

Distribution and diversity of Polychaeta (Phylum: Annelida) in the Northern coastal waters of Bay of Bengal

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Abstract

A compilation of polychaete species distributed along the East coast of India has been presented in this paper, which includes a total of 22 species belonging to 20 genera, 15 families, four orders and three subclasses; obtained during the summer monsoon survey of 2013. Subclass Errantia and Sedentaria comprised of 10 species each, while subclass Polychaeta *incertae sedis* consisted of only two species.

Keywords: Benthic, Faunistic Study, Marine, Polychaetes

Introduction

Polychaetes are the most enduring, persistent and abundant metazoan found in the marine ecosystem (Mackie & Oliver, 1996; Hutchings, 1998). They are found in various habitats like, bathypelagic and abyssopelagic zone (Hessler & Jumars, 1974), in open coastal areas (Boesch, 1972), in estuarine areas (Orth, 1973), in artificial harbours (Reish, 1971), on coral reefs (Kohn & Lloyd, 1973) and their estimation mirrors the benthos (Mackie *et al.*, 1997). Polychaetes play a vital role in the food chain (Desai, 1973) as secondary consumers feeding on plants, detritus or acting as food for higher invertebrates and vertebrates in the tertiary level. Polychaetes act as ecological indicators, sensitive to environmental changes and pollution (Ravichandran & Rameshkumar, 2008). Hence, their thorough assessment is needed for understanding and management of aquatic ecosystem. In this regard for ecological studies and community structure comprising organisms, a clear understanding of taxonomy is essential.

The present study aims to investigate the spatial distribution pattern of polychaetes along the East coast of India, from Odisha to Andhra Pradesh coast. This faunal survey was conducted during the summer monsoon period. The samples were collected from the

coastal estuarine area stretching from Gopalpur to Machilipatanam from 10 m, 20 m, and 30 m depth of water column. Many studies have been done from the open ocean region of the Indian Ocean from 200 m and beyond (Rao, 1973; Wafar *et al.*, 2011). There are a few benthic studies undertaken along the East coast of India, from the intertidal zone up to 30 m depth (Rao & Sarma, 1983; Chakraborty & Choudhury, 1994). The present study was conducted to understand the polychaete diversity along the coastal waters of Andhra Pradesh and Odisha. A total of 20 genera including 22 species are enlisted in this research article along with the systematic account of each species, their distribution (in India and world) and diagnostic characters.

Material and Methods

A summer monsoon survey was conducted at Visakhapatnam (17°42'N 83°32'E; 17°44'N 83°19'E; 17°41'N 83°21'E), Kakinada (17°06'N 82°24'E; 17°01'N 82°23'E; 17°00'19"N 82°25"E), Gopalpur (19°17'21"N 84°56'54"E; 19°17'26"N 84°57'29"E; 19°17'29"N 84°58"E) and Machilipatanam (16°09'42.1"N 81°14'51.6"E; 16°10'55.2"N 81°13'55.5"E; 16°08'19.5"N 81°14'49.0"E) (Figure 1) from 9th to 24th May, 2013.

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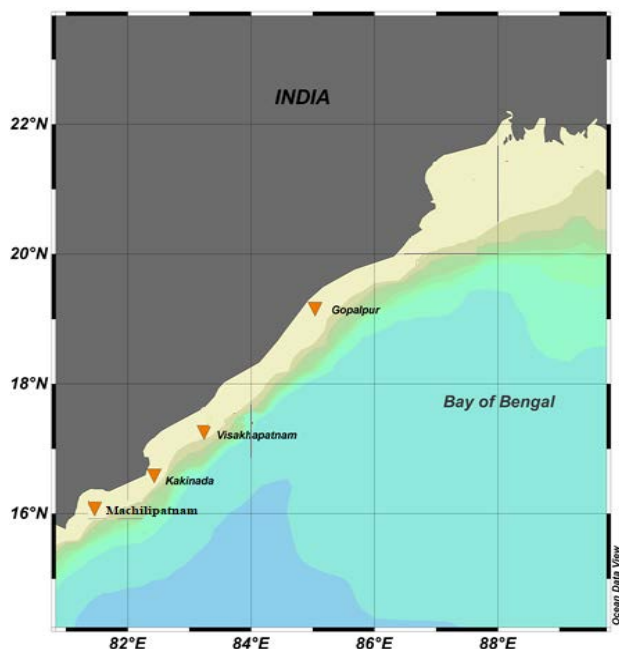


Figure 1. Map of study area.

