

## SIX NEW RECORDS OF INTERTIDAL POLYCHAETES FROM PAKISTAN

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**ABSTRACT:** This paper describes six species of polychaete worms, which are new records from Pakistan. The species are: *Arabella iricolor* (Montagu), *Capitella capitata* (Fabricius), *Mesochaetopterus sagittarius* (Cláparede), *Phyllochaetopterus herdmani* Willey, *Lysidice natalensis* Kinberg and *Marphysa depressa* (Schmarda).

**KEY WORDS:** Polychaeta, Annelida, Taxonomy, Pakistan.

### INTRODUCTION

Present study is a part of the plan to investigate polychaete fauna of Pakistan. So far, 109 species have been reported from our coastal waters (see Mustaquim, 1997). The present paper adds another six species to the list. These species belong to families Arabellidae Hartman, 1944, Capitellidae Grube, 1862, Chaetopteridae Malmgren, 1867, and Eunicidae Savigny, 1818. Of these, Arabellidae and Capitellidae families have been heretofore unreported from Pakistan. Family Arabellidae is composed of 8 genera and 78 species whereas family Capitellidae has 37 genera and 134 species (Fauchald, 1977). The arabellids superficially resemble lumbrinereids but differ in having long narrow maxillary carriers, which are three in number. The prostomium in arabellids is without any appendages and the parapodia are uniramous. Chaetae include capillaries but the hooded hooks are absent. They are mostly carnivorous and burrow in sand. The capitellids are more earthworm-like in appearance due to inconspicuous parapodia. The prostomium in capitellids is also without appendages but the parapodia are biramous and the hooded hooks are present. They are mostly deposit feeder and burrow in sandy mud. Members of the families Eunicidae and Chaetopteridae have been recorded from Pakistan (Karachi) by Aziz (1938) and Habib and Mustaquim (1988), respectively, and their publications show the presence of ten eunicids and two chaetopterids in the coastal waters of Pakistan.

### MATERIALS AND METHODS

The worms for the present study were collected from Manora, Sandspit, Buleji, Clifton and the Korangi creek during June 1996 to May 1997. All the samples were taken from intertidal zone during low tide. In the laboratory, worms were narcotized by introducing; drop wise, 70% alcohol to their seawater. When the narcotized worms became unresponsive to touch, they were stored in a mixture of glycerol, 95% alcohol and formalin, in the ratio 1:1:1. Parapodia were cleared in lactophenol, where necessary. The parapodia were mounted in glycerol jelly and sealed with Apathy's cement (Peacock, 1966). Outlines of the drawings were made by camera lucida, with details added from direct observations under a stereo or a compound microscope. Specimens of the six species described herein, have been deposited in the Pakistan Museum of Natural History, Islamabad.

## SYSTEMATIC ACCOUNT

Family ARABELLIDAE Hartman, 1944

*Arabella iricolor* (Montagu, 1804)  
(Figures 1 A-D)

*Arabella iricolor*: Wesenberg-Lund, 1949, :318; Fauvel, 1932, :158; 1953, :274, fig.140 a-h; Day, 1967, :446, fig.17.18 I-m; Mohammad, 1971, :295; Uschakov and Wu Bao-Ling, 1979, :85.

**Material Examined:**

Five specimens, measuring 50 to 90 mm in length and about 0.5 to 1.0 mm in breadth, were examined. Two of the specimens were collected from Sandspit on 19th July 1996; another one from Manora on 19th December 1996 and the remaining two from the Clifton beach on 8th January 1997.

**Description:**

Body long, slender and wiry, consisting of short segments. The prostomium is well developed and bluntly conical, with four eyes arranged in a transverse row across the posterior margin. The prostomial appendages are absent. Maxillae are well developed consisting of five pairs of toothed plate. There are three maxillary supports: two long and slender and a short median piece. Parapodia are uniramous, with a small, rounded prechaetal lobe and a longer, conical postchaetal lobe. Branchiae and ventral cirrus are absent. Dorsal cirrus is present as small knob or papilla arising from the base of the parapodia. Chaetae are simple, lanceolate and slightly geniculate.

