



First Report on Distribution of Polychaetes (Annelida: Polychaeta) Along the Makran Coast of Pakistan, Northern Arabian Sea

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Abstract: Polychaetes are one of the most important macro-invertebrate groups in marine benthic communities. These worms play a crucial role in the food web of the trophic system and serve as the primary link between sediment and higher predators. They are demonstrating a wide range of functional diversity as well as apprehension of various environmental conditions also they are one of the best indicators of environmental disturbance among benthic groups. Studies on polychaetes from Pakistan were date back almost over a century but this studies only conducted in coastal areas of Sind specially Karachi coast. Due to the fact of scarcity of polychaete data from Makran coast, the current study is aimed to identify the diversity and their distribution from 7 different designated stations. A total of 15 species have been identified, belonging to the families Amphinomidae, Eunicidae, Lumbrineridae, Nereididae and Polynoidae. The species are described briefly and presented with their microscopic illustrations. The present study is first to describe the diversity of polychaetes from the Makran coast. The specimens are deposited in the repository of the Marine Reference Collection and Resource Centre, University of Karachi.

1. Introduction

Polychaetas are the most diversified class of segmented worms under the phylum Annelida found in marine ecosystem. They are a major group within the soft bottom macro-invertebrates (Gray and Elliott, 2009) and comprise an abundant and ecologically significant functional component of the coastal ecosystem by constituting 80% to the total macro benthic community (Misra, 1999; Shou et al., 2009). To date, more than 12,000 polychaete species have been recorded (Read and Fauchald, 2020) in which the greatest number of taxa belongs, live in protected habitats such as mud, sand, and rock crevices. Their colors are often bright, and some species are iridescent with a range in length from less than 2 mm (1/8 in.) to 5–10 cm (2 to 4 in.) in length.

In the trophic system, these worms are having a pivotal role in food web and form the central link between the sediment systems and higher predators. They are showing a wide functional diversity and

adaptation to different environmental conditions (Knox., 1977; Musco., 2012), especially in areas of anthropogenic stress (Gray and Elliott., 2009). Thus, they are often used as surrogates to estimate the state and dynamics of benthic communities (Pocklington and Wells., 1992; Dauvin et al. 2007; Giangrande et al., 2005; Aguado-Giménez et al., 2015; Musco et al., 2009; Soares-Gomes et al., 2012; Attish, 2022; Martins and Barros, 2022). Recent studies have shown polychaetes are used as bioindicator organisms most valuable for the detection of pollution and its status (Mendez and Paez-Osna, 1998; Harlan, 2008; Khan et al., 2017a,b; Bat and Kurt, 2020). Such applications are most effective when knowledge of species diversity is comprehensive (e.g., for the Arabian Seas; Wehe and Fiege, 2002; Dauvin et al., 2003; 2006). Studies on polychaetes from Pakistan were date back almost over a century. Aggarwala (1924), Bindra (1923, 1927), Fauvel (1932, 1953), Aziz (1938), Bhatti and Sufi (1949), Hasan (1960), Ashraf (1968), Ahmad (1969), Ahmad and Ashraf (1973), Ahmad et al., (1982), Habib and Mustaqim (1988), Siddiqui and Mustaqim (1988), Rehana and Mustaqim (1989), Mustaqim (1990, 1991a, 1991b, 1995, 1997, 2000), Swaleh and Mustaqim (1993), Ishaq and Mustaqim (1996), Wehe and Fiege (2002), Rasheed and Mustaqim (2003, 2005), Mushtaq and Mustaqim (2006a; 2006b), Kazmi and Naushaba (2010; 2013), Khanum and Mustaqim (2012), Reuscher and Fiege (2016), Kazmi et al. (2019), Arshad et al. (2019), Moazzam and Moazzam (2019), Khatoon et al. (2020) and Khan et al. (2019, 2022) studied on different aspects of polychaete fauna from Pakistan especially Sind Coast. There are still new species records are being reported frequently from Pakistan. The present study was conducted to understand the polychaete diversity along the Makran coast and deals with 15 species of benthic polychaetes belonging to 5 families under 9 genera along with the systematic account of each species, their distribution and diagnostic characters from 7 stations of Makran coast.

2. Methodology

Specimens were collected during low tide from intertidal zone of 7 designated stations (Figure 1, Table 1) of Makran coast i.e. Taak Beach, Jiwani (25°03'06''N 61°44'35''E); Bandari Beach, Jiwani (25°03'09''N 61°44'36''E); Shamal Bandar, Pasni (25°14'01''N 63°04'32''E); Ras Juddi, Pasni (25°13'25''N 63°30'15''E); Sikhoni, Ormara (25°17'53''N 64°14'40''E); Maadi, Ormara (25°14'51''N 64°22'36''E); Taak, Ormara (25°16'11''N 64°30'21''E) during December 2021 to February 2022. Samples were preserved in 5% formaldehyde and were brought to MRC&RC laboratory. Physico-chemical parameters (water temperature, salinity, and pH) were recorded simultaneously. In the laboratory, benthic materials were sorted and transferred tubes with 70% ethanol. Polychaetes were dissected and examined under the stereo zoom microscope (SMZ 10) for identification. Temporary mounts of parapodia were prepared from III, middle and last tail segments and observed under upright microscope. The specimens are deposited in the repository of the Marine Reference Collection and Resource Centre, University of Karachi.