Sediment samples were collected from 10 m, 20 m and 30 m depth using a Van Veen grab. The samples were sieved on board through a 500 µm mesh sieve. The samples were fixed in 7% neutral formaldehyde solution containing Rose Bengal stain. To narcotise the specimen, 50% MgCl₂ was added as relaxant and preserved in 70% ethanol. The fixed sample was kept for further analysis in the laboratory. The samples were sorted to group level and polychaetes were identified with the help of optical and stereomicroscopy up to the species level using existing literature (Horst, 1921; Tampi, 1958; Fauchald, 1967; Misra *et al.*, 1981; Paxton, 1986).

Results

Systematic Account

Class POLYCHAETA Grube, 1850
 Subclass ERRANTIA Audouin & Milne-Edwards, 1832
 Order EUNICIDA Fauchald, 1977
 Family EUNICIDAE Berthold, 1827
 Genus *Eunice* Cuvier, 1817

1. *Eunice tubifex* Crossland, 1904

1904. *Eunice tubifex* Crossland, *Proc. Zool. Soc. Lond.*, 74(1): 303, pl. XXI, fig. 1–8.

Diagnosis: Peristomium is longer than prostomium. Short, stubby occipital antennae. Branchiae in the form of a single filament starting from 17th setiger and gradually increases to a maximum of 4 filaments till 30th setiger. Posterior end has maximum filaments. Limbate setae longest with smooth sides. Sub-articular hooks are thin and bidentate (Venkataraman *et al.*, 2012).

Distribution: India - Thondi, Palk bay (Anbuechezian *et al.*, 2012), Andaman and Nicobar Islands, Gulf of Mannar, Krusadai Island (Venkataraman *et al.*, 2012). World - Red Sea, Arabian Sea, Gulf of Oman (Wehe & Fiege, 2002), South Australia, Philippine Islands, Indian Ocean, Atlantic Ocean (Venkataraman *et al.*, 2012), Cap Bon Peninsula, North-Eastern coast of Tunisia, Western Mediterranean Sea (Zaâbi *et al.*, 2012).

Family LUMBRINERIDAE Schmarda, 1861

Genus *Kuwaita* Mohammad, 1973

2. *Kuwaita heteropoda* (Marenzeller, 1879)

1879. *Lumbriconereis heteropoda* Marenzeller, *Kaiserl. Akad. Wiss. Math. Naturwiss. Kl. Wien.*, 41(2): 138, pl. I–VI.

2002. *Kuwaita heteropoda* Carrera-Parra & Orensanz, *Zoosystema*, 24(2): 278.

Diagnosis: Body about 10-20 cm in length. Cone-shaped prostomium with three small antennae lacking palps, tentacles and eyes. Simple multidentate hooded hooks, anterior setigers with long hood, and posterior setigers with short hoods along with well-defined proximal and distal teeth. Posterior setigers contain very small nephridial papillae; branchiae are reduced in posterior parapodia; maxillary apparatus with five pairs of maxillae, MIII bidentate with distal tooth bigger than proximal one. Absence of dorsal and ventral cirri. Parapodia with two dissimilar lobes (Rao, 2001; Carrera-Parra & Orensanz, 2002; Arias & Carrera-Parra, 2014).

Distribution: India - West coast of India from Cape Comorin to Dwarka (Joydas & Damodaran, 2009), Trivandrum, Chennai, Nellore, Machilipatnam (Musale & Desai, 2011), Thondi, Palk Bay (Anbuechezian *et al.*, 2012). World - Singapore (Fauvel, 1932), Yellow Sea (Treadwell, 1936), Southern Sakhalin (Annenkova, 1937), Vietnam (Fauvel, 1939), Japan (Marenzeller, 1879), Red Sea, Gulf of Aden, Gulf of Oman, Arabian Gulf (Wehe & Fiege, 2002).

Family ONUPHIDAE Kinberg, 1865

Genus *Diopatra* Audouin & Milne-Edwards, 1833

3. *Diopatra neopolitana* Delle Chiaje, 1841

1841. *Diopatra neopolitana* Delle-Chiaje, *Batelli & Co., Naples*, 1841-1844, 97-98, pl. VI-VII.

Diagnosis: Body length ranges between 4-15 cm, enclosed in tough tubes of fine sand or mud. Prostomium with a pair of short, slender frontal antennae, a pair of oval cushion like palps, and five long occipital tentacles with ringed ceratophores near the base. Branchiae starting from setiger 4-5, extending up to setiger 25-30, branchial filaments arranged in 10-12 whorls and reduced in posterior segments. All the segments possess winged capillaries, comb-setae and acicular setae except the first 4-5 segments which have winged capillaries and pseudo-compound hooks with tridentate tips (Rao, 2001).

