

# ON SOME ARCHIANNELIDS FROM THE BEACH SANDS OF WALT AIR COAST

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## ABSTRACT

The paper reports the occurrence of twelve species of Archiannelids in the interstitial sands of the Waltair beach. Of these, six European species are reported for the first time from Indian waters and their occurrence on the Indian coast is of great interest from a Zoogeographical aspect of their distribution.

## INTRODUCTION

WHILE engaged in the study of the interstitial fauna of the beach sands of Waltair coast, several interesting species of Archiannelida were encountered in the collections. The previous records of the fauna in Indian waters are known from the works of Aiyar and Alikunhi (1944) and Alikunhi (1948), who have described seven species from the coasts of Madras, Krusadai Island and Cranganore. The present paper lists altogether twelve species of archiannelids, half of which are recorded for the first time from Indian waters. The occurrence of some of these European species on the Indian coast indicates the extent of their geographical distribution.

The archiannelids were collected by taking fresh sand samples in a glass beaker and vigorously swirling them with sea-water when the worms were shaken off to the surface. The supernatant water was quickly decanted off into a petridish from where the animals were picked up with a pipette under a binocular microscope. The forms were narcotised with weak solutions of Magnesium chloride and fixed in Bouin's fluid. The worms were usually collected in the intertidal sands with coarse texture where the wide interstitial spaces allowed free movements for the worm. The temperature in the habitat varied from 25-30°C. while the salinity ranged from 24-34‰.

Family: POLYGORDIADE.

Genus: *Polygordius* Schneider, 1868.

*Polygordius madrasensis* Aiyar and Alikunhi, 1944.

Aiyar and Alikunhi (1944) described the species from the intertidal sands on the coasts of Madras and Krusadai Island. The local forms conform to the original description and reach a length of 5-7 mm. The worms were commonly encountered throughout the year in coarse and medium sands 5-10 cm. below surface between the low and the mid-water levels. The species is negatively phototactic and gregarious in habits.

*Polygordius uroviridis* Aiyar and Alikunhi, 1944

Aiyar and Alikunhi (1944) described the species from the beach sands at Madras. The forms were frequently encountered in coarse and medium sands between the low and the mid-water levels of the beach, in association with *P. madrasensis*. The worm is sluggish in habits and when disturbed coils into a mass adhering firmly to the substrate with the help of its adhesive pygidium.

Family: PROTODRILIDAE.

Genus: *Protodrilus* Hatschek, 1881.

*Protodrilus pierantonii* Aiyar and Alikunhi, 1944

Aiyar and Alikunhi (1944) described the species from the coasts of Madras, Gulf of Mannar and Cranganore. The local forms are identical with the Madras species in all its essential features and were commonly encountered throughout the year in coarse and medium sands 10 cm. below surface between the low and the mid-water levels. The species is quite active and gregarious in habits.

*Protodrilus indicus* Aiyar and Alikunhi, 1944

Aiyar and Alikunhi (1944) described the species from the intertidal zone at Madras. The forms were frequently collected in medium sands near the mid-water level in the company of *P. pierantonii*. The worm is negatively phototactic and sluggish in habits.

Family: SACCOCIRRIDAE.

Genus: *Saccocirrus* Bobretzky, 1872.

*Saccocirrus minor* Aiyar & Alikunhi, 1944

Aiyar and Alikunhi (1944) described the species from the beach sands at Madras and Cranganore. The Madras specimens attain a length of 10-15 mm, while the local forms are smaller reaching only 7-8 mm., the

species was rarely encountered in coarse sands with fine shell gravel 10 cm. below surface near the low water level. The species is quite active and carnivorous, feeding on the smaller microfauna of the sand.

*Saccocirrus cirratus* Aiyar and Alikunhi, 1944

Aiyar and Alikunhi (1944) described the species from the intertidal zone at Madras. The species was rarely encountered on this coast, occurring in coarse sands with fine shell gravel 15 cm. below surface near the low water level.

Family: NERILLIDAE

Genus: *Nerilla* Schmidt, 1848.

