RUNNING HEAD: ARABIAN PENINSULA MAGELONIDAE

Arabian Peninsula Magelonidae (Polychaeta), new records and new species, with a re–description of *Magelona pacifica* and a discussion on the magelonid buccal region

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Abstract

The presence of five *Magelona* species from the seas surrounding the Arabian Peninsula has been previously reported: *M. cornuta, M. obockensis, M. pulchella, M. crenulifrons* and a previously undescribed species (identified by Louis Amoureux as *M. cornuta* in 1983 and described herein as *M. montera* sp. nov.). The present study details a further six *Magelona* species off the coasts of Iran and Qatar, collected during surveys conducted between 1998 and 2007. Four species are newly recorded for the region: *M. conversa, Magelona* cf. *falcifera, Magelona* cf. *cincta* and *M. symmetrica*, and two species (*M. montera* sp. nov. and *M. sinbadi* sp. nov) are deemed new to science. A key is provided for the 15 species currently known from the western Indian Ocean region. *Magelona pacifica* originally described from Panamá is discussed and re-described due to its similarity to *M. montera* sp. nov. A 'buccal organ/tube' in addition to an everted proboscis was observed in one specimen (*Magelona* cf. *agoensis*) and is herein described and discussed in relation to previous morphological studies of the same region.

Keywords: Buccal organ, Iran, *Magelona montera* sp. nov., *Magelona sinbadi* sp. nov., Qatar, Key, Western Indian Ocean

Introduction

All known *Magelona* species from the seas surrounding the Arabian Peninsula (Persian Gulf, the Gulfs of Aden and Oman, and the Red Sea) were reviewed by Mortimer (2010). That review covered six species previously reported from the region (see also Wehe & Fiege 2002): *Magelona cornuta* Wesenberg-Lund, 1949; *Magelona heteropoda* Mohammad, 1973; *Magelona pulchella* Mohammad, 1970; *Magelona obockensis* Gravier, 1905 (see Gravier 1906, for a more expansive description of the species); *Magelona crenulifrons* Gallardo, 1968 (Mortimer & Mackie 2009) and *Magelona papillicornis* F. Müller, 1858 (Amoureux 1983). Mortimer (2010) also included re–descriptions of three of these species (*M. obockensis*, *M. heteropoda* and *M. pulchella*; all originally described from this region) leading to the synonymisation of *M. heteropoda* with *M. obockensis*. Type material of *M. cornuta* (Gulf of Oman) and *M. crenulifrons* (Vietnam) were previously examined and re–described in a paper examining Hong Kong species by Mortimer & Mackie (2009).

Amoureux (1983) studied the polychaetes of sandy beaches in the Gulf of Aqaba, on the eastern coast of the Sinai Peninsula. He noted the presence of three *Magelona* species; *M. cornuta* from Eilat; and both *M. obockensis* and *M. papillicornis* from Na'ama Bay, at the Southern tip of the Sinai Peninsula. Specimens from this study were located in the collections of the Muséum National d'Histoire Naturelle, Paris (MNHN) and were examined by Mortimer (2010). The specimens of *M. cornuta* and *M. papillicornis* were found to be incorrectly identified: that recorded as *M. papillicornis* was found to be *M. obockensis* and the specimen of *M. cornuta* was believed to be an undescribed species. Unfortunately, the specimens identified as *M. obockensis* could not be located for verification. Mortimer (2010) did not regard *M. papillicornis* as being present in the area, but confirmed the presence of five *Magelona* species around the Arabian Peninsula: *M. cornuta, M. obockensis, M. pulchella, M. crenulifrons* and a previously undescribed species (*M. cornuta* of Amoureux 1983), which is examined herein.

Surveys of the polychaete fauna off the coasts of Iran and Qatar were conducted by CREOCEAN between 1998 and 2007. The resulting samples identified at the Centre d'Estudis Avançats de Blanes have given rise to the description of several new species of benthic organisms, including cumaceans (Corbera *et al.* 2005) and chaetopterid (Bhaud *et al.* 2003) and oweniid (Martin *et al.* 2007) polychaetes, whilst highlighting the presence of seven *Magelona* species. Additional material from the collections of the Natural History Museum,

London (BMNH) were also studied. This present study reviews this material and includes three species deemed to be new to science, discussing their affinities with known species (two species described herein, including Amoureux's '*M. cornuta*' from Eilat; the third species is not described at this time due to the condition/lack of material, see below). A further five species are described, four of which are newly recorded from the region. *Magelona pacifica* Monro, 1933 originally described from Panamá is discussed and re–described.

Materials and methods

Sampling methods

Magelona specimens were collected off the coasts of Iran and Qatar, in several studies of the polychaete fauna of the Arabian Gulf. Sampling work for each survey campaign was performed by a team from the French company CREOCEAN. However, two specimens from additional surveys were also borrowed from the Natural History Museum, London (BMNH) and Muséum National d'Histoire Naturelle, Paris (MNHN), see Table 1 for details.

The first samples were collected in August 1998 and October 2002 off the Iranian coastline, near Assaluyeh, in the north of Nay Band Bay, 250 km south of Bandar Bousher (27°30'N, 52°35'E). Five transects, each 3 km in length, were positioned perpendicular to the Iranian coast. Each transect having three stations, from the lowest margin of the coral reef belt, to about 30 m in depth. Full details, including a sampling map, are given in Martin *et al.* (2006). Three replicate samples were collected at each station using a ~0.1 m^2 Van Veen grab and sieved through a 1 mm mesh. A one–litre volume of sediment was taken from one of the three grab replicates, in order to analyse sediment granulometry. This was carried out by means of laser granulometry (% volume) on dry sediment after sifting through a 0.8 mm mesh sieve using a Malvern Mastersizer S laser granulometer. Estimates of organic carbon were made according to the European experimental standard NF ISO 14235 (oxidation method, 0.1 % m/m).

Similar sampling and sediment analyses methods were employed off the Iranian coast line in the region of Tombak (four transects perpendicular to the coastline sampled at 10 m, 15 m and 20 m depth) during 2005 and 2006 and a further two transects near Akhtar were also sampled during 2006 (E stations; at 10, 15, 20 m and F stations; at 10, 20, 25 m, see Table 1).

Further material was collected off the coast of Qatar in 2005 and 2007. The 2005 sampling was performed in March to the East of Doha Airport, approximately 2.5 km off the main shoreline, from 16 m to about 20 m deep. Samples were collected using a Smith McIntyre grab (sampling surface of 0.1 m²). Station SC–2000 (May 2007) was located in Doha Bay, at a distance of approximately 6 km from the shoreline and was characterised by shallow waters (< 7 m). The samples were collected using a Van Veen grab (sampling surface of 0.1 m²). The SB series of stations (October 2007) were located about 110 km off the Qatari mainland and approximately 40 km NE of Halul Island. Samples were collected using a Day grab (sampling surface capacity of 0.1 m²). One grab from each station was used to assess grain size distributions for all samples. The sediments from those samples were packaged in 250 ml glass bottles and kept at -4°C, in the dark until their arrival at Lonestar Technical Services (a laboratory certified by Lloyds register and accredited by ANSI RAB to ISO 9002), where granulometry was assessed following a classical sieving method (Wentworth 1922).

In order to assess the relevance of grain size in explaining distribution patterns of each of the different species, samples were classified according to the percentage of silt and clay (diameter < 63 μm) and fine to sandy sediments (diameter > 63 μm).

In order to analyse the benthic organisms (including *Magelona* specimens), sediment samples were always sieved through a 1 mm mesh. The retained materials were then fixed in a 4% formaldehyde/seawater solution and stained with Rose Bengal prior to sorting. Initial sorting was carried out under a light microscope, *Magelona* specimens being separated for further investigation.

Morphological observations

All drawings were made using a camera Lucida attachment on a Leica MZ9.5 zoom microscope, or Leica DM2000 compound microscope. Images of prostomia where taken using a JVC KY-F7U3CCD camera on a Leica Z6 macroscope. The resulting images were processed using syncroscopy, Automontage and Adobe Photoshop. The images of polydentate hooks were taken using a Nikon Eclipse E600 microscope and Spot Advanced imaging software.

To maintain consistency in the descriptions within this family, specimen descriptions are in the same format as those used in Mortimer (2010). Specimens are recorded as complete (c), anterior fragments (af), posterior fragments (pf) or fragments (f). Abdominal pouches are fully described according to their shape, size, nature and location, as discussed in Mortimer

(2010). Measurements were taken as detailed in Fiege *et al.* (2000) and staining patterns were observed using methyl green, as detailed by Mackie & Gobin (1993). Dissections of various segments were made in order to produce chaetal and parapodial drawings. Dissected segments were mounted onto slides using Aquamount mountant and covered with a cover slip. Slide preparations were left to harden over several days and then sealed using a clear lacquer.

Specimens have been deposited at the National Museum Wales, Cardiff (NMW), Museo Nacional de Ciencias Naturales, Madrid (MNCN) and Museu Nacional de História Natural, Lisbon (MB), details of which are included throughout under the material examined sections.

Results

Systematics

Family MAGELONIDAE Cunningham & Ramage, 1888

Genus *MAGELONA* F. Müller, 1858; emended Fiege *et al.* (2000)

***Magelona montera* sp. nov.**

Figures 1, 13E

Magelona cornuta–Amoureux (1983) Table 1, p737; not *Magelona cornuta* Wesenberg-Lund, 1949

Material examined. Holotype: Northern Red Sea, ISRAEL, Eilat, Gulf of Aqaba, (approximately 29°33'N, 34°57'E), sand, intertidal (MNHN A895; af), collected by D. Dexter, 5th July 1979.

Diagnosis. Prostomium longer than wide, with distinct prostomial horns, distal tips bulbous. Notopodia of chaetigers 1–8 with foliaceous postchaetal lamellae, with crenulated margins, expanded as cirriform dorsal superior processes. Neuropodia with triangular ventral lobes, chaetiger 8 with additional triangular postchaetal lamellae. Notopodia of chaetiger 9 with triangular postchaetal lamellae, 'swollen' distally, confluent with prechaetal ridges. Neuropodia of chaetiger 9 similar to preceding chaetiger, however, ventral processes prechaetal. All thoracic chaetae capillary. Abdominal lateral lamellae subtriangular, basally constricted. Hooded hooks tridentate, in two groups, vis–à–vis.

Description. A moderately large species; thoracic–abdominal junction indistinct (Figure 1A). Holotype, ovigerous, posteriorly incomplete, condition good. Prostomium 1.2 mm long, 0.95 mm wide; thorax 6.7 mm long (including prostomium), 0.6 mm wide; abdomen 0.55 mm wide; total length approximately 30 mm for 53 chaetigers, 53rd chaetiger now dissected and slide mounted.