Distribution: India - West coast of India from Cape Comorin to Dwarka (Joydas & Damodaran, 2009), Mormugao, Trivandrum, Nellore, Nizamapatnam, Machilipatnam, Kakinada (Musale & Desai, 2011). World - Aegean and Ionian Seas, Greece and Eastern Mediterranean Sea (Simboura *et al.*, 2000), Gulf of Oman, Arabian Gulf (Wehe & Fiege, 2002), Cap Bon Peninsula, North-Eastern coast of Tunisia, Western Mediterranean Sea (Zaâbi *et al.*, 2012).

Genus *Onuphis* Audouin & Milne-Edwards, 1833

4. *Onuphis eremita* Audouin & Milne-Edwards, 1833

1833. *Onuphis eremita* Audouin & Milne-Edwards, *Annls. Sci. Nat, Paris, Sér. 1*, 28: 226-228, plate X, fig. 1-5.

Diagnosis: Median occipital antennae shorter than the inner laterals. Tentacular cirri well separated, dorso-laterally present and longer than the peristomial segments. Branchiae with simple filaments in the first setiger, with 2 filaments from 22-24 setigers, with 4-5 filaments and then decrease posteriorly; setae include anterior hooded pseudo compound hooks with three teeth, posterior winged capillaries, comb setae and bidentate acicular setae with guard (Misra *et al.*, 1981).

Distribution: India - Chennai coast (Misra *et al.*, 1987), Trivandrum (Musale & Desai, 2011). World- Sri Lanka, Indo-China, Madagascar, Atlantic Ocean (Misra *et al.*, 1987), Suez Canal, Arabian Sea, Gulf of Oman, Arabian Gulf (Wehe & Fiege, 2002).

5. *Onuphis holobranchiata* Marenzeller, 1879

1879. *Onuphis holobranchiata* Marenzeller, *Kaiserl. Akad. Wiss. Math. Naturwiss. Kl., Wien.*, 41(2): 132-134, fig. 1.

Diagnosis: Body has dark brown pigmentation. The anterior part is cylindrical due to eversible pharynx. Median and posterior parts have slight dorsal flattening, almost circular in transverse section; have poorly developed branchiae and fit closely into their tubes (Paxton, 1986).

Distribution: India - West coast of India from Cape Comorin to Dwarka (Joydas & Damodaran, 2009), Trivandrum, Nellore, Nizamapatnam (Musale & Desai, 2011). World - Red Sea, Arabian Gulf (Wehe & Fiege, 2002).

Order PHYLLODOCIDA Dales, 1962

Family GLYCERIDAE Grube, 1850

Genus *Glycera* Lamarck, 1818

6. *Glycera alba* (O. F. Müller, 1776)

1776. *Nereis alba* Müller, *Hafniae, Typis Hallageriis*, 217.
1987. *Glycera alba* O'Connor, *J. Nat. Hist.*, 21: 174-175.

Diagnosis: Body narrow about 5-6 cm in length for 150 segments. White in colour. Prostomium contains eight rings. Palps and antennae manifest a cruciform shape at the extremity of the prostomium. Parapodia with a pair of pointed lobes anteriorly and two lobes posteriorly; of which dorsal one is pointed and ventral one is round. Branchiae occur on the dorsal side of the parapodia starting from about setiger 20 (Rao, 2001).

Distribution: India - Konkan coast (Vizakat, 1991), Kayankulam backwaters and Arattupuzha coast along the Southwest coast of India (Devi *et al.*, 1996), East coast of India along Vasishta Godavari Estuary (Rao *et al.*, 2009), Mormugao (Goa), Mangalore, Kochi, Trivandrum, Nellore (Musale & Desai, 2011), Thondi, Palk Bay (Anbuezhian *et al.*, 2012). World - Atlantic Ocean (Misra *et al.*, 1987), Red Sea, Gulf of Aden, Gulf of Oman, Arabian Gulf (Wehe & Fiege, 2002), Northern Cyprus along Eastern Mediterranean Sea (Çinar, 2005), Cap Bon Peninsula, North-Eastern coast of Tunisia, Western Mediterranean Sea (Zaâbi *et al.*, 2012), Sinop Peninsula along Southern Black Sea (Şahin *et al.*, 2017).

Family GONIADIDAE Kinberg, 1866

Genus *Goniada* Audouin & Milne-Edwards, 1833

7. *Goniada emerita* Audouin & Milne-Edwards, 1833

1833. *Goniada emerita* Audouin & Milne Edwards, *Annl. Sci. Nat. Paris, Sér. 1*, **29**: 268–269.