3. Results

Faunistic analysis of polychaetes collected at seven stations on the coast of the Makran yielded a total of 15 species belonging to 5 families. Among these, family Nereididae consists of 8 species. Amphinonidae, Eunicidae, Polynoidae have 2 species in their families and Lumbrineridae comprises with only one specie. All species are discussed with their distinct features. Parapodia and prostomium illustrations were also given for aid in identification.

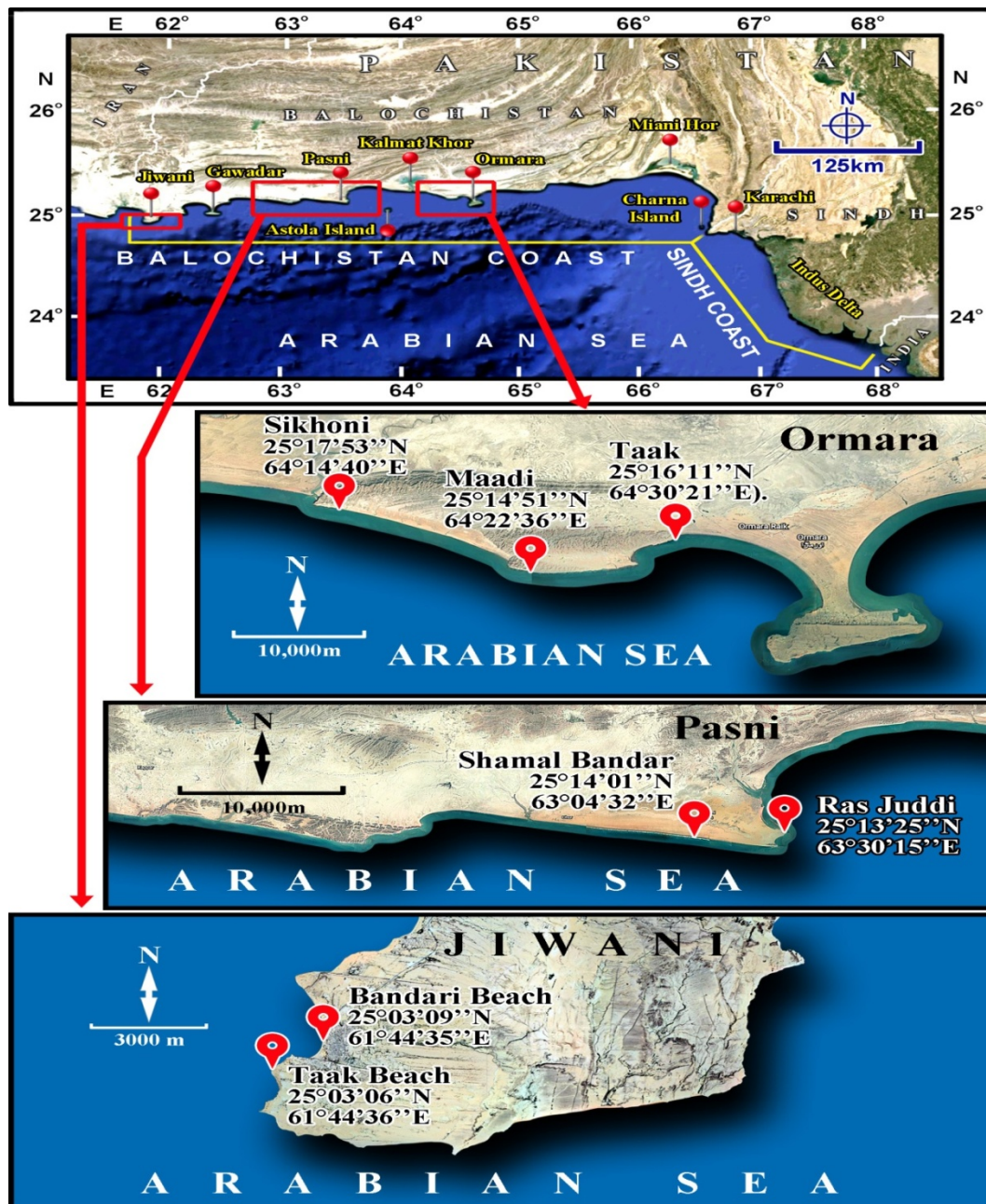


Figure 1. Map of study area

Table 1. Specimens with locality and habitat.

Specimens (Code)	Date	Location/ Coordinates	Habitat
<i>Eurythoe complanata</i> (Pallas, 1766) POL-22-MRCC	04-12-2021; 30-01-2022	Ras Juddi(25°13'25''N 63°30'15''E)	Rocky cum sandy
<i>Eurythoe matthaii</i> (Bindra, 1927) POL-10-MRCC	05-12-2021	Sikhoni (25°17'53''N 64°14'40''E)	Rocky cum sandy
<i>Lysidice natalensis</i> (Kinberg, 1865) POL-41-MRCC	05-12-2021	1.Sikhoni (25°17'53''N 64°14'40''E); 2.Taak (25°16'11''N 64°30'21''E)	1.Rocky 2.Rocky cum sandy