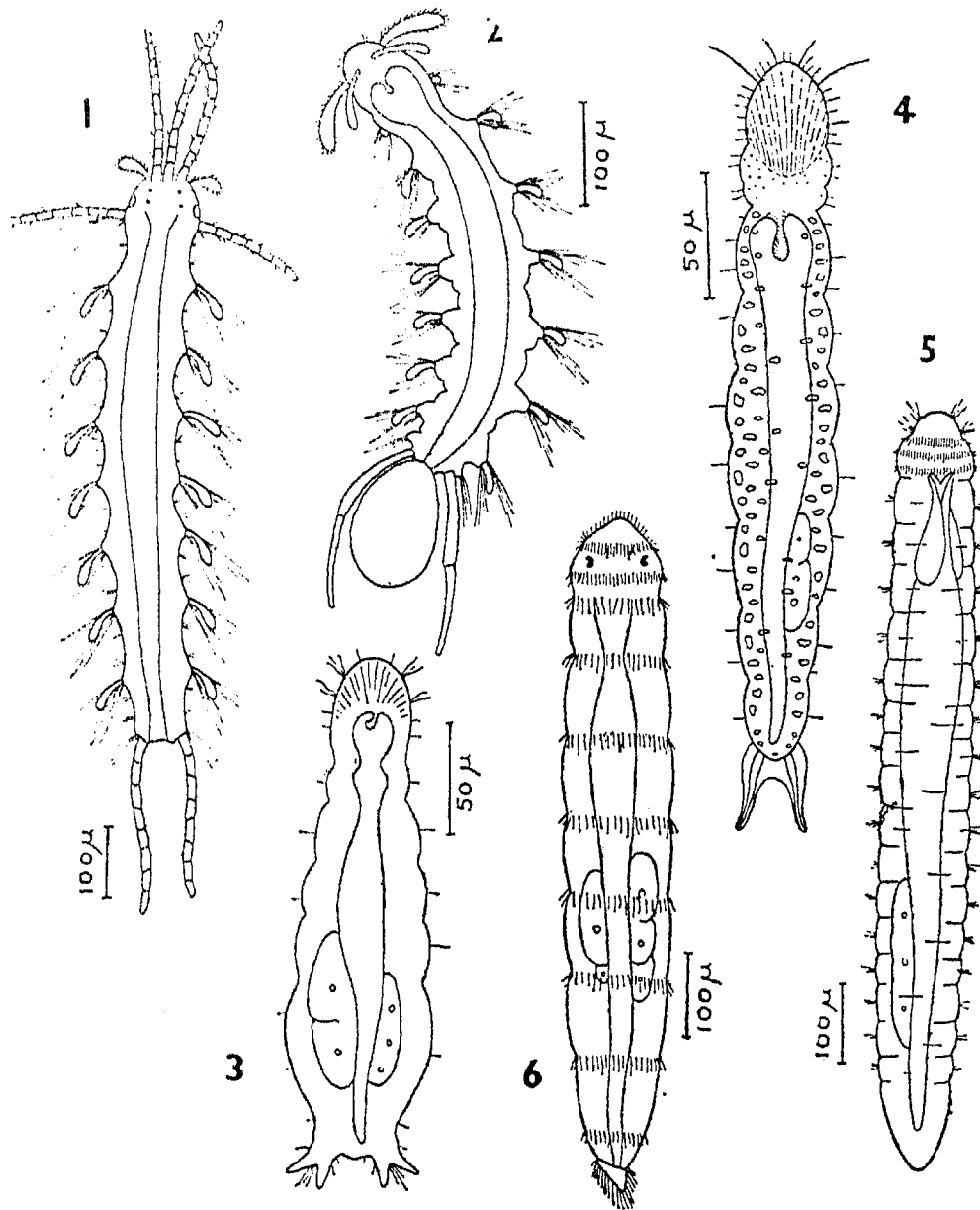
*Nerilla antennata* Schnidt, 1863 (Fig. 1)

This species has a wide geographical distribution and its occurrence has been commonly reported in Europe on the coasts of Baltic, North Sea, North Atlantic and Mediterranean (*see* Fauvel, 1927). It is also known from Brazil (Marcus, 1947) and South-West Africa (Remane, 1949) on the Atlantic coast and Puget Sound (Wieser, 1957) on the Pacific Coast. The individuals on this coast agree with the type description of the species and attain a length of 0.8 mm. excluding the tentacles and anal cirri. Some geographical variations of the lateral ciliary tufts of the species has been reported (*see* Wieser, 1957). In the local forms the lateral cilia between parapodia consists of two tufts on each side. This species was rarely encountered on this coast in coarse and medium sands 10–15 cm. below surface between the low and the mid-water levels of the beach. The worms are transparent matching with the substrate and sluggish in habits.

Genus: *Nerillidium* Remane, 1925.