Diagnosis: Presence of nine rings in the prostomium, the basal rings possess a pair of nuchal organs and are bigger than the former rings. A pair of basal subdermal eyes present. Several types of papillae on the proboscis. 60–70 anterior uniramous setigers are followed by biramous setigers dorsally. Between dorsal cirrus and notopodium is present acicular notosetae. Dorsal cirrus with three ligules. Notopodia and neuropodia have a single acicula (Böggemann, 2015).

Distribution: India - Kakinada (Musale & Desai, 2011), Cochin backwaters (Sivaleela & Venkataraman, 2012). World- Arabian Sea (Wehe & Fiege, 2002), Northern Cyprus along Eastern Mediterranean Sea (Çinar, 2005).

Family NEPHTYIDAE Grube, 1850

Genus *Micronephthys* Friedrich, 1939

8. *Micronephthys oligobranchia* (Southern, 1921)

1921. *Nephtys oligobranchia* Southern, *Mem. Ind. Mus.* **5**(8): 610–611, plate XXIV, fig. 12A–C.

2010. *Micronephthys oligobranchia* Dnestrovskaya & Jirkov, *Invertebr. Zool.* **7**(2): 115.

Diagnosis: Elongated white body, comprising of 30–40 segments, about 3–6 cm in length. Presence of a pair of nodular chitinized internal jaws. 14 rows of fleshy papillae on the surface of proboscis and a circle of bilobed papillae at the extremity of the proboscis. Presence of a small prostomium with four antennae. The anterior segments are closely arranged, whereas, the posterior segments are broader, having a narrow connection between them. Lyrate setae present. The first setiger contains setae on both rami. The species lacks dorsal and ventral cirri. Parapodia is biramous, with both rami distinctly separated from each other. The branchia appears from 5–7 segments up to 30th segment. Presence of a solitary long anal cirrus. Inter-ramal cirri appear from setigers 6–8 (Rao, 2001).

Distribution: India - Gangetic delta, Chilka lake, Vishakapatnam, Cochin backwaters (Misra *et al.*, 1987), Kayankulam backwaters and Arattupuzha coast along the Southwest coast of India (Devi *et al.*, 1996), East coast of India in Vasishta Godavari Estuary (Rao *et al.*, 2009). World – China, Gulf of Siam (Fauvel, 1932).

Genus *Nephtys* Cuvier, 1817

9. *Nephtys polybranchia* Southern, 1921

1922. *Nephtys polybranchia* Southern, *Mem. Ind. Mus.* **5**(8): 607–609, plate XXIV, fig. 11A–G.

Diagnosis: Elongated body possessing parapodia and 113 setigers. 36 mm in length and 2 mm in width. Proboscis contains 22 rows of subterminal papillae, with 6–10 papillae in each row. Absence of mid-dorsal papilla on the proboscis. Four antennae present on the prostomium. The notopodial acicular lobe is smaller and more circular, in comparison to the neuropodial acicular lobe. The acicular lobes of a fully developed parapodia are rounded at setiger 20. The pre- and post-acicular lobes, though small, are distinct. Presence of highly developed and digitiformed notopodial cirrus. Two kinds of setae are present: one with barred sub-distal area, found in the pre-acicular fascicles and the other being very long with denticles arranged in transverse rows found in the post-acicular fascicles. Inter-ramal cirri appear from setiger 4. Lyrate setae absent (Fauchald, 1967).

Distribution: India- Kayankulam backwaters and Arattupuzha coast along the Southwest coast of India (Devi *et al.*, 1996), West coast of India from Cape Comorin to Dwarka (Joydas & Damodaran, 2009), Mormugao, Karwar, Trivandrum (Musale & Desai, 2011). World – Gulf of Siam, China (Fauvel, 1932), Vietnam (Fauchald, 1967).

Family PHYLLODOCIDAE Örsted, 1843

Genus *Phyllodoce* Lamarck, 1818

10. *Phyllodoce malmgreni* Gravier, 1900

1900. *Phyllodoce malmgreni* Gravier, *Nouv. Arch. Mus. Hist. Nat. Paris (Ser. 4)*, **2**: 207–209, plate X, fig. 29–31.

Diagnosis: Tentacular cirri long subulate, dorsal cirri sub-rhomboidal numerous irregular rows of small papillae at the base of proboscis. Have an incision, dividing the posterior part of the prostomium into two lobes. The nuchal papilla is short and knob-like (Pleijel, 1993).