Prostomium longer than wide (L:W ratio 1.26), rounded laterally; anterior margin smooth, triangular, with conspicuous prostomial horns (Figures 1B, 13E); horn distal tips bulbous, distinctly separated from antero–lateral margins of prostomium. Two pairs of prominent longitudinal dorsal muscular(?) ridges, outer pair, abutting inners for entire length; inner pair diverging distally into horn corners. Outer pair, moderately thick, with distinct transverse ridges. Distinct quadrangular (muscular?) areas present either side of ridges. Proboscis partially everted, squashed and visible on left–hand side of body (Figures 1A, 13E); spherical(?) (true shape difficult to discern due to condition); ridged, ridging much lighter superiorly. Both palps attached (right–hand palp slightly longer), highly coiled, long; arising ventrolaterally from base of prostomium, reaching approximately chaetiger 25; non–papillated region reaching chaetiger 4. Papillae: short proximally but long for majority of length; digitiform; proximally with two rows of papillae either side of inconspicuous groove, medially and distally with one row either side.

Achaetous region behind prostomium slightly longer than chaetiger 1. Chaetigers 1–8 similar; parapodia biramous; notopodia with low triangular prechaetal lamellae confluent with large foliaceous postchaetal lamellae of similar size throughout thorax (slightly larger on chaetigers 7 and 8), upper margins minutely crenulate (degree of crenulation, somewhat variable). Long slender, cirriform, prechaetal superior processes present (DML) (Figures 1C–I). Neuropodial pre– and postchaetal lamellae as low ridges; ventral triangular lobes (VNL) with pointed distal tips, beneath chaetae, of similar size to the mid–thorax. Lobes decreasing in size on chaetiger 8 and occur in a slightly prechaetal position, chaetiger 8 with additional postchaetal triangular lamellae.

Chaetiger 9: Notopodial prechaetal lamellae inferiorly encircling chaetae forming sub-triangular postchaetal lamellae (smaller than those of chaetigers 2–8), with distinct ‘swollen’ tips; superior processes (DML) absent (Figure 1J). Neuropodia of chaetiger 9 similar to that of chaetiger 8; triangular postchaetal lamellae confluent with low prechaetal ridges and digitiform prechaetal lobes. Chaetae of all thoracic chaetigers simple winged capillaries.

Abdominal chaetigers with large subtriangular lateral lamellae with rounded tips, of about equal size in both rami (Figures 1K–L); basally constricted, and overlapping in anterior

abdomen. Postchaetal extension of the lateral lamellae behind chaetal rows well–developed in anterior abdomen; triangular. Triangular processes (DML and VML) present at inner margins of chaetal rows, long in anterior abdomen.

Abdominal chaetae tridentate hooded hooks (Figures 1M–N) of similar size. Hooks in two groups, main fangs vis–à–vis (Figures 1K–L). Around 8–12 hooks per rami, majority of hooks located in group at inner margins of chaetal rows. Single hook, smaller than 'ordinary' tridentate hook present at the bases of lateral lamellae.

Paired posteriorly open pouches present on consecutive segments from chaetiger 38. Pouches appear as simple folds, medially split with thicker cuticle surrounding edges. Eggs present in body cavity (visible on slide preparation of 53rd chaetiger), approximately 60 μm in diameter. Eggs clearly separated from pouches by epidermis. Posterior unknown.

Colour. Colour of preserved specimen uniformly cream/white in alcohol. Methyl green stain dissipates quickly leaving a very diffuse, overall stain. However, dorsal transverse bands of light green persist between chaetigers 3–9, just posterior to parapodia. These correspond with white speckled transverse bands visible in the same area without staining (see Figure 1A). Similar light green bands are observed with methyl green in the abdomen, and additional dark green interparapodial patches. Ventrally, a diffuse dark stain of speckles between chaetigers 5–7 (stronger between 5–6) and light green speckled patches either side of the mid–ventral line, just posterior to the level of the parapodia in the same region were observed.

Habitat. Type specimen found in intertidal sand, Eilat, Israel, Gulf of Aqaba.

Etymology. From the Spanish word, 'montera', for the hat worn by a bullfighter/Matador, referring to the shape of the prostomial frontal horns.

Remarks. Sixteen species share morphological similarities with *M. montera* sp. nov. in the shape of the thoracic lamellae: *Magelona berkeleyi* Jones, 1971, *M. cornuta*, *Magelona crenulifrons*, *Magelona gemmata* Mortimer & Mackie, 2003, *Magelona marianae* Hernández-Alcántara & Solís-Weiss, 2000, *Magelona methae* Nateewathana & Hylleberg, 1991, *Magelona nonatoi* Bolívar & Lana, 1986, *Magelona pulchella*, *Magelona pacifica*, *Magelona tehuanensis* Hernández-Alcántara & Solís-Weiss, 2000, five undescribed species of Uebelacker & Jones (1984) (spp. D, G, J, K, L) and *Magelona sinbadi* sp. nov. described herein (see below).

The two species sharing the most morphological similarities with *M. montera* sp. nov. are *M. marianae* (from México) and *M. pacifica* (from Panamá, see below for re–description).

Magelona marianae possess thoracic notopodial lamellae with crenulate margins and distinct prostomial frontal horns, but differs from *M. montera* sp. nov. in the nature of chaetigers 8–9, and in possessing bidentate hooded hooks. The prostomium of *M. pacifica* shares many similarities with that of *M. montera* sp. nov., however differs in having a more triangular anterior margin; less bulbous distal tips of the frontal horns; and frontal horns which are not as wide (transversely). Both species share many similarities in terms of: lamellar shape; methyl green staining patterns and presence of paired posteriorly open pouches with a medial slit, on consecutive segments from approximately chaetiger 40. *Magelona pacifica* like *M. montera* sp. nov. possesses small abdominal triangular processes (DML and VML) at the inner margins of chaetal rows. However, *M. pacifica* differs in not possessing distinct crenulate upper margins of thoracic notopodial lamellae, and in possessing bidentate hooded hooks. The abdominal hooks of *M. pacifica* also appear to be in one unidirectional group (see below) differing from *M. montera* sp. nov. in which they are vis–à–vis.

Magelona montera sp. nov. differs from *M. pulchella, M. methae, Magelona* spp. D and G and *M. crenulifrons* in possessing tridentate and not bidentate hooded hooks, and having crenulate thoracic notopodial lamellae. *Magelona nonatoi, M. berkeleyi* and *Magelona* sp. J all differ from *M. montera* sp. nov. in possessing only rudimentary prostomial horns. *Magelona cornuta, M. tehuanensis* and *Magelona* sp. L possess well–developed frontal horns but differ from this new species in possessing crenulate anterior prostomial margins. *Magelona gemmata, Magelona* sp. K and *M. sinbadi* sp. nov. have well–developed frontal horns but differ from the new species by not possessing crenulate thoracic notopodial lamellae. *Magelona* sp. K and *M. sinbadi* sp. nov. further differ in the nature of their 9th chaetigers. The prostomial shape and nature of the frontal horns in *M. montera* sp. nov. is very distinct.

The presence of distinct 'swollen' tips on the postchaetal notopodial lamellae of chaetiger 9 as seen here in *M. montera* sp. nov. is a feature shared with *M. gemmata* from the Seychelles.

***Magelona sinbadi* sp. nov.**

Figures 2, 13F

Material examined. Holotype: Arabian Gulf, IRAN, Stn. B4–20A (27°41.908'N, 52°11.497'E), shelly muddy sand, 20 m (NMW.Z.2010.037.0001; af), Van Veen grab, August 2005.

Diagnosis. Prostomium longer than wide, with distinct prostomial horns. Notopodia of chaetigers 1–8 with subspatulate postchaetal lamellae expanded as cirriform dorsal superior processes; neuropodia with digitiform ventral lobes. Neuropodia of chaetiger 8, with additional triangular postchaetal lamellae. Notopodia of chaetiger 9 with triangular postchaetal lamellae and digitiform lateral processes; neuropodia with triangular postchaetal lamellae and smaller digitiform prechaetal lobes. All thoracic chaetae capillary. Abdominal lateral lamellae rounded triangular, basally constricted. Hooded hooks tridentate, in two groups, vis–à–vis.

Description. A moderately stout species; difference between abdomen and thorax not marked (Figure 2A). Specimen dimensions: prostomium 1.0 mm long, 0.8 mm wide; thorax (including prostomium) 4.5 mm long, 0.9 mm wide (measured at widest point around chaetiger 4–5); abdomen 0.8 mm wide, 10.8 mm long; total length 15.3 mm for 27 chaetigers.

Prostomium longer than wide (L:W ratio 1.25); anterior margin smooth, triangular, with conspicuous prostomial horns (Figures 2B, 13F); distal tip folded upwards (Figure 2C) (Note: figured prostomium appears slightly shorter due to distal folding of prostomium); lateral edges undulating. Two pairs of prominent longitudinal dorsal muscular(?) ridges, outer pair shorter and abutting inners for entire length; inner pair diverging only distally, into corners of horns. Outer pair moderately thick, with heavy transverse ridges. Distinct quadrangular (muscular?) areas present either side of ridges. Proboscis not everted. Both palps attached, long (distal tips broken?), thinner at point of attachment but increasing in thickness by chaetiger 2; arising ventrolaterally from base of prostomium. Palps reaching at least chaetiger 20, non–papillated region reaching chaetiger 4 or 5. Papillae long, digitiform; proximally with two rows of papillae either side of inconspicuous groove, one row either side medially and distally.

Achaetous region behind prostomium, roughly twice the size of chaetiger 1. Chaetigers 1–8 similar; parapodia biramous; notopodia with low triangular prechaetal lamellae confluent with subspatulate postchaetal lamellae of similar size throughout thorax; single long, slender cirriform prechaetal superior processes (DML) present (Figures 2D–G). Neuropodia of chaetigers 1–8 with low pre– and postchaetal ridges; ventral cirriform lobes (VNL) underneath chaetae, decreasing slightly to mid–thorax. Small postchaetal expansions present by chaetiger 6, becoming well–developed and triangular on chaetiger 8, apexes of which are broadly rounded. Ventral neuropodial lobes of chaetiger 8 short, slender triangular, in distinctly prechaetal positions.

Chaetiger 9: Notopodial prechaetal lamellae low and rounded, adjoined to lateral digitiform processes underneath chaetae; distal tips papilla–like (Figures 2H–J). Processes also confluent with broadly rounded triangular postchaetal lamellae, much smaller than on preceding chaetigers. No superior processes (DML) observed. Neuropodia of chaetiger 9 (Figure 2H) with triangular postchaetal lamellae of similar size to notopodial; apexes broadly rounded; confluent with low prechaetal ridges and short digitiform prechaetal lobes (VNL). Chaetae of all thoracic chaetigers simple winged capillaries.