<i>Marphysa depressa</i> (Schmarda, 1861) POL-08-MRCC	31-01-2022	Shamal Bandar (25°14'01''N 63°04'32''E)	Rocky cum Sandy
<i>Lumbrineris latreilli</i> (Audouin & Milne Edwards, 1833) POL-29-MRCC	31-01-2022	Shamal Bandar (25°14'01''N 63°04'32''E)	Rocky cum Sandy
<i>Neanthes willeyi</i> (Day, 1934) POL-38-MRCC	05-12-2021	Sikhoni (25°17'53''N 64°14'40''E)	Rocky cum sandy
<i>Nereis coutieri</i> (Gravier, 1899) POL-36-MRCC	05-12-2021	Taak (25°16'11''N 64°30'21''E)	Rocky cum Sandy
<i>Nereis persica</i> (Fauvel, 1911) POL-37-MRCC	30-01-2022	Taak Beach, Jiwani (25°03'06''N 61°44'35''E)	Rocky cum Sandy
<i>Perinereis cultrifera</i> (Grube, 1840) POL-28-MRCC	2-02-2022	Taak, Ormara (25°16'11''N 64°30'21''E)	Rocky cum Sandy
<i>Perinereis nigropunctata</i> (Horst, 1889) POL-03-MRCC	31-01-2022	Shamal Bandar (25°14'01''N 63°04'32''E)	Rocky cum Sandy
<i>Perinereis nuntia</i> (Lamarck, 1818) POL-06-MRCC	31-01-2022	Shamal Bandar (25°14'01''N 63°04'32''E)	Rocky & Sandy
<i>Pseudonereis anomala</i> (Gravier, 1899) POL-39-MRCC	02-12-2021	Bandari Beach (25°03'09''N 61°44'36''E)	Rocky & Sandy
<i>Pseudonereis variegata</i> (Grube, 1857) POL-11-MRCC	02-02-2022	Maadi (25°14'51''N 64°22'36''E)	Rocky cum Sandy
<i>Lepidonotus purpureus</i> (Potts, 1910) POL-24-MRCC;	05-12-2021	Sikhoni (25°17'53''N 64°14'40''E)	Rocky cum Sandy
<i>Lepidonotus jacksoni</i> (Kinberg, 1855) POL-40-MRCC	31-01-2022	Shamal Bandar (25°14'01''N 63°04'32''E)	Rocky cum Sandy

Systematic Account

Class POLYCHAETA (Grube, 1850)

Subclass ERRANTIA (Audouin & Milne-Edwards, 1832)

Order AMPHINOMIDA

Family AMPHINOMIDAE (Lamarck, 1818)

Genus *Eurythoe* (Kinberg, 1857)

1. *Eurythoe complanata* (Pallas, 1766)

Material Examined:

Catalogued no: POL-22-MRCC; 2 specimens; Length: 5.5 cm; 85 segments; Locality: Ras Juddi, Pasni; Taak, Jiwani.

Diagnostic characteristics:

Body dark orangish, elongated and dorsoventrally flattened. Prostomium with pair of eyes having three antennae. One pair of palps is color pale red with light brown branchia and white chaeta and branchia

commencing on the second segment. Four very conspicuous eyes and caruncle terminating on third or fourth segment, lateral lobes hidden in grooves under the smooth lobe. The caruncle terminates on the anterior part of the fourth setiger. The parapodia are small, notochaeta vary greatly and are long and white with a slender, elongated tip and a few serrations along the cutting edge together with a spur below the serrations (Figure 2; A-D).

Distribution:

Australia and Tropical Indo-Pacific

2. *Eurythoe matthaii* (Bindra, 1927)

Material Examined:

Catalogued no: POL-10-MRCC; 1 specimen; Length: 12.7 cm; 130 segments; Locality: Sikhoni, Ormara.

Diagnostic characteristics:

Body coloration having light brown. Body Elongated, somewhat rectangular in cross section, becoming enlarged in middle region, then gradually shortened towards posterior end. Dorsal and ventral surfaces of body somewhat flattened. Prostomium subtriangular, rounded anteriorly with two lateral antennae and one median antenna, lateral antennae conical, emerging on anteriodorsal sides of prostomium, Median antenna slender, tapering, with rounded tip, situated between posterior eyes. Parapodia biramous; notopodia and neuropodia distinctly separated, with a dorsal and ventral cirrus; with distinct, irregular annulations; dorsal cirri slender tapering; ventral cirri conical; dorsal cirri longer than ventral cirri on all chaetigers. Harpoon shaped chaetae well developed, reaching the length of the bifid chaetae. Length: 65—110 mm, by 5—8 mm (Figure2; E-H).

Distribution:

Indian Ocean, Tropical West Africa.

Order EUNICIDA

Family EUNICIDAE (Berthold, 1827)

Genus *Lysidice* (Lamarck, 1818)

3. *Lysidice natalensis* (Kinberg, 1865)

Material Examined:

Catalogued no: POL-41-MRCC; 1 Specimen; Length: 8cm; 138 segments; Locality: Sikhoni;Taak, Ormara.

Diagnostic characteristics:

Body elongated, having light brown coloration. Three antennae. Tentacular cirri absent. Dorsal and ventral cirri. Palps absent. Reniform eyes present, close to the lateral antennae. Anterior margin prostomium bilobed, antennae tapered, as long as the prostomium. Dorsal cirrus is conical. Ventral cirrus rounded in the anterior segments. Acicula black with blunt tips, acicular chaetae are brown, bidentate with small guards (Figure 2; I-K).

Distribution:

South Africa: Western Cape Province, west and south coast to KwaZulu Natal (Type locality Durban), Namibia, and Pakistan.