Distribution: India- East coast estuaries like Hooghly, Mahanadi, Godavari, Krishna, Vellar, Coleroon and West coast estuaries like Ashtamudi, Kochi, Beypore, Korapuzha, Mulki, Kali, Mandovi, Auranga, Narmada (Khan & Murugesan, 2005), Trivandrum (Musale &

Desai, 2011). World – Red Sea, Gulf of Aden (Wehe & Fiege, 2002).

Subclass POLYCHAETA INCERTAE SEDIS

Family MAGELONIDAE Cunningham & Ramage, 1888

Genus *Magelona* Müller, 1858

11. *Magelona capensis* Day, 1961

1961. *Magelona capensis* Day, *J. Linn. Soc. Lond.*, **44**(299): 495, fig. 6a–h.

Diagnosis: Body is about 30 mm long. Prostomium is wide with antero-lateral outgrowths, eyes absent. From the base of prostomium long palps arise. In setigers 1-8 the notopodia has a small superior lobe joined to a larger inferior lobe. Setiger 9 possess broad-winged capillaries, like in setiger 1-8. Abdominal hooded hooks present (Abd-Elnaby, 2008).

Distribution: India - Nizamapatnam (Musale & Desai, 2011). World – Coast of Brazil, Northern European coast and Mediterranean coast (Wilson, 1958), Mediterranean Sea and Western Africa (Abd-Elnaby, 2008).

12. *Magelona cincta* Ehlers, 1908

1908. *Magelona cincta* Ehlers, *Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition auf dem Dampfer "Valdivia"* 1898-1899, **16**(1): 111–112, plate XV, fig. 9–12.

Diagnosis: 9th parapodium contains distinct setae (i.e., dissimilar from setigers 1-8). Parapodia 1-8 with 2 notopodial postchaetal lateral lamellae with pointed tips. Parapodium 9 without ventral medial lobe. Prostomium equal in length and width, without anterior horns, with lateral pouches between setigers 10 and 11. Hooded hooks of posterior region, with tridentate tips (Mortimer & Mackie, 2009).

Distribution: India- East coast of India (Vasishta Godavari Estuary) (Rao *et al.*, 2009) Mormugao, Mangalore, Kochi, Nellore, Nizamapatnam, Machilipatnam, Kakinada (Musale & Desai, 2011), West coast of India from Cape Comorin to Dwarka (Joydas & Damodaran, 2009). World- South Africa, Algoa Bay; Mozambique (Ehlers, 1908; Wilson, 1958), Hong Kong waters (Mortimer & Mackie, 2009).

Subclass SEDENTARIA Lamarck, 1818

Infraclass CANALIPALPATA Rouse & Fauchald, 1997

Order SPIONIDA Fauchald, 1977

Family SPIONIDAE Grube, 1850

Genus *Paraprionospio* Caullery, 1914

13. *Paraprionospio pinnata* (Ehlers, 1901)

1901. *Prionospio pinnata* Ehlers, *Festschrift zur Feier des Hundertfünfzigjährigen Bestehens des Königlichen Gesellschaft der Wissenschaften zu Göttingen, Abhandlungen der Mathematisch-Physikalischen Klasse.*, 163–164.

1990. *Paraprionospio pinnata* Wilson, *Mem. Mus. Vic.*, **50**(2): 268–270, fig. 84–93.

Diagnosis: Prostomium bluntly pointed extending to first setiger. Three pairs of large pinnate branchiae on setigers 1-3. Notopodia large and pointed on the first five setigers. Neuropodial lamellae prominent pointed anteriorly and rounded posteriorly. Neuropodial hooks geniculate appearing from setiger 9. Notopodial hooded hooks appearing from middle body region. Eversible proboscis bilobate. Transverse ridge between branchial bases on setiger 1 (Wilson, 1990).

Distribution: India- Konkan coast (Vizakat, 1991), West coast of India from Cape Comorin to Dwarka (Joydas & Damodaran, 2009), East coast of India along Vasishta Godavari Estuary (Rao *et al.*, 2009), Mormugao, Karwar, Mangalore, Cannanore, Calicut, Kochi, Trivandrum, Pondicherry, Kakinada (Musale & Desai, 2011). World- South Texas Continental Shelf (Flint & Rabalais, 1980), Southern Australia (Wilson, 1990), Red Sea, Gulf of Aden, Gulf of Oman, Arabian Gulf (Wehe & Fiege, 2002), Northern Cyprus along Eastern Mediterranean Sea (Çinar, 2005).

Genus *Prionospio* Malmgren, 1867

14. *Prionospio* sp.