Abdominal chaetigers with large, basally constricted and broadly rounded triangular lateral lamellae (in profile, somewhat toad-stool shaped) of about equal size in both rami (Figures 2K and L); edges undulating (often folded over and appearing crinkled); overlapping in anterior abdomen. Postchaetal extensions of the lateral lamellae behind chaetal rows well–developed, rounded. Triangular processes (DML and VML) present at inner margins of chaetal rows, long in anterior abdomen.

Abdominal chaetae tridentate hooded hooks (Figure 2M) of similar size. Hooks in two groups, main fangs vis–à–vis (Figures 2K–L). Around 10–14 hooks per rami. No pouches observed, posterior unknown.

Colour. Preserved colour uniformly cream/white in alcohol, conspicuous glandular areas noticeable interparapodially in the abdomen. Staining with methyl green shows no distinct pattern, but a diffuse overall stain. After much of the stain has dissipated, light stain between chaetigers 4–7 remains.

Habitat. Holotype found in shelly muddy sand, 20 m, Iran, Arabian Gulf.

Etymology. From the name Sinbad, the fictional sailor with Persian origins, referring to the region in which this species was first sampled.

Remarks. *Magelona sinbadi* sp. nov. shares many morphological similarities with *M. gemmata* originally described from the Seychelles. In particular, the prostomia of both species, which are: longer than wide; undulating laterally and which possess distinct quadrangular regions either side of thick, highly ribbed ridges. Both species further share similarities in the shape of the thoracic lamellae. However, the two species differ in the shape of the lamellae of the 9th chaetiger. This is particularly true for the notopodia, with *M. gemmata* possessing subtriangular lamellae with swollen bud–like tips (Mortimer & Mackie 2003: figure 4E), whilst *M. sinbadi* sp. nov. possess digitiform lateral processes in addition to triangular postchaetal lamellae. The two species further differ in the neuropodia of the same chaetiger, *M. gemmata* possessing postchaetal lamellae that are distinctly pointed, and prechaetal lobes that are long and slender. In *M. sinbadi* sp. nov. these are broadly rounded

(postchaetal lamellae) and shorter, thicker and more blunt (prechaetal lobes). *Magelona sinbadi* sp. nov. further differs in possessing thoracic neuropodial lobes which reduce in size to the mid–thorax.

As in *M. sinbadi* sp. nov., the methyl green staining pattern of *M. gemmata* shows no clear pattern (new observations), however, distinct transverse bands of white speckles across the dorsum, level with the parapodia are present. These bands were heavily stained with Rose Bengal when the type specimen was first examined; similar bands were not observed in *M. sinbadi* sp. nov.

Magelona sinbadi sp. nov. shares similarities with a further 14 species which possess prostomial frontal horns and rounded sub–spatulate thoracic lamellae: *M. tehuanensis*, *M. pacifica*, *M. nonatoi*, *M. marianae*, *Magelona lenticulata* Gallardo, 1968, *Magelona longicornis* Johnson, 1901, *M. cornuta*, *M. crenulifrons*, *Magelona cepiceps* Mortimer & Mackie, 2006, *M. berkeleyi* and four unnamed species (*Magelona* spp. G, J, K and L of Uebelacker & Jones 1984) from the Gulf of México.

Magelona tehuanensis, M. marianae, M. lenticulata, M. cornuta, M. crenulifrons and *Magelona* sp. L differ from *M. sinbadi* sp. nov. in possessing prostomia which are either as long as wide, or only marginally longer than their widths. All but *M. marianae* possess crenulate anterior prostomia. *Magelona marianae* and *M. crenulifrons* further differ in possessing bidentate abdominal hooded hooks, not tridentate as in *M. sinbadi* sp. nov. *Magelona lenticulata* possesses dorsal superior processes on chaetiger 9 and *M. tehuanensis, M. cornuta* and *Magelona* sp. L further differ in the nature of the lamellae of the same chaetiger.

Magelona nonatoi, M. cepiceps, M. berkeleyi and *Magelona* sp. J all possess rudimentary prostomial horns, unlike the well–developed horns seen in *M. sinbadi* sp. nov. Apart from *M. berkeleyi* they further differ from *M. sinbadi* sp. nov. by possessing dorsal superior processes on chaetiger 9. However, *M. berkeleyi* differs in possessing a prostomium, which is broader than long and possessing low postchaetal lamellae on chaetiger 9.

Magelona longicornis differs in possessing a prostomium wider than long, with some degree of crenulation of the anterior margin; dorsal superior processes and larger triangular postchaetal lamellae on chaetiger 9; and bidentate abdominal hooded hooks.

Magelona pacifica, and *Magelona* spp. G and K resemble *M. sinbadi* sp. nov. in possessing prostomia which are longer than wide with well–developed frontal horns. However, *M. pacifica* and *Magelona* sp. G differ in possessing bidentate abdominal hooded

hooks. All three species differ from *M. sinbadi* sp. nov. in the shape of the chaetiger 9 lamellae.

Magelona cf. *agoensis* Kitamori, 1967

Figures 3, 4,13G

Magelona agoensis Kitamori, 1967?

Material examined. Arabian Gulf**,** IRAN—Stn. B1–10 (MB29–000188, grab B, 2 af; MNCN.16.01/13228, grab C, 1 af), 2005; Stn. B1–15A (NMW.Z.2010.037.0002; 4 af), 2005; Stn. B2–10C (MNCN.16.01/13229; 1 af) 2005; Stn. B3–10 (MNCN.16.01/13230, grab B, 1 af; MB29–000187, grab C, 1 af), 2005; Stn. B4–15 (NMW.Z.2010.037.0003, grab A, 1 af; NMW.Z.2010.037.0004, grab B, 1 af), 2005; Stn. B4–20C (NMW.Z.2010.037.0005; 1 af; dissected and slide mounted), 2005; Stn. E20(1) (NMW.Z.2010.037.0006; 1 af), 2006.

Diagnosis. Prostomium width similar to length, subhexagonal without prostomial horns. Notopodia of chaetigers 1–8 with lanceolate postchaetal lamellae, prechaetal lamellae indistinct; without dorsal superior processes. Chaetiger 9 with broader postchaetal lamellae. All thoracic chaetae capillary. Abdominal chaetigers with lanceolate lateral lamellae. Abdominal hooded hooks predominately quadridentate, with the occasional pentadentate hook present. Hooks in 2 groups, vis–à–vis. Posterior unknown, no pouches observed.

Description. A small slender species; thorax marginally wider than, or of similar size to abdomen (Figure 3A). Dimensions of largest specimen (NMW.Z.2010.037.0004): prostomium 0.3 mm long, 0.3 mm wide; thorax (including prostomium) 1.4 mm long, 0.3 mm wide; abdomen 0.25 mm wide; total length 5.2 mm for 25 chaetigers (Note: last chaetiger now dissected and slide mounted). Other specimens 1.5–5.8 mm for 11–25 chaetigers. All material posteriorly incomplete.

Prostomium length similar to width (L:W ratio 1), subhexagonal, anterior margin smooth and straight (Figures 3C, 13G), without prostomial horns. Two pairs of longitudinal dorsal muscular(?) ridges; outer pair shorter and very indistinct (difficult to discern in several specimens), abutting inners for entire length. Inner pair adjoined for majority of length, diverging only at distal prostomial margin. No other obvious prostomial ornamentation. Proboscis everted in two specimens, heart–shaped when fully everted, oval when partially everted; very lightly ridged. One specimen (NMW.Z.2010.037.0006) possessing an everted 'buccal organ/tube' between the everted proboscis and prostomium (see Discussion). This

elongate structure having a dorsal opening (mouth?), and a triangular grooved region on the ventral–most surface (Figures 4A–D). Both palps retained on one specimen (MNCN.16.01/13230), long, slender; reaching approximately chaetiger 19. Right–hand palp retained on another specimen (NMW.Z.2010.037.0002) reaching chaetiger 23. Non–papillated region long, reaching approximately chaetigers 5–6. Papillae of similar lengths; one row of papillae either side of an inconspicuous groove for length of palp.

Achaetous region behind prostomium, of similar size to chaetiger 1. Chaetigers 1–8 similar; parapodia biramous (Figures 3D–K); notopodia with low indistinct prechaetal lamellae. Superior dorsal prechaetal processes (DML) and ventral neuropodial lobes (VNL) absent. Postchaetal lamellae lanceolate to triangular, and of about equal size along thorax; neuropodial lamellae slightly larger than notopodial lamellae in posterior thorax.

Chaetiger 9: Prechaetal lamellae low, confluent with postchaetal lamellae which are marginally longer and broader than on preceding chaetigers. Postchaetal lamellae lanceolate, of similar size in both rami (Figure 3L). All thoracic chaetae simple capillaries.

Abdominal chaetigers with lanceolate to triangular lateral lamellae of about equal size in both rami, with slight basal constrictions (Figure 3M). No processes (DML and VML) observed at inner margins of chaetal rows, however, this may be a consequence of the small size of specimens.

Abdominal hooded hooks predominately quadridentate (Figures 3N−P, 4E−H) with three secondary teeth surmounting main fang; two lower, and one on the back of, and in between the other two. However several pentadentate hooks observed (Figure 3Q) with two small teeth directly above the two lower teeth. Hooks in two groups, with main fangs vis–à–vis (Figure 3M). Around 8–10 hooks per rami, hooks split more or less equally between the two groups (4/4 or 5/3). An occasional smaller hook present next to lateral lamellae. No pouches observed; posterior unknown.

Colour. No live animals observed; preserved colour uniformly white in alcohol. Staining with methyl green shows a distinct pattern (Figures 3A, B). Dorsally, small paired triangular areas present between chaetigers 1–4, comparable to indistinct white speckled areas seen in non–stained specimens; however, stain dissipates quickly from this region. Stain darkest between chaetigers 4–9; comprising of large speckles between chaetigers 4–6. Ventrally a light, transverse band of staining, level with the parapodia of chaetiger 2 present on some specimens, with a similar darker band on chaetiger 4. Ventral staining darkest between chaetigers 5–9, particularly on chaetigers 5 and 6. White patches which do not stain, present between chaetigers 6–9 either side of mid–ventral line. Abdominally, interparapodial

staining present with additional pigmentation along the mid–ventral line adjacent to interparapodial patches (Figure 3B). Although this is a small species, it can be clearly identified from its methyl green staining pattern.

Habitat. Fourteen specimens found at 7 stations, from two surveys in various types of muddy sand, and in sandy mud, 10–20 m, Iran, Arabian Gulf.