Genus *Marphysa* (Quatrefages, 1866)

4. *Marphysa depressa* (Schmarda, 1861)

Material Examined:

Catalogued no: POL-08-MRCC; 1 specimen, Length: 7.5cm; 96 segments; Locality: Shamal Bandar, Pasni.

Diagnostic characteristics:

Body cylindrical and rounded with dark brown. Two bulbous palps. Five antennae. Two eyes. Tentacular cirri absent. Dorsal cirri elongated, and ventral cirri is short. Prostomium bilobed. Branchia start from tenth to twentieth parapodia as single filament, their number reaches to three to four filaments per parapodium and then decreases gradually to posterior end. Acicula three anteriorly, but reduced to two posteriorly, with pale tips and dark brown to black shafts. Acicular chaetae are bidentate with small guards (Figure 2; L-O).

Distribution:

Indian Ocean, Auckland, New Zealand.

Family LUMBRINERIDAE (Schmarda, 1861)

Genus *Lumbrineris* (Blainville, 1828)

5. *Lumbrineris latreilli* (Audouin & Milne Edwards, 1833)

Material Examined:

Catalogued no: POL-29-MRCC; 1 Specimens; Length: 5.5 cm; 123 segments; Locality: Shamal Bandar, Pasni.

Diagnostic Characteristics:

Body coloration having dark brown. Body narrowed anteriorly, long, and thin with numerous segments. Prostomium conical, slightly longer than wide. Parapodium with a short, rounded prechaetal lobe; postchaetal lobe longer, tongue-shaped, projecting obliquely upward in posterior segments (Figure 2; P-S).

Distribution:

Indo-Pacific, Atlantic, Arctic and the Mediterranean Sea.

Order PHYLLODOCIDA

Family NEREIDIDAE (Blainville, 1818)

Genus *Neanthes* (Kinberg, 1865)

6. *Neanthes willeyi* (Day, 1934)

Material Examined:

Catalogued no: POL-38-MRCC; 01 specimen; Length: 4.5 cm; 43 segments; Locality: Sikhoni, Ormara.

Diagnostic characteristics:

Body coloration having dark brown. Prostomium anterior marginentire. One pair of antennae present, paired biarticulated palps with conical palpostyles. Four pairs of longer tentacular cirri reaching backwards to the 7th with distinct cirrophores. Conical paragnaths present on both maxillary and oral rings of pharynx. Anterior parapodia with pointed lobes. Dorsal notopodial ligule present, Neuropodial postchaetal lobe absent or present (Figure 3; A-C).

Distribution:

Australia, New Zealand, Pakistan, Persian Gulf, Suez Canal and Cape of Good Hope.

Genus *Nereis* (Linnaeus, 1758)