**Remarks:**

This species has previously been recorded from the Persian/Arabian Gulf (Wesenberg-Lund, 1949; Mohammad, 1971) and India (Fauvel, 1953). From South Africa, Day (1967) described a subspecies, *Arabella iricolor caerulea*. The dorsal cirrus in the subspecies *caerulea* is merely an obscure papilla on the base of the foot whereas in the stem form it is well developed papilla, especially in the anterior parapodia. The present specimens are more close to the stem form than *A. iricolor caerulea*.

**Distribution:**

Cosmopolitan in temperate and tropical seas.

Family CAPITELLIDAE Grube, 1862

*Capitella capitata* (Fabricius, 1780)  
(Figures 1 E-F)

*Lumbricus capitatus* Fabricius, 1780, :279

*Capitella capitata*: Pettibone, 1954, :298, fig. 33r-u; Day 1967, :595, fig.28.2i-m

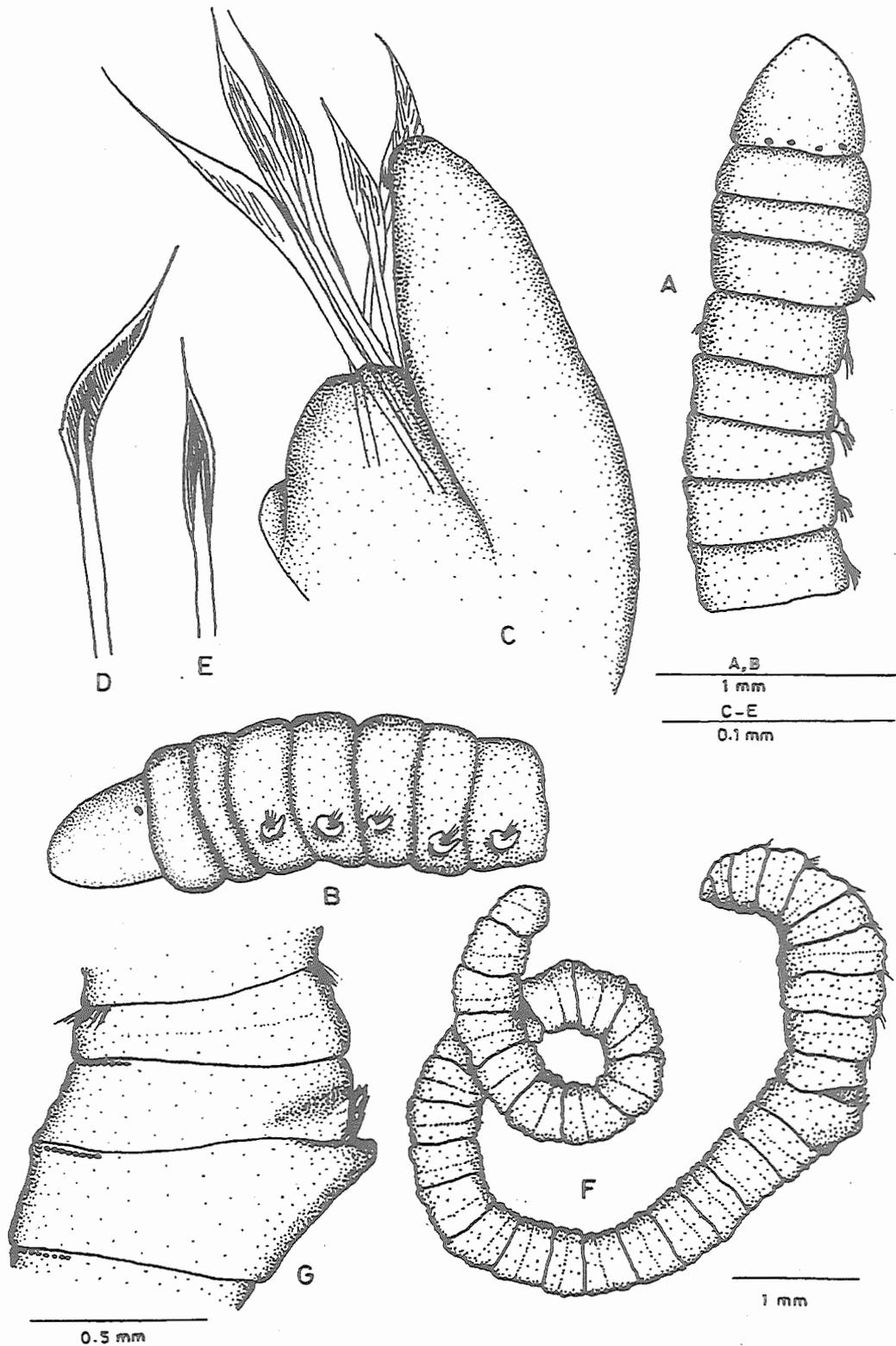


Fig. 1. *Arabella iricolor* (Montagu), A. anterior region, dorsal view; B. lateral view; C. parapodium (9th segment); D, E. lanceolate chetae. *Capitella capitata* (Fabricius), F. entire worm; G. segment bearing genital chaetae.

**Material Examined:**

Five worms measuring 20 to 34 mm in length. They were collected from intertidal mud of the Sandspit backwater on 12th March and 7th April 1997.

**Description:**

Body is slender, slightly enlarged in the thorax. The prostomium is conical and without appendages. A pair of eye is present. From first to seven chaetigerous segments, each segment has two dorsal and two ventral fascicles of capillary chaetae. The eight and ninth segments in female have hooks in both rami but in male there are enlarged genital chaetae dorsally slanting inward towards the genital opening and normal hooks ventrally. Abdominal segments with long shafted hooks in both rami. Branchiae are absent.