Remarks. There are three known species of *Magelona* that possess polydentate abdominal hooks: *Magelona polydentata* Jones, 1963 from the Bahamas, *Magelona agoensis* Kitamori, 1967 from Japan and an undescribed species (sp. I of Uebelacker & Jones 1984) from the northern Gulf of México. All three of these species being somewhat larger than any of the material observed here.

Uebelacker & Jones (1984) stated that "*Magelona* sp. I is nearly identical to *M. polydentata* Jones, 1963, from the Bahamas, apparently differing from the latter in possessing oblique dorsal slits on some thoracic setigers, in having abdominal dorsal and ventral medial lamellae, and in having predominately tridentate hooks on some specimens". Both species differ from *Magelona* cf. *agoensis* in possessing: rudimentary prostomial horns, ventral thoracic neuropodial lamellae, and somewhat rudimentary neuropodial lamellae on chaetiger 9. In addition, both are reported to have thoracic pigment bands, which on the holotype of *M. polydentata* is between chaetigers 5–9 but present between chaetigers 6–8 on *Magelona* sp. I. However, Jones (1963) when discussing this pigment band stated "it is believed that this does not constitute a valid taxonomic character. To be sure, such a band is faintly indicated on the other specimens from Bimini, but it is entirely lacking in the remaining specimens examined". A pigment band was not observed on any of the Iranian material studied here. However, this area of the thorax does correspond with that which stained most strongly with methyl green.

Magelona polydentata is described as possessing only a single pair of prostomial ridges, which are well–separated. This appears also to be the case for *Magelona* sp. I (see Uebelacker & Jones 1984: figure 7–20a), in contrast to the two pairs of abutting ridges as described herein for *Magelona* cf. *agoensis*. However, it should be noted that the outer pair of ridges were often extremely difficult to discern.

The predominant abdominal hooded hooks reported for *M. polydentata* possess four accessory teeth above the hook's main fang, some possessing five, and a small number with three. This is similar to the hooks seen in *Magelona* sp. I, however, the later species additionally possesses tridentate hooded hooks which predominate in some specimens. This is in contrast to the Iranian material observed here, which predominately has three accessory teeth above the main fang.

Small dorsal and ventral abdominal processes (DML and VML) were reported as being present on *Magelona* sp. I, but not on *M. polydentata.* These were not observed on any of the Iranian material, but this may be due to the small size of the specimens, especially in comparison with the other species.

Based on the original description of *M. agoensis*, the Iranian material observed here shares similarities with the type material, regarding: the shape of the prostomium; the shape of the lamellae and the nature of the abdominal hooded hooks. However, the original description differs in possessing thoracic postchaetal lamellae that are longer in the notopodia than the neuropodia, and abdominal hooded hooks in a single unidirectional facing group. Unfortunately, the original description and drawings of *M. agoensis* are inadequate for direct comparison and the current location of the holotype is unknown (the holding institution was noted in the original description as the Tokai Regional Fisheries Research Laboratory, although accession numbers relating to the specimen were not given. Enquiries to the laboratory did not yield any further information on the holotypes whereabouts). The holotype of *M. agoensis* is much larger than the Iranian material observed here, and it is possible that the variation observed between the specimens is caused by their difference in size. Nevertheless, it is believed that the Iranian specimens are likely to represent a new species. However, in the absence of the holotype of *M. agoensis* for re–description and comparison, and without more complete Iranian material we prefer not to describe it as so at the present time.

Magelona cf. *cincta* Ehlers, 1908

Figures 5−6, 13H

Magelona cf. *cincta*–Mortimer & Mackie (2009: 194); *Magelona cincta* Ehlers, 1908?

Material examined. Arabian Gulf**,** IRAN—Stn. 15 (MNCN.16.01/13246; 1 af), 1998; Stn. B3–10A (MNCN.16.01/13247; 1 af), 2005; Stn. B3–15B (MB29–000203; 1 af), 2005; Stn. F10(3) (NMW.Z.2010.037.0037; 1 dissected specimen) 2006; Stn. F25(1) (MB29–000204; 1 af), 2006. QATAR—Stn. SB 1(1) (MNCN.16.01/13248; 1 af,), 2007; Stn. SBW 2(1) (MB29–000206; 1 af), 2007; Stn. SB 3(1) (NMW.Z.2010.037.0038; figured anterior & 1 af), 2007; Stn. SB 4(1) (MNCN.16.01/13249; 1 af), 2007; Stn. SBW 6(1) (NMW.Z.2010.037.0042; 1 c, 1 af), 2007; Stn. SB 7(1) (NMW.Z.2010.037.0039; 2 af,), 2007; Stn. SB 8(1) (MB29–000205;

1 af), 2007; Stn. SBW 9(1) (NMW.Z.2010.037.0043; 2 af), 2007; Stn. SB 14(1) (NMW.Z.2010.037.0040; 3 af), 2007; Stn. SB 15(1) (NMW.Z.2010.037.0041; 1 af), 2007.

Diagnosis. A stout species, prostomium wider than long, subtrapezoidal, with rudimentary horns. Chaetigers 1–8 with slender, smooth–edged, triangular notopodial postchaetal lamellae with pointed tips; no superior processes present. Ventral neuropodial lobes directly below chaetae in anterior thorax, postchaetal in posterior thorax. Neuropodial lamellae of first two or three chaetigers distally expanded. Chaetiger 9 similar in both rami, low ridges with short triangular lobes laterally. Thoracic chaetigers with simple capillary chaetae. Abdominal lateral lamellae sinuous leaf–shaped with pointed tips. Hooded hooks tridentate, in two groups facing vis–à–vis. Posteriorly open pouches on abdominal chaetigers.

Description. A stout species; thoracic width similar to, but wider than abdomen. Complete specimen dimensions: prostomium 0.4 mm long, 0.5 mm wide; thorax (including prostomium) 1.8 mm long, 0.6 mm at maximum width (around chaetiger 6); abdomen 0.55 mm wide; total length 13.5 mm for approximately 55 chaetigers. Other material 2.5–6.5 mm for 16–23 chaetigers. Median thoracic chaetigers characteristically rounded and bulbous laterally.

Prostomium wider than long (0.75–0.83 L:W ratio), subtrapezoidal; anterior margin smooth with rudimentary horns (Figures 5B, 13H). Two longitudinal dorsal muscular(?) ridges, anteriorly divergent and extending into the prostomial corners. Two inconspicuous outer ridges abutting inner ridges; no other obvious prostomial markings. Proboscis partially everted in one specimen (NMW.Z.2010.037.0039), oval, longitudinally ridged inferiorly. Palps retained in three specimens, arising ventrolaterally from base of prostomium; short, reaching approximately chaetiger 17. Palps papillated almost to base (non–papillated region reaching approximately chaetiger 2), 3 rows of papillae either side of an inconspicuous groove proximally, decreasing to one either side distally (papillae very long, length decreasing only at proximal end).

Achaetous region behind prostomium, roughly twice the size of chaetiger 1. Notopodia of chaetigers 1–8 similar (Figures 5C−M); low triangular notopodial prechaetal ridges confluent with slender triangular postchaetal lamellae, terminating in pointed tips. Postchaetal lamellae decreasing in size along thorax, appearing more lateral in position from chaetiger 5. Notopodial lamellae of chaetiger 8 marginally longer than on preceding chaetigers. No superior processes (DML) observed. Neuropodial ventral lobes (VNL) initially distally expanded, decreasing in size from chaetigers 1–5; but increasing again on chaetigers 6–8; becoming cirriform, and postchaetal in posterior thorax. Neuropodial lobes (VNL) of

chaetigers 1 and 2 slightly distally expanded, almost scoop like, with small pointed tips (Figures 5D, F). Those of chaetiger 3 distally expanded to a varying degree (Figure 5H).

Chaetiger 9: lamellae similar in both rami, low pre– and postchaetal ridges. Postchaetal lamellae terminating in lateral subtriangular lobes (Figure 5N). All thoracic chaetae simple capillaries (Figure 5P), those of chaetigers 7 and 8 longer than on preceding chaetigers; bundles splayed distinctively (Figure 5A). Chaetae of chaetiger 9 shorter, but not otherwise modified.

Abdominal chaetigers with sharply pointed, rather sinuous leaf–shaped lateral lamellae, of about equal size in both rami; not basally constricted (Figure 5O); no obvious postchaetal expansions. Occasional minute dorsal and ventral processes (DML and VML) observed on abdominal chaetigers, extremely difficult to see. Abdominal chaetae tridentate hooded hooks, of a similar size (Figures 5Q–S). Hooks in two groups, main fangs vis–à–vis (Figure 5O). Approximately eight to ten hooks per ramus in anterior abdomen, in roughly two equal groups; decreasing to six on median and posterior chaetigers. Hooks arising from definite ridge. Unpaired posteriorly open lateral pouches present, starting from approximately chaetiger 18 to posterior part of body. Pouches alternating on both sides of the body, occurring on alternate segments. Pouch location often difficult to discern due to presence of tube and condition of material. No pygidial cirri observed on complete specimen, presumed missing(?).

Colour. Preserved specimens cream–white in alcohol, majority of material initially stained with Rose Bengal. Distinct reddish/brown pigment band present between chaetigers 5–8, faded in some specimens, although always present (Figures 5A, 6C). Very light Rose Bengal staining interparapodially in the abdomen. Methyl green staining weak all over, light pigmentation between chaetigers 3–5 and 7–9. Small patches of darker pigment present on thorax (Figures 6A, B), dorsally between chaetigers 1−5, and around segment margins in posterior thorax. Ventrally, light pigmentation is present as transverse bands between chaetigers 2 and 4. Light interparapodial patches of staining in abdomen. Patches of white speckles present (Figures 5A, 6C) dorsally and ventrally between chaetigers 1–5; closer to mid–line in venter and strongest around chaetigers 3–4. Speckles also present ventrally along the mid–ventral line from chaetigers 8 into abdomen. Methyl green pigment persisting around white speckled areas after much of the stain has dissipated.

Habitat. Found at five stations off Iran, from three different surveys, in fine sand, fine shelly sand, shelly muddy sand, and mud, 10–27 m, and at 10 stations off Qatar, from one

survey, in muddy sand with shell debris, mud with shell debris, and mud, 58–60 m. Several specimens in distinct sediment covered tubes (NMW.Z.2010.037.0040, NMW.Z.2010.037.0042, NMW.Z.2010.037.0043).