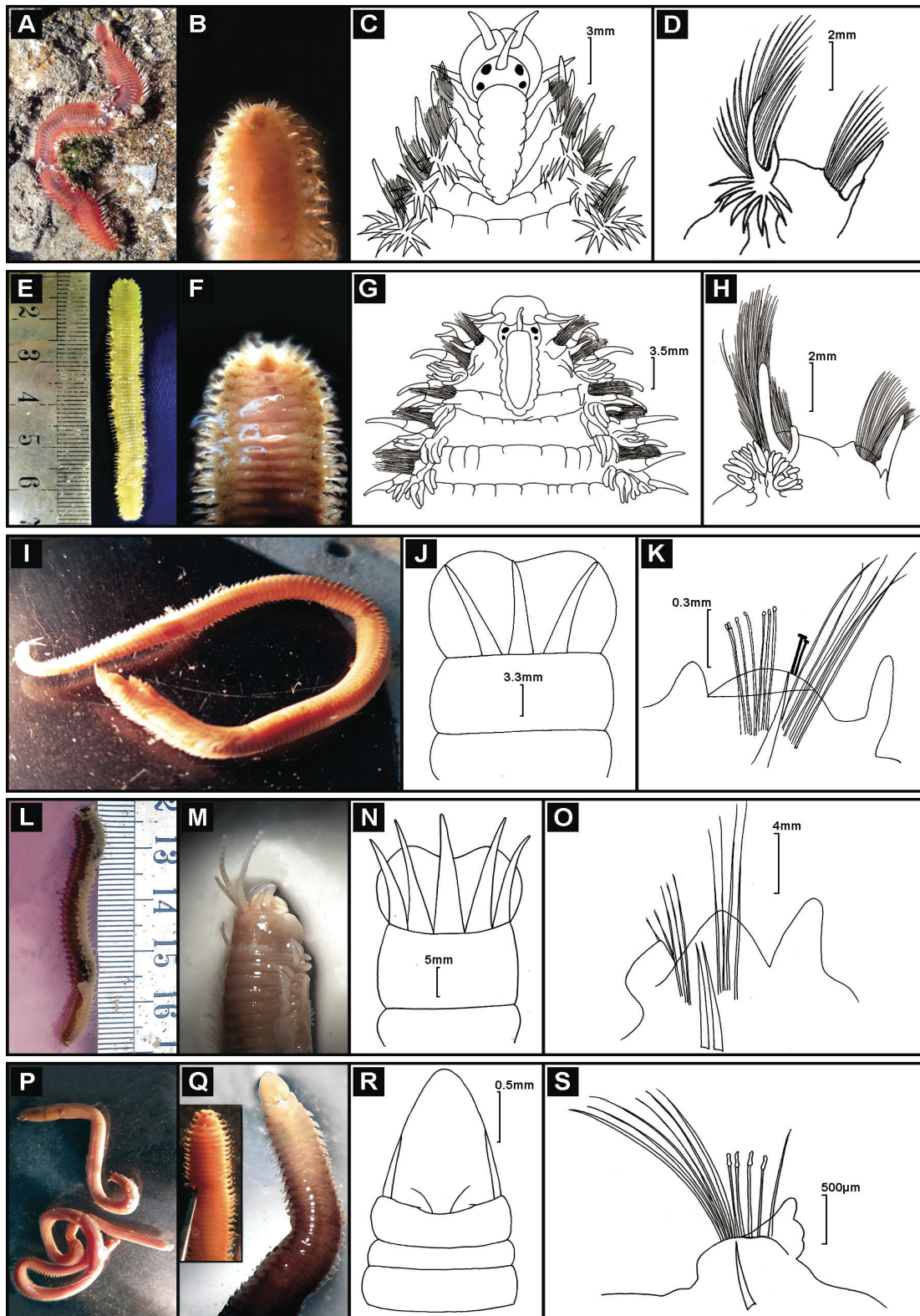


Figure 2. *Eurythoe complanata* (A-D); *Eurthoe mathaii* (E-H); *Lysidice natalensis* (I-K); *Marphysa depressa* (L-O); *Lumbrineris latreilli* (P-S).

7. *Nereis coutieri* (Gravier, 1899)

Material Examined:

Catalogued no: POL-36-MRCC; 01 specimen; Length: 6.2 cm; 118 segments; Locality: Taak, Ormara

Diagnostic characteristics:

Body coloration having light brown with dark brown pigment on chaetiger. Longest tentacular cirri extending back to chaetiger. All paragnaths are conical. Brown paragnaths in one row. Anterior and mid-body notopodia have two equal, conical pointed ligules, dorsal cirrus longer than dorsal ligule. In posterior notopodia dorsal ligule is expanded into a rounded crest, dorsal cirrus is longer than dorsal ligule. Notochaetae are homogomph spinigers anteriorly and two homogomph falcigers with smooth blades posteriorly (Figure 3; D-F).

Distribution:

Indo-China, Persian Gulf, Red Sea, Suez, Pakistan.

8. *Nereis persica* (Fauvel, 1911)

Material Examined:

Catalogued no: POL-37-MRCC. 01 specimen, Length: 5.5 cm; 93 segments; Locality: Taak Beach, Jiwani.

Diagnostic characteristics:

Body coloration having dark brown. Body rounded. Prostomium with entire anterior margin, one pair of antennae, one pair of biarticulated palps with conical palpostyles, and four pairs of tentacular cirri with distinct cirrophores. Paragnaths groups as in posterior notochaetae included one to two dark homogomph falcigers, their blades with two to three blunt teeth (Figure 3; G-I).

Distribution:

Persian Gulf, Arabian Sea, Gulf of Aden, Suez Canal, Red Sea, India, Indo-China, Madagascar and New Caledonia.

Genus *Perinereis* (Kinberg, 1865)

9. *Perinereis cultrifera* (Grube, 1840)

Material Examined:

Catalogued no: POL-28-MRCC; 01 specimens; Length: 6 cm; 108 segments; Locality: Taak, Ormara.

Diagnostic characteristics:

Body coloration having light brown. Prostomium is broadly triangular. Eyes black, antennae one-third of prostomium, longest tentacular cirri extend back to fifth setiger. Tentacular cirri are rather long and slender. Faint transverse pigmented bands on several anterior setigers, otherwise lacking pigmentation patterns. Jaws about five distinct teeth. Notopodia with 2 equal lobes anteriorly. Dorsal cirrus as long as dorsal notopodial ligule anteriorly, anal cirri extend back to about seven setigers. Falcigerschaetae with short blades just like sickle-shaped terminal pieces and posterior feet not modified (Figure 3; J-M).

Distribution:

Indian Ocean, N.E. Atlantic, Mediterranean, N.W. Pacific.

10. *Perinereis nigropunctata* (Horst, 1889)

Material Examined:

Catalogued no: POL-03-MRCC; 01 specimen; Length: 5 cm; 87segemnets; Locality: Shamal Bandar, Pasni.

