

Short Communications

Distribution of *Diopatra neapolitana* Delle Chiaje (Polychaeta) in the South-West Coast of India

V. S. PARAMESWARAN

Department of Marine Sciences, University of Cochin
Cochin 16

Received 1 September 1972; revised received
4 December 1972

Based on a survey of the bottom fauna and bottom deposits of the south-west coast of India the distribution of *D. neapolitana* in the continental shelf is discussed. The species has been found in the Vembanad estuary as well, where the salinity is as low as 18‰. It is well represented in the regions having a firm substrata formed of fine sand and mud and rare or absent in clay or pure sand. The tubes of the deep water forms are strengthened with sand grains and shell fragments, while those present in the estuary and inshore regions are made of decayed leaves, flints of wood and coconut fibres, which are prevalent in the region.

TUBICUIOUS polychaetes form part of the sedentary bottom fauna. Cheriyan¹ has recorded the occurrence of *Diopatra neapolitana* in the Cochin Harbour area which is connected to the sea by the open barmouth. In a survey made in the Cochin backwaters, *D. neapolitana* has been noted in the interior of the lake though it is not so abundant as it is in the barmouth region. Among the tubiculous polychaetes of Indian seas, *D. neapolitana* Delle Chiaje is widely distributed having been recorded from Atlantic, Pacific and Indian Oceans and adjacent seas. Fauvel² showed that *D. variabilis* Southern is only a variety of *D. neapolitana* and that the difference between the two are not of specific importance. But, Krishnar³ observes that *D. variabilis* differs from *D. neapolitana* in the breeding habits and hence they must be treated as separate species. Fauvel⁴ in his comprehensive account of the polychaeta of the Indian seas has treated *D. ambionensis* Willey⁵ and *D. variabilis* Southern⁶ as synonyms of *D. neapolitana*. On the distribution of 6 species of polychaetes in the Adayar Estuary, Madras, Krishnamurthy⁷ states that the distribution of *D. variabilis* is restricted to the region which has a salinity range of 20-26‰. While *D. variabilis* is present only in brackish water, *D. neapolitana* occurs both in the estuary and in the sea. In view of this it would be of interest to study the distribution of *D. neapolitana* in the sea and to compare it with the restricted distribution of *D. variabilis* in the estuary. The present paper deals with the occurrence of *D. neapolitana* in the inshore waters along the south-west coast of India.

D. neapolitana may be identified by the spiralled branchiae in the anterior segments. The first segment (peristomium) is without parapodia, but two cirri are present in the dorsal region. Behind this, segments 2nd to 4th or 5th have well-developed parapodia without gills. From the 5th or 6th segment gills develop up to the 45th segment; 10-15 segments after the 46th have simple filamentous gills. In the specimens collected in the present survey the gills disappeared only by about the 61st segment even though Fauvel⁴ mentions that gills disappear by 50-70 segments. In the living condition, the gills are greenish yellow in colour. The tube is mostly buried in the substratum leaving a small portion above.

During 1958-66 a survey of the bottom fauna and bottom deposits was made along the inshore waters from Mangalore in the north to Poovar in the south, extending from 5 fm (fathoms) to about 200 fm including 125 stations in 16 profiles⁸. Collections were made by using Petersen Grab, Naturalist's dredge and 6 ft Beam Trawl. Fig. 1 shows these stations. Out of these *D. neapolitana* was found in 22 stations, marked in dark spot in the map. The stations nearest to the shore were about 5 fm deep and away from the coast in each station in a profile, the depth increased to 15, 22, 37, 44, 80, 100,

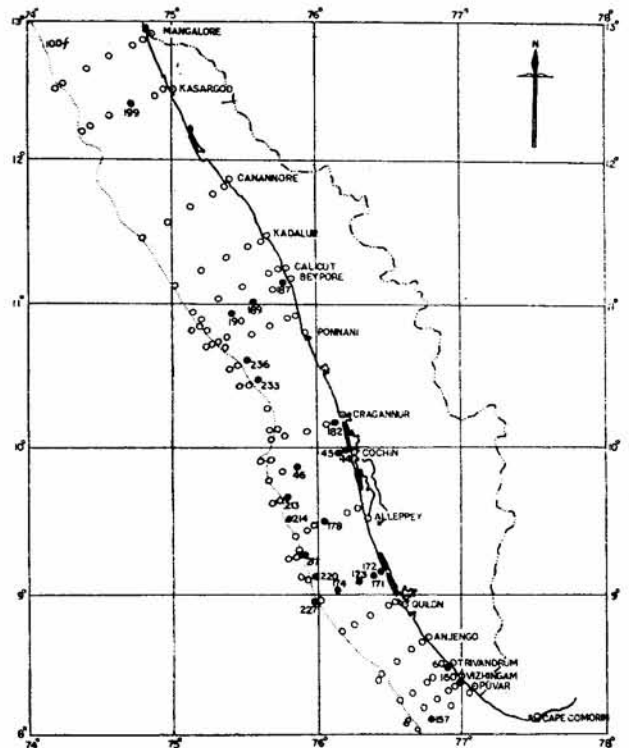


Fig. 1 — Station location map [O, stations from where benthos collections were taken during 1958-66; ●, stations from where *D. neapolitana* has been collected]

125 fm and still farther away the maximum depth was 200 fm. The approximate distance from the coast to the outermost stations was about 60 km.