Diagnosis: In the anterior portion 30 setigers are present. Prostomium bottle-shaped, anteriorly rounded. 2 pairs of eyes; anterior pair rounded and posterior pair rectangular. Peristomium long. Anterior neuropodial setae lacking granulations. Dorsal folds absent. Shape of apinnate branchial pairs 2 and 3 is triangular. Notopodial postchaetal lamellae of setae 1 round and big (Delgado-Blas, 2014).

Distribution: India - West coast of India from Cape Comorin to Dwarka (Joydas & Damodaran, 2009), East coast of India along Vasishta Godavari Estuary (Rao *et al.*, 2009), Cannanore, Calicut, Trivandrum, Pondicherry, Nellore, Nizamapatnam (Musale & Desai, 2011). World-

Northern Cyprus along Eastern Mediterranean Sea (Çinar, 2005), Cap Bon Peninsula, North-Eastern coast of Tunisia, Western Mediterranean Sea (Zaâbi *et al.*, 2012), Sinop Peninsula along Southern Black Sea (Şahin *et al.*, 2017).

Genus *Scolelepis* Blainville, 1828

15. *Scolelepis (Scolelepis) squamata* (O.F. Müller, 1806)

1806. *Lumbricus squamatus* Müller, *Havniae [Copenhagen]*, N. Christensen. Volumen quartum: [1–5], 39, pl. CLV, figs. 1–5.

2006. *Scolelepis (Scolelepis) squamata* Delgado-Blas, *Contrib. Zool.*, 75(1/2): 76–79, fig. 1a–q.

Diagnosis: Body about 2 cm long. Prostomium pointed anteriorly with six eyes in a row and a well-developed occipital keel extending up to setiger 2. Notopodial lamellae fused with branchiae anteriorly, auricular and remaining free posteriorly. Bidentate neuropodial hooded hooks from setiger 30–35 onwards, notopodial hooks appearing more posteriorly. A pair of long, stout and coiled palps. Branchia commences from 2nd setiger to the posterior end (Venkataraman *et al.*, 2012).

Distribution: India - Vellar Estuary and nearshore waters of Porto Novo (Parangipettai) (Srikrishnadhas, 1987), West coast of India from Cape Comorin to Dwarka (Joydas & Damodaran, 2009), Andaman and Nicobar Islands (Rajasekaran & Fernando, 2012). World – Aegean and Ionian Seas (Greece and Eastern Mediterranean Sea) (Simboura *et al.*, 2000), Red Sea, Arabian Gulf (Wehe & Fiege, 2002).

Order TERESELLIDA Rouse & Fauchald, 1997

Family CIRRHATULIDAE Ryckholt, 1851

Genus *Aphelochaeta* Blake, 1991

16. *Aphelochaeta filiformis* (Keferstein, 1862)

1862. *Cirratulus filiformis* Keferstein, *Zeitschrift für wissenschaftliche Zoologie*. 12(1): 122–123, fig. 28–31.

1999. *Aphelochaeta filiformis* Petersen, *Hydrobiol.* 402: 109.

Diagnosis: Body small (about 42 mm), cylindrical, with up to 200 segments. Prostomium pointed anteriorly. The second segment is heart-shaped dorsally, overlapping the third segment posteriorly. Two groups of 1 or 2 palps on the anterior edge of the first setiger, on either side. Branchiae long, filamentous, same size as the palps and starting from the first setiger to the tail end. Its colour is brownish to greenish yellow (Hayward & Ryland, 2017).

Distribution: India - Trivandrum, Pondicherry (Musalé & Desai, 2011). World - Arabian Gulf (Wehe & Fiege, 2002).

Family TRICHOBRANCHIDAE Malmgren, 1866

Genus *Trichobranchus* Malmgren, 1866

17. *Trichobranchus glacialis* Malmgren, 1866

1866. *Trichobranchus glacialis* Malmgren, *Öfversigt af Königlich Vetenskapsakademiens förhandlingar*, Stockholm., 22(5): 395–396, pl. XXIV, fig. 65.

Diagnosis: The body has an average size of 30 mm for 70 segments. The thorax is columnar with a narrow abdomen. Thorax possess 15 setigers. Upper lip forms a pair of lobes and the lower lip is folded obliquely. A single, mid dorsal branchia along with 3 pairs of branchiae present. Tentacles of two types- long, thread like and stout thick type. Branchiae with four branches nearly fused with common origin on a thick stem. Spines of first thoracic neuropodium (setiger 6) bent with straight (not recurved) tips. Pygidium is even or may have slight dents (Malmgren, 1866).