**Remarks:**

This is the first record of a capitellid worm from Pakistan. *Capitella capitata* is an opportunistic species (Grassle and Grassle, 1974) and it has received much attention of marine biologists as an indicator of polluted conditions (Warren, 1976, 1977). Grassle and Grassle (1976) believe that *C. capitata* is a complex of at least six sibling species, which are similar morphologically but quite different genetically. The description given by Day (1967) for *C. capitata* agrees well with the description of the present material.

**Distribution:**

Cosmopolitan

Family CHAETOPTERIDAE Malmgren, 1867

*Mesochaetopterus sagittarius* (Claparede, 1870)  
(Figures 2 A-D)

*Mesochaetopterus minutus* Potts, 1914, :963, pl. II-III, figs.7-8; Fauvel, 1953, :342, fig.178a; Day, 1967, :531, fig.22.2 h-n.

*Mesochaetopterus sagittarius*: Gibbs, 1971, :177

**Material Examined:**

Five specimens, collected from intertidal sand of the Clifton beach, on 27th October 1996 and 8th January 1997 were examined. All the specimens lack posterior region.

**Description:**

The prostomium is well developed and ovoid. Buccal segment is broad and truncate with a pair of long grooved palps. Anterior region of the body has ten segments. Chaetiger four possesses eight or nine modified chaetae. Middle region of the body has two long segments with simple flattened notopodia supported by two to three chaetae. The dorsal ciliated grooves expand into a cupule in the middle of the second segment. Branchiae are absent. Neuropodia are notched and uncinigerous row divided. Notochaetae are lanceolate.