D. neapolitana is distributed from Kasargod to Poovar, a distance of about 450 km, though not continuously from one end to the other. In Kasargod profile, *D. neapolitana* is found in only one station at a depth of 30 fm. Southwards, it is found in Beypore which is 125 km from Kasargod. At the Beypore profile, it is found in three stations at depths of 5, 22 and 37 fm. South of Beypore, the species has been recorded at 80 fm in two stations off Ponnani. Next it is located off Cranganore at 5 fm. Again it is found at Cochin in three stations at 5, 10 and 34 fm. In Manakkodam profile, 25 km from Cochin, it is found at a depth of 80 fm. Again it is found almost the same distance from Manakkodam, at Shertallai profile, at 80 fm. In the Alleppey and Ambalapuzha profiles *D. neapolitana* is found at 35 and 80 fm respectively. South of this region, the species has been observed at 80 fm. In the Kayamkulam profile which is 50 km from Alleppey, *D. neapolitana* is found in four stations at 15, 22, 37 and 125 fm. However, in the 125 fm station, only two empty tubes have been obtained. South of Kayamkulam *D. neapolitana* is found only off Trivandrum at 10 fm, off Vizhinjam at 10 fm and off Poovar at 44 fm.

From the above, it is seen that in the region from Beypore to Kayamkulam *D. neapolitana* is of common occurrence. South of Kayamkulam and north of Beypore the species is comparatively rare. From the data collected, it is found that active living animals in the tubes are found up to 80 fm approximately 45 km from the coast. In the shallow region of 5 to 10 fm, decayed leaves, flints of wood and cocount fibres are seen cemented to mud tubes, whereas in the deeper regions the tubes are strengthened with sand grains and shell fragments. In places where broken shells accumulate, shells form the major constituent. In the present survey such shell pieces are found on tubes collected from stations 46, 157, 172, 213 and 220. Cheriyan¹ has described the tube of *D. neapolitana* with some modifications in the description given by Fauvel⁴. The tube of *D. variabilis* described by Southern⁶ is similar to that of *D. neapolitana*. According to Krishnamurthy⁹ the salinity of the waters has been described as a barrier for this polychaete in its migration to regions of lower as well as higher osmotic pressures. Although factors like temperature especially in the tropics¹⁰, availability of minerals of biological importance, etc., have played a part in the migration of animals from marine habitat to less dilute media, equal importance should be given for nephridia and their role in osmoregulation. Thus factors like tolerance for salinity and abilities for osmotic regulation as reflected in the grades of structural modifications of nephridia might have played an important role in the successful establishment and distribution of the polychaetes such as *Onuphis eremita*, *Glycera embranchiata*, *Loimia medusa*, *Diopatra variabilis*, *Clymene insecta* and *Marphysa gravelyi* in the Adayar Estuary⁹. Among the genus *Diopatra*, *D. cuprea*, *D. orientalis* and *D. straita* have been recorded from brackish water. In the Cochin backwaters, the author has collected *D. neapolitana* from the interior of the lake where the salinity is as low as 20-18‰. It has also been collected from

offshore stations where the salinity has always been 34‰ or more. As in the case of *D. variabilis*, the distribution of *D. neapolitana* is not restricted to a particular region with respect to salinity. Here, salinity may be considered as a barrier for *D. neapolitana* in its migrations to lower osmotic pressures only. When compared with the brackish water polychaete *Marphysa gravelyi* which is able to thrive well in lower salinities⁹ (10-5‰), *D. neapolitana* is only poorly adapted in hypotonic media. It does not implicate that *D. neapolitana* is present in all regions with high salinity. From the survey made in the Cochin backwaters, it is clear that *D. neapolitana* does not occur in regions where the substrata are formed only of either clay or of sand. *D. neapolitana* is well represented in regions with firm substrata formed of fine sand and mud¹.

The author is indebted to Dr C. V. Kurian, Prof. and Head of the Department, for the data and specimens as well as for his guidance. Thanks are due to Dr V. O. Sebastian for a critical reading of the manuscript. The work was carried out during the tenure of a scholarship awarded to the author by the CSIR.

References

1. CHERIYAN, P. V., *Bull. Dep. mar. Biol. Oceanogr. Univ. Kerala*, **2** (1966), 41.
2. FAUVEL, P., *Mem. Indian Mus.*, **12** (1932), 1.
3. KRISHNAN, G., *Z. wiss. Zool.*, **147** (1936), 513.
4. FAUVEL, P., *Annelida-polychaeta: The fauna of India including Pakistan, Ceylon, Burma and Malaya*—(Allahabad), 1953, 251.
5. WILLEY, A., *Report on polychaeta* (Ceylon Pearl Oyster fisheries supplementary reports), **30** (1905), 243.
6. SOUTHERN, R., *Mem. Indian Mus.*, **5** (1921), 563.
7. KRISHNAMURTHY, B., *J. mar. Biol. Ass. India*, **5** (1963), 1, 97, 102.
8. KURIAN, C. V., *Bull. natn. Inst. Sci., India*, **38** (1968), 649.
9. KRISHNAMURTHY, B., *Proc. Indian Acad. Sci.*, **57** (1963), 275.
10. PANIKKAR, N. K., *Proc. Indo-Pacific Fish Council. 2 Meeting*, April 1950, Cornula, New S. Wales, Australia, 1951, 162.

Growth of *Penaeus monodon* Fabricius under Laboratory Conditions

M. SUBRAHMANYAM*

Department of Zoology, Andhra University, Waltair

Received 24 January 1973

Postlarvae of *P. monodon* grew to a maximum length of 150 mm in a period of 8 months and 3 weeks under laboratory conditions. The average growth rate was 16.0 mm/month. The possibility of culturing *P. monodon* in coastal areas is indicated.

GROWTH is one of the most important parameters in conservation, management and cultural practices. It is also an index of the environmental conditions. The estimation of prawn growth in nature by any known method is difficult. The Petersen method cannot be employed to species with a short life-span and protracted spawning season. The prawn is a migratory species and on

*Present address: Central Inland Fisheries Research Institute, Barrackpore, West Bengal.