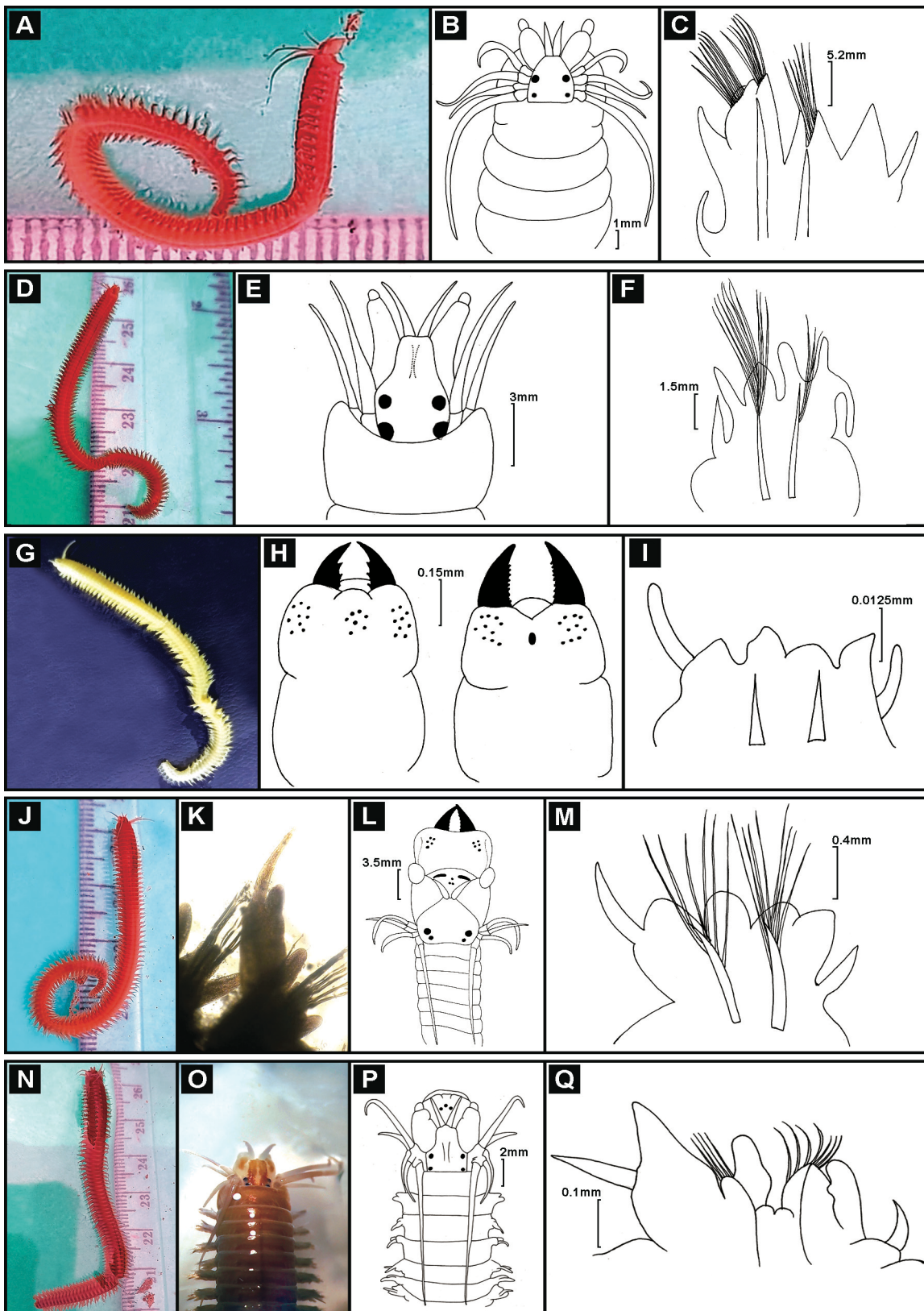


Figure 3. *Neanthes willeyi* (A-C); *Nereis couteri* (D-F); *Nereis persica* (G-I); *Perinereis cultrifera* (J-M); *Perinereis nigropunctata* (N-Q).

Diagnostic characteristics:

Body coloration having light brown, streaky pigmentation on dorsal surface. Prostomium with three rows of dark pigments and a V- shaped spot. Tentacular cirri are short. Antennae two short, triangular longest tentacular cirri usually extend to third setiger. Paragnaths conical and transverse. Epitokes with similar body pigmentation and natatory region extending to pygidium but differ in number of pre-natatory chaetigers and number modified dorsal and ventral cirri. 1 to 5 ventral cirri on chaetigers (Figure 3; N-Q).

Distribution:

Malayan Peninsula, Nicobar Island, India, Persian Gulf, Madagascar, Mombasa, and Red Sea.

11. *Perinereis nuntia* (Lamarck, 1818)

Material Examined:

Catalogued no: POL-06-MRCC; 01 specimen; Length: 3 cm; 86 segments; Locality: Shamal Bandar, Pasni.

Diagnostic characteristics:

Body coloration having light brown. Prostomium with entire anterior margin. 2 pairs of eyes, anterior pair more widely spaced than posterior pair with 1 pair of antennae. Four pairs of tentacular cirri, each with distinct cirrophores. Tentacles are short and small and distally slender. Dorsal cirri of variable length. Parapodia with dorsal ligules blunt, conical, or tapering. In the posterior feet, the dorsal ligule is enlarged. Parapodia 1 and 2 lacking notochaetae and notoacaculae, Notopodia bilobed from chaetiger 3, dorsal cirrus basally attached. Neuropodia bilobed throughout with ventral cirrus (Figure 4; A-D).

Distribution:

Red Sea and Gulf of Aden. The species is widely recorded throughout the tropical Indo-Pacific, from Thailand, China and Hong Kong to Australia (north of 27°S), and Fiji, but many of these records need critical re-appraisal.

Genus *Pseudonereis* (Kinberg, 1865)

12. *Pseudonereis anomala* (Gravier, 1899)

Material Examined:

Catalogued no: POL-39-MRCC; 01 specimens; Length: 6.5 cm; 121 segments; Locality: Bandari Beach, Jiwani

Diagnostic characteristics:

Dark brown pigmentation on prostomium and body, forming a band at each segment, becoming lighter posteriorly. Prostomium with two antennae and four pairs of tentacular cirri. Two pair of eyes present. Body with up to 30 chaetigers. Anterior parapodia with two equal notopodial lobes and a long dorsal cirrus. Posterior parapodia with the notopodial lobe flattened and elongate with the dorsal cirrus at its obliquely truncate tip. Posterior dorsal falcigerous bristles, with rather short, faintly curved, terminal piece. Aciculae black, two per parapodium, pygidium with two anal cirri, two per parapodium (Figure 4; E-H).