Distribution. Iran and Qatar (present study), Hong Kong (Mortimer & Mackie 2009)

Remarks. The Arabian *Magelona* cf. *cincta* specimens observed here share many similarities with the Hong Kong *Magelona* cf. *cincta* specimens as described by Mortimer & Mackie (2009) in: possessing a pigment band in the posterior thorax; lamellar and prostomial shape; methyl green staining patterns; characteristic bulbous chaetigers in the mid–thorax and the presence of white speckled regions in the thorax and abdomen. The only perceived differences are: the slightly more expanded neuropodial thoracic lamellae of chaetiger 1 in Hong Kong material (which are more scoop–shaped, possessing higher edges) and the presence of occasional minute dorsal and ventral processes in the abdomen of the Arabian material. The Hong Kong material has been re–examined and odd minute projections at the inner margins of chaetal rows have been observed on a couple of specimens. The fact that even in the Arabian material these processes are sporadic (even on the same specimen) suggests that this is a variable character within this species. The degree of protrusion of these processes, and hence their conspicuousness may depend on the degree of contraction of the specimen. It is possible that these processes move in and out under coelomic pressure. We believe this to be the same species as those specimens observed from Hong Kong. Both the Iranian and Hong Kong material differed from the type material, in having less distally expanded neuropodial lobes of the first three chaetigers. However, the type specimen is much larger than either the Iranian or Hong Kong material examined. It is possible that the perceived differences seen here maybe due to size. Therefore, more material in a better condition, and of a comparable size from the type locality needs to examined before any conclusions can be made.

Magelona conversa Mortimer & Mackie, 2003

Figures 7, 13I

Magelona conversa Mortimer & Mackie, 2003

Material examined. Arabian Gulf**,** IRAN—Stn. B4–10A (NMW.Z.2010.037.0007; 1 af), 2005; Stn. B4–15A (MNCN.16.01/13231; 2 af), 2005; Stn. 33FC (68–6806) (BMNH.2010.234; 1 af), 2005.

Diagnosis. Prostomium longer than, or equal to width, subtriangular, without prostomial horns. Notopodia of chaetigers 1–8 with smooth–edged foliaceous postchaetal lamellae; superior prechaetal processes from chaetiger 5 (or 6) to 8. Neuropodial prechaetal lamellae longer than postchaetal lamellae on chaetigers 1–8. Chaetigers 1–8 with capillary chaetae; chaetiger 9 with mucronate chaetae. Abdominal lateral lamellae rounded subrectangular. Hooded hooks bidentate, main fangs unidirectional, pointing laterally. Anteriorly and posteriorly open lateral pouches present on abdominal chaetigers, posterior unknown.

Description. A moderately stout species; thorax marginally wider than, or equal to abdomen. However, thorax slightly dorso–ventrally flattened, thinner in comparison to the more rounded abdomen. Thoracic chaetigers with transverse furrows between parapodia, either side of the mid–body line (Figure 7A; shown as dotted lines). Dimensions of figured anterior: prostomium 1.3 mm long, 1.15 mm wide; thorax 5.3 mm long (including prostomium), 0.95 mm wide; abdomen 0.9 mm wide; total length 13.5 mm for 25 chaetigers (Note: 25th chaetiger now dissected, slide mounted). Other material 9.8–15.5 mm with 19–31 chaetigers. All material posteriorly incomplete.

Prostomium longer than, or equal to width (L:W ratio 1.0–1.13), subtriangular; anterior margin smooth and rounded; prostomial horns absent (Figures 7A–C, 13I, note: left–hand margin of prostomium in Figure 7A folded underneath; slight tear in anterior margin, which is minutely curled. Prostomium in Figure 7B curved upwards as shown in Figure 7C, making prostomium look shorter and rounder. However shape and size much more akin to that figured for the holotype, Mortimer & Mackie 2003: figure 2A). Prostomial lateral edges occasionally undulating as shown for paratype (Mortimer & Mackie 2003: figure 2B). Two pairs of prominent longitudinal dorsal muscular(?) ridges; inner pair joined for majority of length, diverging only at anterior margin of prostomium (lightly ridged transversely); outer pair abutting inners for entire length. Conspicuous patterns either side of ridges; irregular oblong regions proximal to ridges; smaller rounded areas towards lateral edges, initially in longitudinal lines at base of prostomium. Proboscis everted in 3 specimens (lightly squashed in figured anterior); a large heart–shaped sac when fully everted, oval when partially everted. Proboscis with conspicuous longitudinal ridges inferiorly, lightly ridged superiorly. One palp present in sample tube (MNCN.16.01/13231), very short with 2 rows of papillae either side of ventral groove; papillae extremely long making palp appear ‘frilly’ (similar to type material of a similar size).

Achaetous region behind prostomium, roughly equal size to, or approximately 1 and half times the size of chaetiger 1. Chaetigers 1–7 similar; parapodia biramous (Figures 7D–F)

with small rounded notopodial prechaetal lamellae which, from chaetiger 5 (or 6) to 8, project dorsally as triangular superior processes (DML). Prechaetal lamellae confluent with large foliaceous postchaetal lamellae, which increase in size along thorax, distal tips pointing upwards. Neuropodia with long and slender, triangular prechaetal lamellae; postchaetal lobes short, rounded triangular. Ventral neuropodial lobes (VNL) absent. Neuropodial postchaetal lobes of chaetiger 7 more distinct, larger; triangular to oval.

Chaetiger 8: notopodial prechaetal lamellae similar to preceding chaetigers, but superior processes larger, distinctly triangular; postchaetal lamellae very large, foliaceous (Figures 7G, H). Neuropodial prechaetal lamellae broader and more triangular than previous chaetigers (Figure 7H); postchaetal lamellae well–developed, rounded oblong (Figure 7G). Chaetae of chaetigers 1–8 all simple capillaries.

Chaetiger 9: segment short (Figure 7A), notopodial and neuropodial prechaetal lamellae low and broadly rounded, encircling chaetae cuff–like to form higher postchaetal lamellae (Figure 7I). Neuropodial prechaetal lamellae inferiorly developed as large triangular processes (varying in length, as seen in the type material). Chaetae arranged in fan–like arcs; mucronate (Figure 7K).

Abdominal chaetigers with thick, 'fleshy' subrectangular lateral lamellae, directed towards each other, of about equal size in both rami (Figure 7J). Lamellae internally supported by several conspicuous, slender curved aciculae (3 or 4 at chaetiger 25), appearing continuous between rami; distal regions extending towards tips of lateral lamellae, conspicuous even under binocular microscope. Small triangular processes (DML and VML) evident throughout abdomen, at inner margins of chaetal rows. Abdominal chaetae bidentate hooded hooks (Figure 7L), of similar size. Hooks of unidirectional orientation, main fangs pointing laterally. Initially about 10 hooks per ramus in anterior abdomen, reducing to around 6 at chaetiger 25. Hooks arising from definite ridge. Paired anteriorly open lateral pouches present on anterior abdominal chaetigers (Figure 7A) (chaetigers 11, 14, 17 and 20); large, convoluted, bounded dorsally and ventrally by large cuticular flaps. Unpaired lateral pouches found posteriorly on two specimens, on chaetigers 24L (NMW.Z.2010.037.0007) and chaetigers 26L, 28R and 30L (MNCN.16.01/13231). Pouches posteriorly open, however, very large and convoluted, more akin to anteriorly open pouches (especially those on chaetiger 26L). Posterior unknown.

Colour. No live animals observed, cream–white in alcohol. One specimen stained with Rose Bengal (BMNH.2010.234). Staining with methyl green revealed dorsal and ventral transverse bands as white speckles between parapodia, in thorax (Figure 7A) and anterior

abdomen (ventral and abdominal bands lighter). Strong interparapodial staining in the abdomen, and staining associated with the cuticular flaps of paired pouches. Staining with Rose Bengal of a similar pattern.

Habitat. Four specimens found at three stations off the coast of Iran in two surveys, in coarse sand, coarse shelly muddy sand, and shelly sand with low mud, 9–15 m.

Distribution. Seychelles (Mortimer & Mackie 2003), Iran (present study).

Remarks. The morphology of the Iranian material agrees well with the Seychellois type material in all respects. Although Rose Bengal staining has now dissipated in the type material, the staining pattern for the Iranian material agrees well with that described for the types. Prostomial shape of the figured specimen (BMNH.2010.234) agrees well with the holotype, despite appearing shorter and more rounded due to its curled nature. There is a slight variation in size and shape of prostomia in the Iranian material but this is mirrored by the variation seen within the type material. The form of the dorsal muscular(?) ridges and ornamentation either side in both sets of material agrees well.

The only variation seen was in the number of abdominal hooks, which were greater in number on the Seychellois material (between 15–18 in the anterior abdomen). The type material is generally larger than the Iranian material, however, when material of a similar size was compared, they were observed to have a similar number of hooks. The authors therefore consider that these specimens are *M. conversa.*

A couple of adjustments to the original description of the type material should be made. Mortimer & Mackie (2003: 164) when describing *M. conversa,* stated that the thorax is narrower than abdomen. The thoracic width of type material is generally slightly wider, or equal to the width of the abdomen as seen here within the Iranian material. However, the original description should have stated that the thorax is thinner than the abdomen when viewed laterally. Secondarily, the neuropodial postchaetal lamellae of chaetiger 7 are more developed than previously described, being triangular or oval, and about a third of the length of the prechaetal lamellae.

The abdominal pouches of *M. conversa* as observed in both the Iranian and Seychellois material follow that as described by Mortimer (2010: 22) for species possessing both anteriorly and posteriorly open pouches.

Magelona crenulifrons Gallardo, 1968

Figures 8, 13J

Magelona crenulifrons Gallardo, 1968*; Magelona crenulifrons*–Mortimer & Mackie (2009:185)