Distribution: India - West coast of India from Cape Comorin to Dwarka (Joydas & Damodaran, 2009). World-Gulf of St. Lawrence (Brunel *et al.*, 1998), European waters (Costello *et al.*, 2001), Red Sea, Arabian Sea (Wehe & Fiege, 2002), Gulf of Mexico (Fauchald *et al.*, 2009).

Infraclass SCOLECIDA Rouse & Fauchald, 1997

Family CAPITELLIDAE Grube, 1862

Genus *Capitella* Blainville, 1828

18. *Capitella capitata* (Fabricius, 1780)

1780. *Lumbricus capitatus* Fabricius, *Hafniae, Impensis Ioannis Gottlob Rothe.*, 279.

1967. *Capitella capitata* Day, *Br. Mus. Nat. Hist.*, 595.

Diagnosis: Body is long (about 120 mm comprising 100 segments), cylindrical, tapering at both ends and wide anteriorly. Prostomium conical with similar length and breadth, possessing two small eyes ventrally and two nuchal organs behind eyes. Thorax containing 9 setigers. Only capillary setae present in the first 6–7 segments, 7th segment with both capillary setae and hooks and segments beyond 7 with only hooks. A single genital pore opens mid-dorsally between setigers 8 and 9. Pygidium lacks cirri. Absence of gills. Body colour is reddish-brown to purple, in alcohol it decolourises to transparent (Blake, 2009).

Distribution: India - Cannanore, Trivandrum, Pondicherry, Nellore, Nizamapatnam, Machilipatnam, Kakinada (Musale & Desai, 2011), Thondi, Palk bay (Anbuezhian *et al.*, 2012). World - Cosmopolitan. Red Sea, Arabian Gulf (Wehe & Fiege, 2002), Northern Cyprus (Eastern Mediterranean Sea) (Çinar, 2005), West Greenland (Blake, 2009), Cap Bon Peninsula, North-Eastern coast of Tunisia, Western Mediterranean Sea (Zaâbi *et al.*, 2012).

Family COSSURIDAE Day, 1963

Genus *Cossura* Webster & Benedict, 1887

19. *Cossura coasta* Kitamori, 1960

1960. *Cossura coasta* Kitamori, *Bull. Jap. Soc. Sci. Fish.*, **26**(11): 1082–1085.

Diagnosis: Anterior setigers absent, 3 long branched anal cirri. Nuchal organs present on neck, function as chemosensors (Read, 2000).

Distribution: India - West coast of India from Cape Comorin to Dwarka (Joydas & Damodaran, 2009), East coast of India (Vasishtha Godavari Estuary) (Rao *et al.*, 2009), Thondi, Palk bay (Anbuezhian *et al.*, 2012), Calicut, Kochi (Musale & Desai, 2011). World-Seto Inland Sea, Japan (Kitamori, 1960).

Family MALDANIDAE Malmgren, 1867

Genus *Euclymene* Verrill, 1900

20. *Euclymene annandalei* Southern, 1921

1921. *Euclymene annandalei* Southern, *Mem. Indian Mus.*, 648, pl. XXVIII, fig. 22a–g, pl. XXIX, fig. 22h–k.

Diagnosis: Cylindrical body with long segmentation, possessing 21 setigers. Numerous ocelli on prostomium, which is brusquely triangular. Cephalic rim crenulated posteriorly. Presence of a dorsal glandular streak arising from 9th setiger. Notosetae with anteriorly placed narrow winged capillaries and posteriorly placed feathered forms. Setiger 1-3 with a single acicular spine with a smooth bent teeth; nerosetae with numerous hooks each with a vertical series of 5-6 teeth. Pygidium funnel shaped with cirri around it (Rao, 1995).

Distribution: India - Konkan coast (Vizakat, 1991), Chilka Lake, (Southwest) Vellar estuary and Andaman Nicobar Islands (Rao, 1995), Kakinada (Musale & Desai, 2011), Thondi, Palk bay (Anbuezhian *et al.*, 2012).

World- Gulf of Aden, Arabian Gulf (Wehe & Fiege, 2002), Northern Cyprus along Eastern Mediterranean Sea (Çinar, 2005).

Family OPHELIIDAE Malmgren, 1867

Genus *Armandia* Filippi, 1861

21. *Armandia leptocirris* Grube, 1878

1878. *Armandia leptocirris* Grube, *Memoires de L'Academie Imperiale. des Sciences de St. Petersbourg Mem. Acad. Sci. S. Peterb.*, **25**(8): 194.