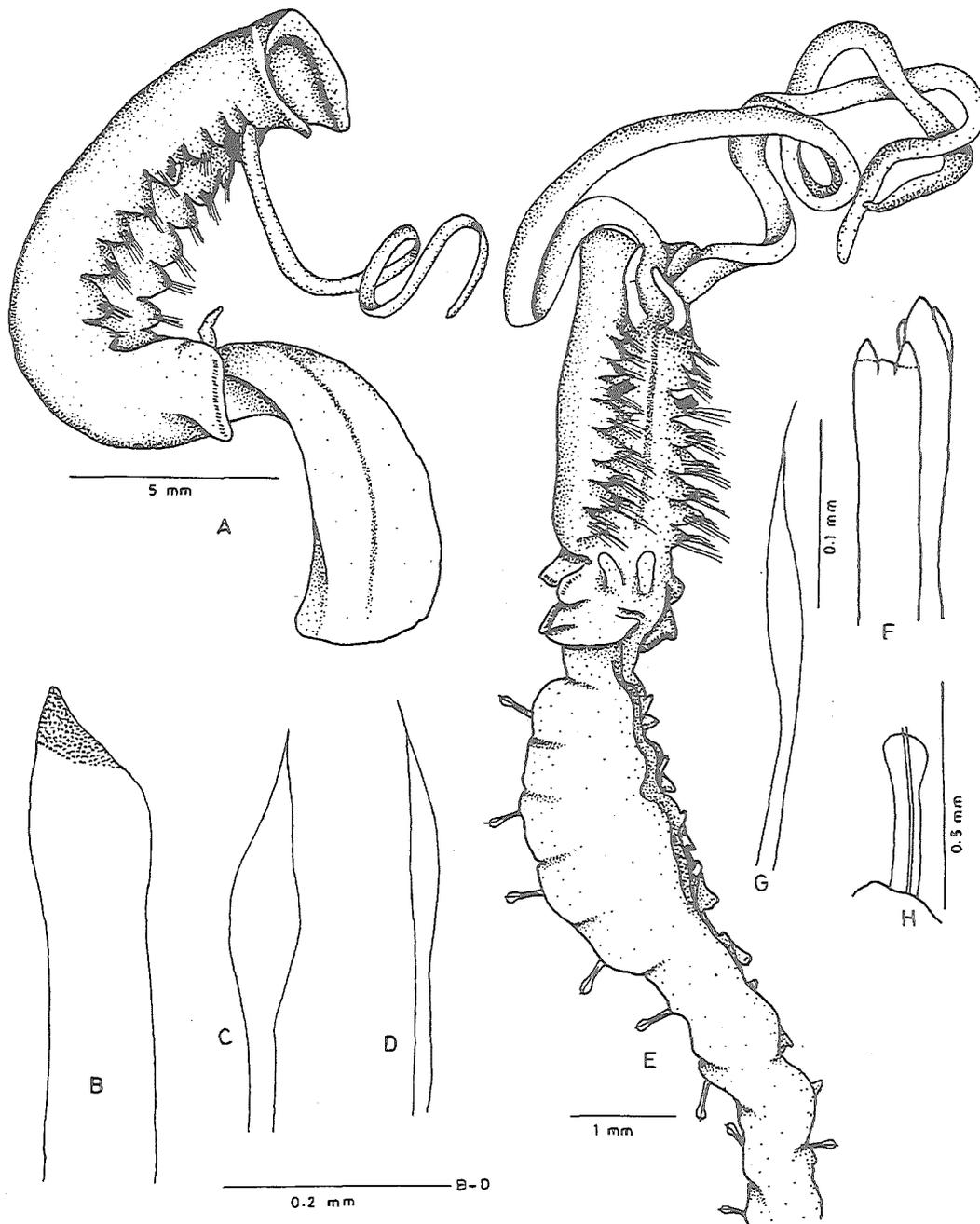


Fig. 2. *Mesochaetopterus sagittarius* (Claparede), A. anterior part, lateral view; B. chaeta from modified segment (4th); C. notochaetae; D. neurochaetae. *Phyllochaetopterus herdmanii* Willey; E. worm in lateral view; F. chaeta from modified segment (4th); G. neurochaeta; H. knobbed tip notopodium with chaetae.

**Remarks:**

The genus and species are new record for Pakistan. Although all the specimens collected lack posterior region, identification was not difficult as most of the species-specific characters are found in the anterior and middle regions of the body. The description given by Fauvel (1953) agrees well with description of the present material except that the size of the worm is much larger and the eyes are absent in the present specimens. *Mesochaetopterus japonicus* Fujuwara has been recorded from Ratnagri (India) by Day (1973). This species is a large one having a length up to 230 mm and the middle region of the body has three segments; instead of two as in the case of *M. sagittarius*.