*Nerillidium mediterraneum* Remane, 1928 (Fig. 2)

Remane (1928) described the species from the beach sands at Naples. Later it has been reported on the Mediterranean coast at Naples (Gerlach, 1953; Boaden, 1965), Banyuls (Gerlach, 1954), and Marseilles (Swedmark, 1956) and the Atlantic coast of France (Renaud-Mornant and Jouin, 1965) and Africa (Remane, 1949). The local forms conform to the original description and reach a length of 0.5–0.6 mm. excluding the anal cirri. The palps and tentacles are more slender and longer than those of the Mediterranean forms. The anal cirri grow to a length of about 200  $\mu$  and are two-jointed resembling those of the species at Naples. Regeneration of the lost



FIGS. 1-6. Archiannelida. Fig. 1. *Nerilla antennata* Schmidt. Adult animal, dorsal view. Fig. 2. *Nerillidium mediterraneum* Remane. Adult animal, dorsal view. Fig. 3. *Diurodrilus minimus* Remane. Adult animal, dorsal view. Fig. 4. *D. benazzii* Gerlach. Adult animal, dorsal view. Fig. 5. *Trilobodrilus nipponicus* Uchida and Okuda. Adult animal, dorsal view. Fig. 6. *Dinophilus gyrocolliatus* (Schmidt). Female, dorsal view.

cirri has also been observed. The parent carries a large solitary egg towed to the posterior border of the pygidium until it hatches and the young is released. The forms were commonly encountered throughout most of the year in medium sands 15 cm. below surface near the mid-water level. The species is sluggish and gregarious in habits.

Family: DINOPHILIDAE.

Genus: *Diurodrilus* Remane, 1925.

*Diurodrilus minimus* Remane, 1925 (Fig. 3)

Remane (1925) described the species from the beach sands at Kiel and Helgoland and later its occurrence has been reported from North Sea (Karling, 1954), Roscoff (Swedmark, 1955), Arcachon (Renaud-Debyser, 1963) and North Wales (Boaden, 1963). The local forms conform to the original description of the species and reach a length of  $240\mu$ . Only a few specimens of this species were collected near half-tide level 20 cm. below surface in medium sands measuring  $200-300\mu$  in their mean diameter. The archiannelid makes rapid gliding movements and was observed to browse about the substrate feeding on fine particles of detritus, bacteria and other smaller protozoans. The worm is thigmotactic and clings to sand particles when subjected to a current of water.

*Diurodrilus benazzii* Gerlach, 1952 (Fig. 4)

Gerlach (1952) described the species from the intertidal sands on the Italian coast. Later Delamare-Deboutteville (1953) reported its occurrence from the Canet Beach on the French Mediterranean coast. The local specimens agree with the original description and attain a length of  $300\mu$ . The forms were commonly encountered throughout the year in sands 15 cm. below surface near the half-tide level. The worms showed preference for substrates with medium sand grades measuring between  $200-500\mu$  in their mean diameter. The animal's body is well adapted for life in the habitat as evident by the ease with which it moved in the interstices of the sand particles. The species is quite active and often lurks amidst sand grains. The worm makes rapid jerky movements or firmly sticks to the substrate with the help of its caudal adhesive forks whenever there is a commotion in the habitat due to wave action, etc. Its feeding habits are similar to those of *D. minimus*. The worm is negatively phototactic and gregarious in habits.

Genus: *Trilobodrilus* Remane, 1925.

*Trilobodrilus nipponicus* Uchida and Okuda, 1943 (Fig. 5)

Uchida and Okuda (1943) described the species from the coast of Japan. Wieser (1957) reported its occurrence in the beach sands at Puget Sound on the Pacific coast. The local forms are quite transparent and reach a length of  $0.7-0.8$  mm. A stiff spine characteristic of the species is present on the buccal segment and each trunk zonite bears laterally a pair of ciliary tufts. The worms were frequently encountered through most of the year in medium sands 15 cm. below surface near the mid-water level. The archiannelid is negatively phototactic and gregarious in habits. It is highly thigmotactic

and even the slightest commotion in the habitat, makes the worm contract and adhere firmly to the substrate.

Genus: *Dinophilus* Schmidt, 1848.

*Dinophilus gyrociliatus* (Schmidt) (Fig. 6)

This species has a wide geographical distribution in Europe occurring on the coasts of Atlantic and Mediterranean (see Fauvel, 1927). The local forms are transparent and attain a length of 0.7–0.8 mm. with conspicuous ciliary girdles on the trunk. Sexual dimorphism is present, the males being much reduced in size. The species are rare on this coast and only a few were collected in medium sands 20 cm. below surface between the low and the mid-water levels of the beach.

#### SUMMARY

The present paper reports the occurrence of twelve species of archiannelids in the beach sands of Waltair coast, six of the species being new records for the Indian waters.

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