Diagnosis: Length 15-30 mm. Presence of 31-38 setigerous segments. Highly arched dorsal side. A prominent mid-ventral groove on the ventral side, located behind the mouth up to the posterior end. The parapodia arise from the dorsal margin of the ventro-lateral folds. Branchiae from 2nd setiger to the last setiger. The last few setigers have longer setae than the ones preceding them. Beyond the 7th setiger, each segment possesses 10-12 pairs of centrally placed lateral eyespots. Anal funnel long, bordered by 11 papillae. A median jointed anal cirrus longer than papillae. Prostomium is anterior to mouth and highly muscular. Cephalic eyes represented as 2-3 brown spots, on the dorsal side of the prostomium underneath the body wall (Tampi, 1958).

Distribution: India - Gulf of Mannar, Andaman Islands (Fauvel, 1932). World- Indo-Pacific region, Persian Gulf, Margui archipelago (Fauvel, 1932), Red Sea, Gulf of Aden, Arabian Gulf (Wehe & Fiege, 2002).

Family PARAONIDAE Cerruti, 1909

Genus *Levinsenia* Mesnil, 1897

22. *Levinsenia gracilis* (Tauber, 1879)

1879. *Aonides gracilis* Tauber, *Reitzel. K. behavn.*, 115–116.

1898. *Levinsenia gracilis* Mesnil & Caullery, *Bull. Sci. Fr. Belg.*, **31**: 136–138, pl. VI, fig. 10.

Diagnosis: 5-6 prebranchial segments. 10-15 pairs of branchiae. Antennae, secondary ciliary organs, modified notochaete absent. Modified neurochaete are long, with curved hooks. Convex edge possesses a ridge (López & Sikorski, 2017).

Distribution: India - West coast of India from Cape Comorin to Dwarka (Joydas & Damodaran, 2009). World- Southern Africa (Day, 1967), Oregon (Fauchald & Hancock, 1981), Red Sea (Wehe & Fiege, 2002).

Discussion

Polychaetes form an essential group of macrobenthic community, recognized for their dominance, species richness and diversity. They are utilized to monitor the health of marine ecosystem, especially of estuarine, mangrove and coastal areas. They are also exploited commercially in aquaculture industries. Studies on polychaete, from India, is mainly confined to the pioneer work on the polychaete community composition of Vasishta Godavari estuary by Rao & Sarma (1983). Jagadeesan & Ayyakkannu (1992) reported the seasonal fluctuation of the benthic fauna of the estuarine region of the Southeast coast of India. Prabhu *et al.* (1993) studied the macro-benthic fauna of the West coast of India. The community composition of polychaetes of Hoogly estuary, Sunderbans of India was represented by Chakraborty & Choudhury (1994). In Mormugao harbour of Goa, West coast of India, the macrobenthic organisms were investigated by Ansari *et al.* (1994). Devi *et al.* (1996) examined the benthic faunal diversity along the Southwest coast of India. Recently, polychaetes abundance and distribution was studied by Anbuhezhan *et al.* (2012) along Thondi coastal waters, Southeast coast of India. 70 species have been reported from the Godavari estuary and Kakinada Bay (Rao, 2001) and 107 species from the coastal and estuarine waters of Odisha (Misra *et al.*, 1987). A comprehensive study on the diversity of polychaetes yielded a record of 153 species from the Indian estuaries, 119 species were unique from the East coast, 11 species were unique from the West coast and 23 species were common from both the East and West coasts (Khan & Murugesan, 2005). Recently, Balakrishnan and Tudu (2021) updated the review list of marine polychaete from the coastal waters of Odisha and West Bengal; they obtained 179 species of polychaete belonging to 119

genera, 36 families and eight orders.

A total of 22 species of polychaetes belonging to 20 genera, 15 families and four orders have been observed in this faunistic study, which was restricted only to the coastal and estuarine waters of Odisha and Andhra Pradesh. The recorded polychaetes belonged to three subclass-Errantia, Polychaeta incertae sedis and Sedentaria. Subclass Sedentaria was the most diverse taxon with eight families, ten genera and ten species. Subclass Errantia comprised of seven families, nine genera and ten species; while subclass Polychaeta incertae sedis consisted of only one family, one genus and two species. The present study will add valuable information to the existing polychaete systematics, description and distribution; along the East coast of India. Information on polychaete distribution from Indian waters will certainly increase our knowledge with respect to their biodiversity and ecology. Such studies will enhance our understanding related to the species spatio-temporal variation. Assessing polychaetes as bioindicators of habitat loss needs to be examined in detail, especially in regions having huge anthropogenic pressure. Moreover, affect of aquaculture industries on the abundance and diversity of polychaetes needs to be explored further.

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