**Distribution:**

Indo-West Pacific to Japan

*Phyllochaetopterus herdmani* Willey, 1905  
(Figures 2 E-H)

*Phyllochaetopterus herdmani* Willey, 1905, :292, pl.5, fig.127-132; Fauvel, 1953, :342, fig.177i-m; Day, 1967, :524, fig.22.1a-e

**Material Examined:**

Four specimens, measuring 20 to 60 mm in length (excluding palps) were examined. They were collected from intertidal rock of the Buleji coast on 28th June and 3rd August 1996.

**Description:**

The prostomium without eyes. Tentacular cirri are long and tapered. Anterior region of the body has nine to ten segments. Segment four with six to eight stout chaetae obliquely truncate at the ends. Middle region of the body has only two segments; each segment with elongate, bilobed notopodia, flattened branchiae and large expanded wing-like neuropodia with uncini along the whole external margin. Posterior region has numerous segments. Notopodia are digitiform with knobbed tips and supported by two spear headed chaetae. Neuropodia are more or less square projecting pinnules. Uncini with twelve to fourteen teeth.

**Remarks:**

Ahmad (1969) recorded another species of this genus viz. *Phyllochaetopterus elioti* Crossland from the Baba Island and Native Jetty (Karachi). The two species are quite different and can be easily distinguished. In *P. herdmani* the middle region has two segments only while in *P. elioti* it is composed of more than twenty segments. *P. herdmani* is closely related to *P. aciculigerus* Crossland, which has two segments in the middle region. However the main difference is the presence of glandular ridges on the first segment of the middle region and a pair of glandular cirri arching over the back in *P. aciculigerus*.

**Distribution:**

Sri Lanka and South Africa

Family EUNICIDAE Savigny, 1818

*Lysidice natalensis* Kinberg, 1865

(Figures 3 A-I)

*Lysidice natalensis*: Day, 1967, :402, fig. 17.7k-r

**Material Examined:**

Four specimens, measuring 30 to 80 mm in length and 1.5 to 2.5 mm in breadth, were examined. They were collected from the Buleji coast on 12th February 1997, where they were found in rock crevices.

**Description:**

Anterior margin of the prostomium is bilobed, antennae tapered, as long as the prostomium. Reniform eyes are present, close to the lateral antennae. Mandibles are heavy, gouge shaped and calcified. Second maxilla has three heavy teeth. Dorsal cirrus is conical. Ventral cirrus rounded in the anterior segments, indistinguishable from the glandular ventral pads in the posterior segments. Dorsal chaetae are limbate capillaries and a few comb chaetae. Ventral chaetae are compound falcigers. Acicula are black with blunt tips. Acicular chaetae are brown, bidentate with small guards. They first appear from about twenty-fifth segment.

**Remarks:**

The present specimens accord with the description given by Day (1967) for *L. natalensis* from South Africa. This species has characteristically heavy teeth, which are three in number on the second maxilla.

**Distribution:**

Southwest Africa

*Marphysa depressa* (Schmarda, 1861)

(Figures 3 J-M)

*Marphysa depressa*: Day, 1967, :395, fig. 17.5 n-t

**Material Examined:**

Three specimens, measuring 28 to 36 mm in length and 3 to 3.5 mm in breadth, were examined. They were collected from the Buleji coast on 28th June and 3rd August 1996. They were found in the rock crevices.