Material examined. Arabian Gulf**,** IRAN—Stn. 24 (NMW.Z.2010.037.0016; 2 af), 1998; Stn. B1–10 (NMW.Z.2010.037.0017, grab A, 9 af; NMW.Z.2010.037.0018, grab B, 14 af; NMW.Z.2010.037.0019, grab C, 9 af), 2005; Stn. B1–15C (NMW.Z.2010.037.0020; 1 af), 2005; Stn. B2–10 (NMW.Z.2010.037.0021, grab A, 1 af; NMW.Z.2010.037.0022, grab B, 6 af; NMW.Z.2010.037.0023, grab C, 7 af), 2005; Stn. B2–15 (NMW.Z.2010.037.0024, grab A, 1 af; NMW.Z.2010.037.0025, grab C, 1 af), 2005; Stn. B3–15 (MNCN.16.01/13237, grab A, 3 af; MNCN.16.01/13238, grab B, 5 af; MNCN.16.01/13239, grab C, 1 af), 2005; Stn. B3–20 (NMW.Z.2010.037.0026, grab A, 3 af; NMW.Z.2010.037.0027, grab B, 1 af; NMW.Z.2010.037.0028, grab C, 1 af), 2005; Stn. B4–10B (MNCN.16.01/13240; 1 af), 2005; Stn. B4–15 (MB29–000193, grab B, 1 af; MB29–000194, grab C, 2 af), 2005; Stn. B4–20 (MB29–000195, grab A, 2 af; MB29–000196, grab B, 2 af; MB29–000197, grab C, 2 af), 2005; Stn. E10(1) (MNCN.16.01/13241; 1 af, 1 f), 2006; Stn. E15 (MNCN.16.01/13242, grab 1, 4 af; MB29–000198, grab 2, 1 af; MB29–000199, grab 3, 1 af), 2006; Stn. F20(1) (NMW.Z.2010.037.0029; 3 af), 2006. QATAR—Stn. SB 1(1) (NMW.Z.2010.037.0030; 1 af,), 2007; Stn. SBW 2(1) (NMW.Z.2010.037.0031; 2af, 1f), 2007; Stn. SB 3(1) (NMW.Z.2010.037.0032; 5 af, 3 f, 2 pf), 2007; Stn. SB 4(1) (NMW.Z.2010.037.0033; 3 af, 9 f), 2007; Stn. SBW 6(1) (NMW.Z.2010.037.0034; 6af, and 1 dissected af, 15f), 2007; Stn. SB 7(1) (NMW.Z.2010.037.0035; 14 af, 16 f, 1 pf), 2007; Stn. SB 8(1) (MNCN.16.01/13243; 3 af, 1 f), 2007; Stn. SBW 10(1) (MNCN.16.01/13244; 2 af), 2007; Stn. SB 11(1) (MNCN.16.01/13245; 2 af, 1 f), 2007; Stn. SB 12(1) (MB29–000200; 2 af, 5 f), 2007; Stn. SB 13(1) (MB29–000201; 1 af, 1 f), 2007; Stn. SB 14(1) (MB29–000202; 3 af, 1 f), 2007; Stn. SB 15(1) (NMW.Z.2010.037.0036; 3 af), 2007.

Diagnosis. Prostomium of similar length to width, spatulate, with distinct frontal horns; anterior margin crenulate. Notopodia of chaetigers 1–8 with foliaceous postchaetal lamellae expanded as cirriform dorsal processes. Neuropodia with slender cirriform ventral lobes. Chaetiger 9 with large distally pointed auricular lamellae, dorsal processes absent; neuropodia with short triangular postchaetal lobes and slender prechaetal lobes. Thoracic chaetigers with winged capillary chaetae. Abdominal lateral lamellae broadly spatulate, basally constricted. Abdominal inferior and superior processes, triangular. Hooded hooks bidentate, in two groups, vis–à–vis. Posteriorly open lateral pouches present abdominally.

Description. A medium sized species, difference between two body regions not marked. Longest specimen, ovigerous (NMW.Z.2010.037.0026; eggs approximately 55 μm diameter, visible from approximately the 45th chaetiger), dimensions: prostomium 0.5 mm long, 0.5 mm wide; thorax 3.0 mm long (including prostomium), 0.4 mm wide; abdomen 0.4 mm wide; total length 22 mm for 54 chaetigers. Figured specimen (NMW.Z.2010.037.0036b) dimensions: prostomium 0.4 mm long, 0.4 mm wide; thorax (including prostomium) 3.0 mm long, 0.5 mm wide; abdomen 0.45 mm wide; total length 11.5 mm for 34 chaetigers. Other material 2.8–18 mm long for 12–57 chaetigers.

Prostomium slightly longer than, or of similar length to width (L:W ratio 1.0–1.33) (width measurements sometimes underestimated as lateral edges occassionally squashed); spatulate to rounded triangular, with distinct frontal horns; lateral margins rounded. Anterior margin crenulate, with 0–9 crenulations (generally 3–7) (degree of crenulation highly variable, some specimens appearing almost smooth with minute crenulations, others wavy or with distinct triangular crenulations (Figures 8A–B, 13J). Two pairs of prominent dorsal longitudinal muscular(?) ridges, inner pair diverging anteriorly and extending into frontal horns, outer pair abutting inners for entire length. Distinct muscular(?) areas either side of ridges. The proboscis is everted in 19 specimens, heart–shaped when fully everted, oval to round when partially everted. Proboscis longitudinally ridged inferiorly; superiorly appearing as a smooth pad. Palps retained (fully or partially) on 70 specimens; long and slender, reaching between chaetigers 9–29. Non–papillated region long, reaching between chaetigers 1–5 (usually 3–4). Palps with 1–2 rows of papillae proximally either side of inconspicuous groove, and 1 (occasionally 2 in shorter palps) row either side distally. Papillae long at distal tips.

Achaetous region behind prostomium, around one and half times the length of chaetiger 1. Notopodia of chaetigers 1–8 similar, with large foliaceous postchaetal lamellae gradually increasing in size along thorax, inferiorly encircling chaetae, forming low triangular prechaetal lamellae (Figures 8C–I). Superiorly, single long, cirriform processes (DML) present. Neuropodia of chaetigers 1–8 similar, with slender cirriform ventral neuropodial lobes (VNL) decreasing gradually in size along thorax and expanding postchaetally from chaetiger 1. Postchaetal expansion increasing gradually in size along thorax, becoming quite distinct from chaetiger 7. Chaetiger 8 with conspicuous triangular postchaetal lamellae and single small slender cirriform ventral neuropodial lobes (Figure 8I).

Chaetiger 9: notopodial postchaetal lamellae shorter than those of preceding chaetigers; auricular and distally pointed; prechaetal lamellae low; superior prechaetal

processes absent (Figure 8J). Neuropodial postchaetal lamellae of chaetiger 9 triangular, with slender lobes in prechaetal positions. All thoracic chaetae simple winged capillaries (Figure 8M).

Abdomen with large, spatulate lateral lamellae (toad–stool shape in profile), basally constricted, and of a similar size in both rami (Figures 8K, L). Postchaetal expansion behind chaetal rows evident in anterior abdomen. Triangular processes (DML and VML) evident throughout at inner margins of chaetal rows. Posteriorly open pouches present, from as early as chaetiger 24. Some variation in pouch location observed, however, often initially unpaired, alternating from one side of the body to the other, on alternate segments, then later appearing on alternate segments. Several posterior fragments present in samples (hook dentition would suggest they may belong to this species), no pygidial cirri observed, presumed missing(?).

Abdominal hooded hooks bidentate (Figures 8N–P). Hooks in two groups, vis–à–vis (Figures 8K, L), initially 7–10 per ramus. Both groups with approximately similar numbers of hooks. Small curved acicular support chaetae present, emerging at bases of lateral lamellae.

Colour. No live specimens observed. All specimens preserved in alcohol, cream–white in colour. Specimens stained with Rose Bengal, although pigmentation now weak in many specimens such as those from Iran 2005 (however, initial concentration of Rose Bengal used may have been lower). Staining seen as very intense interparapodial abdominal patches, especially in the anterior abdomen; a large dorsal round spot present between chaetigers 1–2 in several specimens.

Methyl green staining pattern conspicuous, as described for type material (Mortimer & Mackie 2009). Thoracic dorsal surface speckled all over, apart from mid–dorsal line and surrounding parapodia, slightly less staining in posterior thorax. Venter of thorax striped longitudinally, stripes narrowing to a point at the thoracic–abdominal junction. Staining slightly stronger between chaetigers 1–5. Characteristic medial V–shape observed on venter of most specimens (around chaetigers 5 to 6), usually visible without staining, although more difficult in smaller specimens. Staining in abdomen seen as small speckles along mid–ventral line, and small speckles surrounding interparapodial patches. Slight speckles on prostomium (Figure 13J). Methyl green staining pattern very constant throughout material.

Habitat. Known from Iranian waters in fine silt to coarse sand, 9–74.5 m (Mortimer & Mackie 2009). Described here from a further 13 stations from 3 surveys off Iran in medium sand, shelly sand with low mud, shelly muddy sand, coarse shelly muddy sand, muddy sand, fine muddy sand, and sandy mud, 10–20 m, and 13 stations from a single survey off Qatar in muddy sand with shell debris, mud with some shelly sand, and mud, 57–60 m.

Distribution. Vietnam (Gallardo 1968), Iran, Qatar and Hong Kong (Mortimer & Mackie 2009), Natuna Islands, South China Sea (Al-Hakin & Glasby 2004), Thailand (Nateewathana & Hylleberg 1991; Hylleberg & Nateewathana 1991), and Hong Kong (Shin 1998; 2003).

Remarks. These specimens conform well to the re–description of the type material by Mortimer & Mackie (2009).

This material highlights the importance of making observations on pouch morphology and location from as many specimens as possible, as variations in pattern may be present. However, the patterns observed here were similar to that seen for Hong Kong specimens. Some pouches were observed to be paired, sometimes on consecutive segments, whilst others were present on alternating segments.

Magelona cf. *falcifera* Mortimer & Mackie, 2003

Figures 9–10, 13K

Magelona falcifera Mortimer & Mackie, 2003?

Material examined. Arabian Gulf**,** IRAN—Stn. 8 (NMW.Z.2010.037.0008; 11 af, and 1 dissected af), 1998; Stn. 13 (NMW.Z.2010.037.0009; 1 c, 11 af), 1998; Stn. 14 (NMW.Z.2010.037.0010; 20 af), 1998; Stn. 24 (MNCN.16.01/13232; 2 af), 1998; Stn. 8(1) (NMW.Z.2010.037.0011; 37 af), 2002; Stn. 13(1) (MB29–000189; 23 af), 2002; Stn. B4–10 (MNCN.16.01/13233, grab A, 15 af; MNCN.16.01/13234, grab B, 22 af; MB29–000190; grab C, 6 af), 2005; Stn. B4–15C (NMW.Z.2010.037.0012; 1 af), 2005; Stn. F10 (NMW.Z.2010.037.0013, grab 1, 2 c, 44 af; NMW.Z.2010.037.0014, grab 2, 4 af), 2006; Stn. F20(3) (NMW.Z.2010.037.0015, 16 af), 2006. QATAR—Stn. E72A (MNCN.16.01/13235; 1 af), 2005; Stn. G93 (MNCN.16.01/13236, grab A, 3 af; MB29–000191, grab B, 1 af; MB29–000192, grab C, 1 af), 2005.

Diagnosis. Prostomium width similar to length, subtriangular without prostomial horns. Chaetigers 1–8 with lanceolate postchaetal lamellae, notopodial prechaetal lamellae indistinct and without dorsal superior processes. Chaetiger 9 with broad triangular postchaetal lamellae. All thoracic chaetae capillary. Abdominal chaetigers with lanceolate lateral lamellae and one enlarged hooded hook in anterior abdominal parapodia; other hooded hooks bidentate, those nearest the lateral lamellae more slender. Hooks in 2 groups, vis–à–vis. Lateral pouches absent.