Distribution:

Australia, Malay Archipelago, Indochina, China, Pakistan, Persian Gulf, Madagascar, Red Sea, Suez Canal.

13. *Pseudonereis variegata* (Grube, 1857)

Material Examined:

Catalogued no: POL-11-MRCC; 01 specimens; Length: 4.5 cm; 50 segments; Locality: Maadi, Ormara.

Diagnostic characteristics:

Body coloration having light brown. Prostomium broad inverted T with large bulbous palps. Proboscis with a single conical, transverse and pectinate paragnath of group VI. Notochaeta are homomorphic spinigers throughout parapodia with longer dorsal cirrus. Posterior dorsal cirri are larger, flattened, and lamellate, carrying the small dorsal cirrus at its truncate end. Neuropodial falcigers with short, faintly hooked blades (Figure 4; I-L).

Distribution:

Pacific, Atlantic and Indian Ocean
Family POLYNOIDAE Kinberg, 1856
Genus *Lepidonotus* Leach, 1816

14. *Lepidonotus purpureus* (Potts, 1910)**Material Examined:**

Catalogued no: POL-24-MRCC; 01 specimen; Length: 1.3 cm; 13 segments; Locality: Sikhoni, Ormara.

Diagnostic characteristics:

Body coloration having purplish, elongated, twelve pairs of soft elytra, covering the dorsum completely. Prostomium bilobed, as long as broad and partly covered by occipital fold, often hides the second pair of eyes. All antennae with subterminal swelling and dark bands. Palps stout tapered and smooth. Parapodia biramous. Notochaeta finely spinous and of two different sizes: short and curved notochaeta with blunt tip (Figure 4; M-P).

Distribution:

Tropical Indian Ocean (Zanzibar, Mozambique, Madagascar, Pakistan), Australia and New Zealand.

15. *Lepidonotus jacksoni* (Kinberg, 1855)**Material Examined:**

Catalogued no: POL-40-MRCC; 01 specimens; Length: 1.5 cm; 14 segments; Locality: Shamal Bandar, Pasni.

Diagnostic characteristics:

Body coloration having pale fawn with deep blue border, Body short covered with elytra oval to auriculated with long lateral fringe of cylindrical papillae. Dorsal chaetae slender; ventral chaetae bidentate. Elytra more conspicuously echinate or stellate. Prostomium bilobed, longer than wide. Median antenna ceratophore stout bearing long, smooth style with bulbous subterminal swelling and dark band. Lateral antennae inserted terminally, shorter than the median antenna. Parapodia biramous (Figure 4; Q-S).

Distribution:

Indo-west Pacific: From New Zealand and Australia to India and Tropical East Africa and from Pakistan.

4. Discussion

The present study indicated that the diversity of polychaetes from seven (07) different shores of Makran coast, Pakistan. A total of 15 species were identified, belonging to the families Amphinomidae, Eunicidae, Lumbrineridae, Nereididae and Polynoidae. *Eurythoe complanata* has previously been recorded from Karachi coast by Bindra, (1927) and found similarity with the description of Fauvel (1953) on the basis of its four prominent eyes and a caruncle terminating on the third or fourth segment.

