as shrimps would indicate that the probability of these organisms moving into lesser saline areas for spawning purposes cannot be ruled out. In any case, occurrence of such large shoals of shrimps would definitely enhance the non-penaeid prawn landings of the south-west coast of India.

The authors are greatly indebted to Dr. N. K. Panikkar, Director, National Institute of Oceanography, India, for providing facilities to carry out this work at the Indian Ocean Biological Centre and to Dr. M. J. George, Scientist, Regional Centre, NIO, Cochin, for correcting the manuscript and offering valuable suggestions.

Regional Centre, C. T. ACHUTHANKUTTY,
National Institute of K. K. C. NAIR,
Oceanography, K. S. PURUSHAN,
Cochin-18, July 19, 1973.

1. Rao, P. Vedavyasa, *J. Mar. biol. Ass. India*, 1968, 10(2), 298.
2. Bhimachar, B. S. and George, P. C., *Proc. Ind. Acad. Sci.*, 1950, 31 B (6), 339.
3. Nair, R. Velappan and Subrahmanyam, R., *Curr. Sci.*, 1955, 24, 41.
4. Thampi, P. R. S., *J. Bombay nat. Hist. Soc.*, 1958, 55 (2), 371.
5. Selvakumar, R. A., *Curr. Sci.*, 1970, 39 (21), 481.
6. Nair, K. K. C., *ibid.*, 1972, 41 (5), 185.
7. George, M. J., *Indian J. Fish.*, 1958, 5 (2), 391.
8. Mydeen Kuniu, M., *Bull. Cent. mar. Fish. Res. Inst.*, 1969, 14, 176.
9. Makoto Omori, *Bull. Ocean Res. Inst. Tokyo*, 1969, 4, 66.
10. Banse, K., *J. Mar. biol. Ass. India*, 1959, 1 (1), 45.