Description. A small slender species; difference between abdomen and thorax not marked (Figure 9A). Dimensions of figured complete specimen (NMW.Z.2010.037.0009): prostomium 0.4 mm long, 0.4 mm wide; thorax (including prostomium) 1.8 mm long, 0.45 mm wide (measured at widest point around chaetiger 7); abdomen 0.4 mm wide; total length 17.0 mm for 67 chaetigers. Other complete specimens (2) 5.5–6.7 mm for 45–52 chaetigers; remaining material 12–53 chaetigers, 1.3–13.5 mm.

Prostomium as long as, or less than width, subtriangular; anterior margin smooth and rounded, occasionally straight (Figure 9B) (Note: prostomium folded and curled in anterior drawing, Figure 9A). Two pairs of longitudinal dorsal muscular(?) ridges; outer pair shorter and more indistinct, abutting inners for entire length; inner pair separated for majority of length, tips reaching distal prostomial margin. Indistinct (muscular?) areas either side of ridges, visible only under compound microscope. Proboscis everted in many specimens, oval to circular when partially everted, heart–shaped when fully everted. Proboscis ridged inferiorly, superior surface appearing smooth. Palps present on several specimens, arising ventrolaterally from base of prostomium, reaching at least chaetiger 16–20, non–papillated region reaching chaetiger 3–5. Papillae: long, of similar lengths, digitiform; with 1 row of papillae, either side of inconspicuous ventral groove for length of palp.

Achaetous region behind prostomium roughly one and a half times the size of chaetiger 1; dorsal antero–lateral margins of which are rounded and expand over the base of the prostomium. Chaetigers 1–8 similar; parapodia biramous (Figures 9C–G); notopodia with low indistinct prechaetal lamellae. Superior notopodial prechaetal processes (DML) and ventral neuropodial lobes (VNL) absent. Postchaetal lamellae lanceolate, of about equal size in both rami, gradually becoming longer and broader along thorax.

Chaetiger 9: segment slightly narrower and thinner than previous segments. Prechaetal lamellae low; postchaetal lamellae broad triangular, with narrow tips (Figure 9H). Chaetae of all thoracic chaetigers simple capillaries.

Abdominal chaetigers with basally constricted lanceolate lateral lamellae of about equal size in both rami (Figures 9I–K), becoming more slender posteriorly. Lamellae do not appear to extend postchaetally. Small triangular processes (DML and VML) present at inner margins of chaetal rows.

A large sickle–shaped hook in both rami of anterior abdominal chaetigers present, no secondary teeth observed (Figure 9L); decreasing in size around chaetiger 20 and not apparent after chaetiger 25. A single small slender bidentate hook (Figure 9O) is present at the base of the lateral lamellae (and next to the enlarged hooded hooks in the anterior abdomen);

appearing to emerge where the lamellae is basally constricted. Remaining hooks (Figures 9M–N) bidentate of similar size, hooks in two groups, main fangs vis–à–vis. Approximately four hooks present in anterior abdomen (one slender, one enlarged and two 'ordinary' hooks, as seen in figured specimen) increasing medially to approximately 6–8 hooks and posteriorly 4–6. Sporadic tridentate hooks observed in the posterior abdomen.

Eggs observed posteriorly (NMW.Z.2010.037.0008b; dissected af, visible from approximately the 30th chaetiger) packed within the body cavity, approximately 75 μm in diameter. Pygidium small with two slender lateral anal cirri (Figure 9P). No pouches observed.

Colour. No living animals observed, preserved colour uniformly cream/white in alcohol. Glandular areas noticeable interparapodially within the abdomen, staining lightly with Rose Bengal in some specimens. Staining with methyl green (Figure 10) shows a diffuse overall stain, particularly strong between chaetigers 5–9. Dorsally, pale green speckled areas are present between chaetigers 1 to 4−5 (also seen as white speckles in unstained material). Darker transverse bands also present, level with parapodia on chaetigers 6–8; two longitudinal lines on chaetigers 7–8 either side of mid–dorsal line, and much darker pigmentation on lateral margins of chaetigers 6–9 (also seen on venter). Staining particularly strong around the parapodia of chaetiger 9; additional stain seen as speckles abdominally. Ventrally, speckled patches (lighter in colour) present medially between chaetigers 3–5 and denser staining medially between chaetigers 5–8. Abdominally, speckled areas interparapodially and ventrally either side of the mid–ventral line.

Habitat. Found at 10 stations from 4 surveys off the coast of Iran, in medium sand, shelly muddy sand, and fine shelly sand, 10–19 m, and 2 stations from one survey off Qatar, in medium sand, 15–18.4 m. Evidence of a sediment tube, present on many specimens.

Distribution. Iran, Qatar (present study), Seychelles (Mortimer & Mackie 2003).

Remarks. The Arabian material conforms well with the type material. However, several perceived differences exist. The original description depicts the prostomial shape as subhexagonal, however, having reviewed all material, prostomial shape varies from subtriangular to subhexagonal depending on the degree to which the lateral edges are inverted. Figure 11A shows the prostomial shape of a dissected paratype, which agrees well with those seen in the Arabian material. The figured Arabian specimens appear slightly broader than the type material, however, both sets of material are generally of a similar size and breadth. Lastly, there seems to be a variation in the methyl green staining patterns (Figures 10–11). The types of *M. falcifera* show a diffuse overall stain, with dorsal transverse

white bands on chaetigers 6 and 7 and additional white patches on chaetigers 4, 5 and 8. Ventrally, white transverse bands are present between chaetigers 3–6, with additional white patches level with chaetigers 7 and 8, those of the later chaetiger being somewhat triangular. Additional, strong green speckles are often present as a transverse line around chaetigers 4–6 (one transverse line shown on Figure 11, around chaetiger 5). No abdominal staining observed. The stain dissipated very quickly in the Seychellois material, in contrast to the Arabian material that persisted for some time, still evident days after initial staining.

The morphological similarity between the Arabian material and the type specimens is strong, with the only major difference appearing to be the variation in staining patterns. However, none of the perceived differences is deemed significant enough to warrant separation of this material at this time.

Magelona symmetrica Mortimer & Mackie, 2006

Figures 12, 13L

Magelona symmetrica Mortimer & Mackie, 2006

Material examined. Arabian Gulf, IRAN—Stn. 8 (NMW.Z.2010.037.0044; 10 af, and 1 dissected af), 1998; Stn. 13 (MNCN.16.01/13250; 3 af), 1998; Stn. 14 (MB29–000207; 7 af), 1998; Stn. 8(1) (MNCN.16.01/13251, 11 af; MB29–000208, 9 af; NMW.Z.2010.037.0045, 9 af), 2002; Stn. 9(1) (NMW.Z.2010.037.0046; 8 af), 2002; Stn. 13(1) (NMW.Z.2010.037.0047; 21 af), 2002; Stn. B3–10C (NMW.Z.2010.037.0048; 1 af), 2005; Stn. B4–10 (NMW.Z.2010.037.0049, grab A, 4 af; NMW.Z.2010.037.0050, grab B, 5 af; NMW.Z.2010.037.0051 grab C, 10 af), 2005. QATAR—Stn. E72 (NMW.Z.2010.037.0052, grab A, 1 af; NMW.Z.2010.037.0053, grab B, 1 af), 2005; Stn. I56B (NMW.Z.2010.037.0054; 2 af), 2005; Stn. SC−2000 (NMW.Z.2010.037.0055; 1 af), 2007; Stn. SBW 9(1) (NMW.Z.2010.037.0056; 2 af), 2007.

Diagnosis. Stout species. Prostomium wider than long, subtrapezoidal, without prostomial horns. Palps robust, densely papillated. Chaetigers 1−9 with slender, smooth–edged, triangular postchaetal lamellae. Thoracic chaetigers with capillary chaetae. Abdominal lateral lamellae long, pointed triangular. Hooded hooks tridentate, in two facing groups (vis–à–vis*)*.

Description. A large, stout species (Figure 12A); thorax marginally wider, but thinner than abdomen; no distinct constriction at chaetiger 9. All specimens posteriorly incomplete.

Dimensions of figured anterior fragment: prostomium 0.5 mm long, 0.6 mm wide; thorax (including prostomium) 2.8 mm long, 0.9 mm at maximum width; abdomen 0.85 mm wide; total length 13.0 mm for 39 chaetigers. Dimensions of longest specimen: 65 chaetigers for 23 mm; 1 mm wide. Other specimens with 9−29 chaetigers for 0.75−12 mm in length.

Prostomium wider than, or occasionally as wide as long (Figures 12B and C, 13L), (L:W ratio 0.63−1.00); subtrapezoidal; anterior margin smooth, medially indented in many specimens. Prostomium postero-lateral margins sometimes folded upwards giving the appearance of a much wider prostomium (see Figures 12B and 13L); prostomial horns absent. Two pairs of prominent longitudinal dorsal muscular(?) ridges; inner pair anteriorly divergent and lightly ridged transversely; degree of separation variable, often entirely separated. Outer pair abutting inners. The proboscis is everted in nine specimens, oval when partially everted, heart–shaped when fully everted; longitudinally ridged inferiorly, superiorly appearing smooth. Palps attached in 29 specimens. Palps arise ventrolaterally from base of prostomium, short, reaching chaetigers 10−20; robust and heavily papillated. Non–papillated region reaching to chaetigers 2−3. Palps with four rows of papillae either side of groove (groove fairly conspicuous in most specimens), reducing to one row either side at distal tip (two to three rows either side medially); papillae long, length decreasing only at proximal end.

Achaetous region behind prostomium approximately 1 and half times the size of chaetiger 1. Chaetigers 1−8 similar; parapodia biramous (Figures 12D−H); low triangular notopodial prechaetal ridges confluent with slender triangular postchaetal lamellae, tips of which are pointed. Neuropodial postchaetal lamellae triangular with low prechaetal ridges; initially ventral in position, becoming entirely postchaetal from chaetiger 5−6. Thoracic lamellae reducing gradually in size along thorax.

Chaetiger 9: Notopodia similar to preceding chaetigers. Prechaetal lamellae low ridges in both rami (Figure 12I). Neuropodial lamellae triangular, superior lateral in position; low inferior postchaetal ridges often terminating inferiorly in small triangular processes (processes present in larger specimens, although very small, not seen in smaller material. Sometimes observed only on one side of a chaetiger). Parapodia of chaetiger nine often interposed in furrow between surrounding chaetigers, particularly those of the neuropodia. All thoracic chaetae simple capillaries.

Abdominal chaetigers with sharply–pointed triangular lateral lamellae, of about equal size in both rami (Figure 12J). Lateral lamellae do not extend postchaetally, hooks arising from definite ridge. No dorsal or ventral (DML and VML) processes observed on abdominal chaetigers.

Abdominal chaetae all tridentate hooded hooks (Figures 12K−M) of similar size. Hooks in two groups, main fangs vis–à–vis. Initially about 10 hooks per ramus.