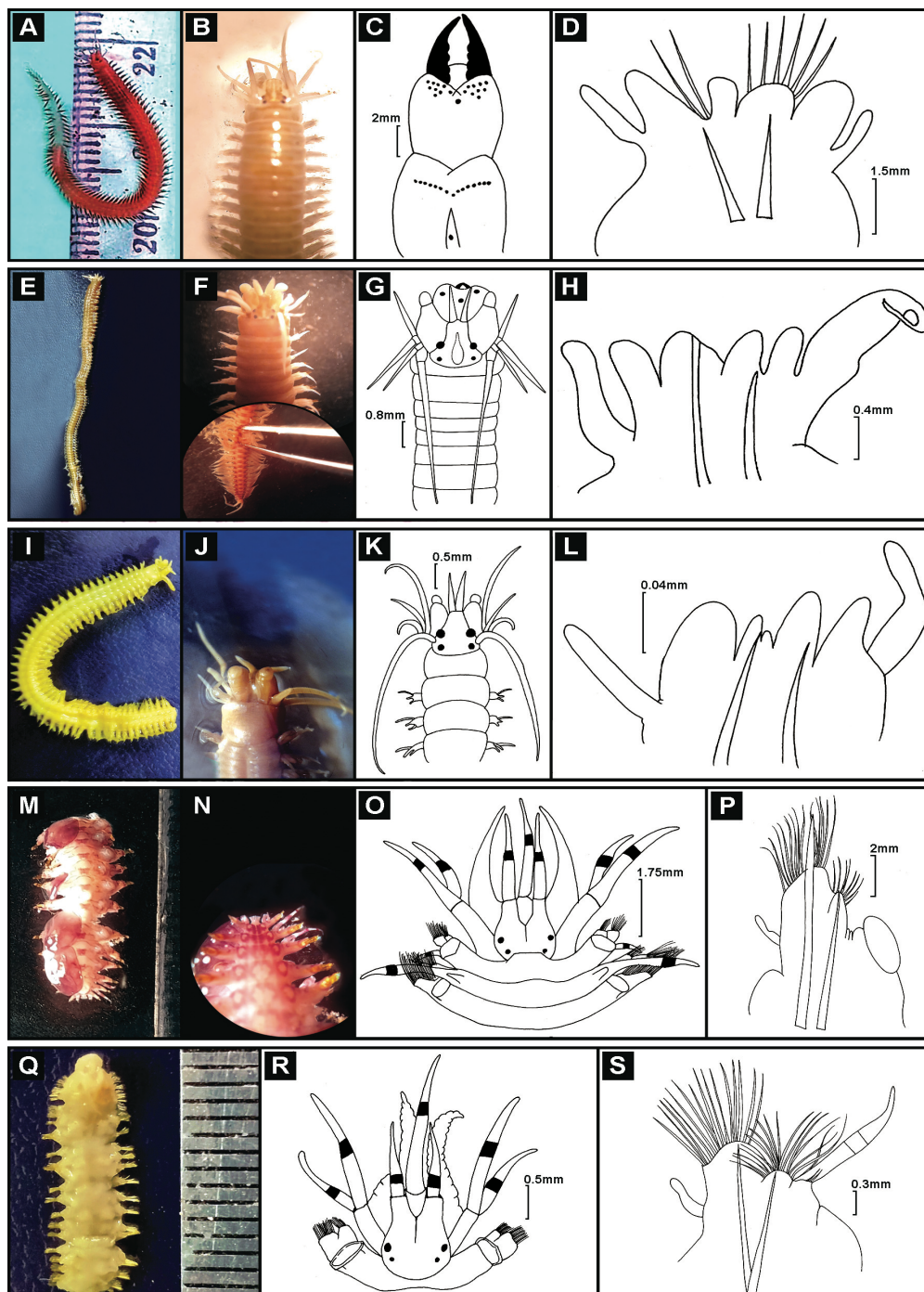


Figure 4. *Perinereis nuntia* (A-D); *Pseudonereis anomala* (E-H); *Pseudonereis variegata* (I-L); *Lepidonotus purpureus* (M-P); *Lepidonotus jacksoni* (Q-S).

Bindra, (1927) reported *Eurythoemaththaii* from Karachi coast also the present taxonomic description agrees with the Fauvel (1953). Mustaqim, (2000) has reported *Lysidice natalensis* from Karachi coast, the examined specimens are similar based on their coloration, reniform eyes with bilobed prostomium. Taxonomic description of *Marphysa depressa* was similar to the previous the description of Mustaqim,

(2000). *Lumbrineris latreilli* resembles with the reported specimen of Mushtaq and Mustaqim (2006b) due to its elongated body with conical prostomium. *Neanthes willeyi* previously reported as *Neanthes capensis* from the Karachi coast, similar diagnostic characters found with a longer tentacular cirri reaching backwards to the 7th with distinct cirrophores, conical paragnaths, anterior parapodia with pointed lobes, as mentioned by Siddiqui and Mustaqim (1988) and Fauvel (1953). Present studies on *Nereis coutieri* agreed with the description of Fauvel (1953) and Mustaqim (1997) with the resemblance of anterior feet, dorsal ramus with two conical equal ligules and a long dorsal cirrus. A present taxonomic study on *Nereis persica* follows the description of (Fauvel, 1953; Abdelnaby, 2020; Mustaqim, 1997).

Perinereis cultrifera previously reported from Karachi coast by (Aziz, 1938) specifically characterized by the anal cirrus extends back to about seven setigers. Falciger chaetae with short blades and sickle-shaped terminal pieces, as well as unmodified posterior feet, thus taxonomic descriptions on present study were similar to the Aziz, (1938).

Our examined specimen of *Perinereis nigropunctata* have similar characters such as prostomium with three rows of dark pigments and a V-shaped spot as previously described by (Siddiqui and Mustaqim, 1988 and Sekar et al., 2019). *Perinereis nuntia* previously reported from Karachi coast by Aziz (1938) and similar taxonomic characters were observed with present study. The same diagnostic characteristics of *Pseudonereis anomala* found in the literature of Fauvel (1953), and Abdela, (2020). Siddiqui and Mustaqim (1988) have been reported *Pseudonereis variegata* for the first time from Karachi coast. Broad prostomium with inverted T and large bulbous palps, proboscis with a single conical, transverse, and pectinate paragnath of group VI are the distinguishing features found in our specimen and agrees with the description presented by Mustaqim (1988) and Abdelnab, (2020). Morphological features and taxonomic characters were examined in *Lepidonotus purpureus* were similar to the specimen of Rasheed and Mustaqim, (2003) those first time recorded from the Buleji coast, Karachi. Present specimen of *Lepidonotus jacksoni* has closely resemblance with the descriptions of Rasheed and Mustaqim, (2003) and Fauvel (1953).

The purpose of this study was to record polychaete fauna from unexplored sites of Makran coast, thus this document provides the information on the distribution of polychaete fauna first time from Makran coast for future biologist.

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Disclosure statement: *Conflict of Interest:* The authors declare that there are no conflicts of interest.

Compliance with Ethical Standards: This article does not contain any studies involving human subjects.

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