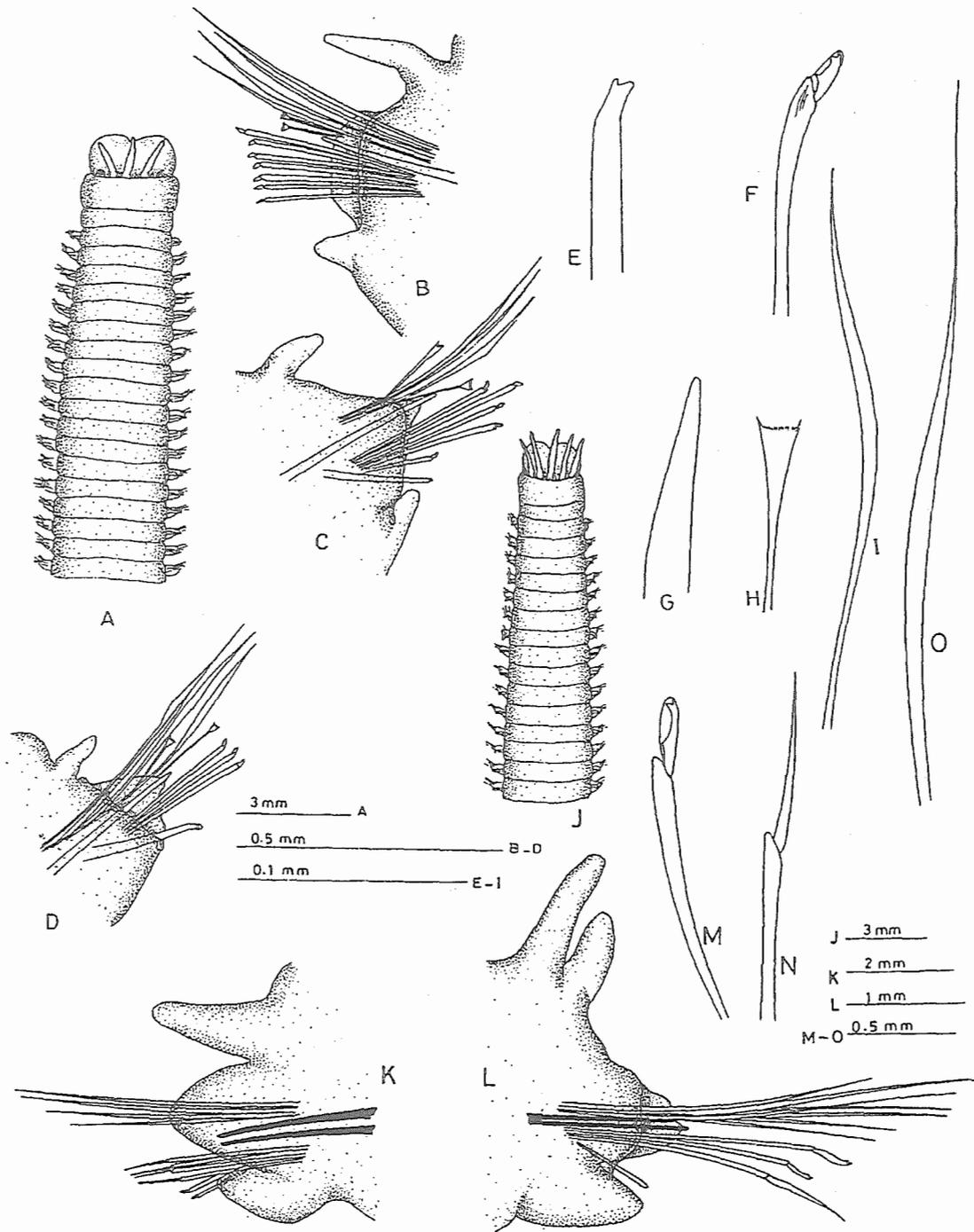


Fig. 3. *Lysidice natalensis*, Kinberg, A. anterior region, dorsal view; B. anterior parapodium; C. middle parapodium; D. posterior parapodium; E. acicular chaeta; F. compound chaeta; I. geniculate chaeta with narrow wing. *Marphysa depressa* (Schmarda). J. anterior region, dorsal view; K. anterior parapodium; L. middle parapodium; M. compound falciger; N. compound spiniger; O. capillary chaeta.

**Description:**

Body is slender and rounded in cross section. Anterior margin of the prostomium is bilobed. Branchiae 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. Dorsal chaetae are capillaries and comb-chaetae; ventral chaetae are compound spinigers and falcigers. Acicula three anteriorly, but reduced to two posteriorly, with pale tips and dark brown to black shafts. Acicular chaetae are bidentate with small guards.

**Remarks:**

All the three specimens agree well with the description given by Day (1967) for this species from South Africa.

**Distribution:**

New Zealand and South Africa

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