Paired anteriorly open lateral pouches absent on anterior abdominal chaetigers. Posteriorly open pouches not observed. Pygidium unknown.

Colour. Observations made on preserved material; now cream–white in alcohol, some still stained with Rose Bengal. Several specimens with pale reddish staining in posterior thorax, not as marked as a pigment band. Glandular areas particularly noticeable in abdomen as large intense white speckled interparapodial patches (often starting from chaetiger 8). Methyl green staining rather diffuse, no obvious pattern. Slightly darker staining in mid–dorsal (chaetigers 4 to 7) and mid–ventral areas of thorax. White speckled areas noticeable, dorsally next to parapodia (Figure 12A) between chaetigers 1−5. Ventrally white speckles strongest between chaetigers 8–13 (associated with mid–ventral line) continuing into abdomen, with additional patches around chaetigers 2–5. Rose Bengal staining dorsally noticeable between chaetigers 2–5 around parapodia (not medially), strongest on 3–4, but also present between 4–5 (if present, seen as sparse speckled areas). Small interparapodial patches are present between chaetigers 6–7, and stronger patches between chaetigers 8–9. Abdominal interparapodial areas showing stain with Rose Bengal, as do the white speckled areas of the venter.

Habitat. 107 specimens found, distributed at eight stations from three different surveys off Iran, medium sand, and shelly muddy sand, 10–21 m, and four stations from three surveys off Qatar, coarse sand, medium sand, and muddy sand with shell debris 17–58 m. Evidence of a tube present on several specimens, covered with minute sand grains.

Distribution. Iran, Qatar (present study), Seychelles (Mortimer & Mackie 2006).

Remarks. The Arabian material observed here conforms with the type specimen and description extremely well. The only difference observed is the presence of pale reddish pigment in the posterior thorax of some of the Arabian material. *Magelona symmetrica* was original described from one specimen in which pigment in the posterior thorax was not observed. However, the presence of thoracic pigment amongst the Arabian material was sporadic. The fact that pigment in Arabian material was pale (never forming a distinct band) even in material collected more recently, and was only present on a small number of specimens suggests that this is a variable character within this species. Observation of live or fresh material may help to resolve this. The holotype of *M. symmetrica* possessed small ventral processes on the neuropodia of chaetiger 9. These were not always observed in the Arabian material, even on different sides of the same chaetiger. However even when present,

they are minute and often difficult to discern. Their presence/conspicuousness may well be related to size of a specimen. This may also be resolved in the future by the examination of additional material.

Of all the Arabian species observed here, *M. symmetrica* shares the most similarities with *Magelona* cf. *cincta,* and these two species can be difficult to separate in preserved material, particularly when specimens are small. However, the following differences between the two species allow separation. *Magelona* cf. *cincta* possess slightly scooped shaped ventral neuropodial lamellae on chaetigers 1–3; the pigment seen in the posterior thorax is a distinct band of a dark reddish/brown; the thoracic neuropodial lamellae decrease sharply in size from chaetigers 1–5; the chaetigers of the mid–thorax are characteristic bulbous; the prostomium has limited ornamentation either side of the prostomial ridges; a distinct methyl green staining pattern is present, and abdominal lamellae are broader at approximately one third of their length, not at the base. All specimens of *Magelona* cf. *cincta* observed were small in comparison to the majority of *M. symmetrica* specimens observed.

In contrast, the generally larger *M. symmetrica* specimens possess: sharply pointed triangular lamellae on chaetigers 1−3; a prostomial margin which is often medially indented (prostomium sometimes curving upwards) and is much more highly ornamented; neuropodial lamellae are of a similar size throughout the thorax; the pale reddish pigment in the posterior thorax (if present) does not form a distinct band, even in newer material (when comparing material of the two species from the same survey, the pigment seen in *Magelona* cf. *cincta* is much stronger); *M. symmetrica* is a stout species, however does not possess characteristically bulbous chaetigers in the mid–thorax; a distinct methyl green staining pattern is not present; intense glandular areas interparapodially are present from chaetiger 8 and abdominal lamellae are sharply triangular. However, it is important to note that the pigment band of *Magelona* cf. cincta does fade over time, and was observed here to be paler in older material. It is likely that some of these observed differences may be due to the size of the species, such as the ornamentation of the prostomium, given that the specimens of *Magelona* cf. *cincta* are much smaller.

Re–description of *M. pacifica*

Due to the morphological similarity between *M. montera* sp. nov. and the original description of *M. pacifica* it was deemed necessary to borrow the type material of the latter species for further examination. On comparison of the type material and the original description it was

concluded that a re–description would be prudent and is included below, despite it being originally described from Panamá, and not believed to be present in the seas surrounding the Arabian Peninsula.

Magelona pacifica Monro, 1933

Figures 14–16

Magelona pacifica Monro, 1933

Material examined. Syntypes: PANAMÁ, Gorgona Island, at low tide, collected by Dr. C. Crossland, (BMNH Type 1933.7.10.65/70; 14 af, 13 f of 2–32 chaetigers, 1 pf of approximately 28 chaetigers for 9 mm, and 13 loose palps) (N.B. original description indicates 12 specimens).

Diagnosis. Prostomium longer than wide, with distinct prostomial horns. Notopodia of chaetigers 1–8 with spatulate postchaetal lamellae, expanded as cirriform dorsal superior processes. Neuropodia with slender triangular ventral lobes; chaetiger 8 with additional triangular postchaetal lamellae. Notopodia of chaetiger 9 with rounded postchaetal lamellae confluent with prechaetal ridges, expanded as lateral cirriform lobes. Neuropodia of chaetiger 9 with triangular postchaetal lamellae and ventral prechaetal processes. All thoracic chaetae capillary. Abdominal lateral lamellae rounded triangular (toad–stool shape in profile), basally constricted. Hooded hooks bidentate, in one unidirectional group.

Re–description. A moderately large species (Figures 14A–D); junction between thorax and abdomen distinct, abdomen thicker dorso–ventrally than thorax. All specimens posteriorly incomplete, condition generally poor. Thoracic parapodia missing or incomplete in many specimens, particularly in posterior thorax. Dimensions of longest syntype: prostomium 1.0 mm long, 0.8 mm wide; thorax 5.0 mm long (including prostomium), 0.5 mm wide (thorax generally widest at chaetiger 1, tapering towards abdomen); abdomen 0.4 mm wide; total length approximately 33.5 mm for 60 chaetigers. Other syntypes with 29–51 chaetigers for 15–26 mm (N.B. original description states that "one of the most complete specimens measures 45 mm (…) for 85 chaetigers". It is likely that this specimen has now fragmented and may be represented by the 60 chaetiger af and the posterior fragment reported here).

Prostomium longer than wide (L:W ratio 1.1–1.4); anterior margin smooth, triangular, with very conspicuous prostomial horns (Figure 15A) (the tips of which are more rounded, and the horns broader than originally figured by Monro). Prostomial lateral margins often

undulating. Two pairs of prominent longitudinal dorsal muscular(?) ridges, outer pair abutting inners for entire length; inner pair diverging distally into each horn. Outer pair moderately thick, heavily ridged transversely. Inner pair showing diagonal striations at each end, with light transverse ridging medially. Distinct muscular(?) areas either side of ridges of varying shape and size. Proboscis everted in 13 specimens; heart–shaped when fully everted, round to oval (Figure 14D) when partially everted; ridged longitudinally, although much lighter superiorly, appearing almost smooth. Palps attached on eight specimens, long and slender; arising ventrolaterally from base of prostomium, reaching approximately chaetiger 21–30; non–papillated region long reaching chaetiger 3–5. Degree of papillation variable, papillae short proximally but long for majority of length; digitiform; proximally with two or three rows of papillae either side of inconspicuous groove, medially with two, and distally with one or two rows either side.

Achaetous region behind prostomium large approximately one and a half times the size of chaetiger 1. Chaetigers 1–7 similar (although size of the lamellae and processes in posterior thorax difficult to ascertain due to absence/damage in most specimens); parapodia biramous (Figures 16A–E); notopodia with low triangular prechaetal lamellae confluent with large spatulate postchaetal lamellae, of a similar size throughout the thorax, upper margins smooth. Long slender, cirriform, prechaetal superior processes present (DML). Neuropodial pre– and postchaetal lamellae as low ridges, forming distinct cuff–like structures confluent with ventral triangular lobes (VNL) beneath chaetae, decreasing in size along thorax. Lamellae of chaetiger 8 unknown due to damage in all specimens, however, neuropodia with additional triangular postchaetal lamellae of similar size to those of the proceeding chaetiger.

Chaetiger 9: Notopodial prechaetal lamellae as low ridges confluent with rounded postchaetal lamellae (smaller than those of preceding chaetigers) and inferiorly expanded as small cirriform processes; superior processes (DML) not observed and described originally as absent (Figure 16F). Neuropodia with triangular postchaetal lamellae confluent with low prechaetal ridges and digitiform prechaetal lobes. Chaetae of all thoracic chaetigers simple winged capillaries.

Abdominal chaetigers with large rounded triangular to spatulate lateral lamellae (toad–stool shape in profile) (Figure 16G) (shape variable, sometimes more rounded, edges often undulating and folded over) of about equal size in both rami; basally constricted, stalked, and overlapping in anterior abdomen. Postchaetal extension of the lateral lamellae behind chaetal rows present in anterior abdomen; triangular, much reduced by chaetigers 15–20. Triangular

processes (DML and VML) present at inner margins of chaetal rows, long in anterior abdomen.

Abdominal chaetae bidentate hooded hooks, with around 10–12 hooks per rami initially (not drawn to prevent further damage to specimens, particularly any remaining complete hooks). Majority of hooks broken where they emerge in all specimens, however they appear to be in one unidirectional group (difficult to discern due to condition of material. Monro's original description does not mention this character, and although his drawings show unidirectional hooks, they are shown with different orientations in different rami i.e. facing the lamellae in one group and away in another). A parapodial slide preparation made from a posterior–most chaetiger of a syntype specimen suggests that they are unidirectional based on how they arise. Information on non–type material of *M. pacifica* from México also suggests unidirectional facing bidentate hooks (Brasil 2003).

Paired posteriorly open pouches on consecutive segments, on both sides of the body, starting from around chaetigers 36–40 (observed on 10 specimens) are present. Pouches appear as simple folds, medially split with thicker cuticle surrounding edges (Figures 15C–E). Pouches present until approximately 10 chaetigers from the pygidium, (observed from posterior fragment).

Eggs present in three fragments (18 and 20 chaetiger fragments and 44 chaetiger af), approximately 80 μm in diameter (clearly visible from approximately 37th chaetiger). Posterior fragment (Figure 15F) with no pygidial cirri observed, presumed broken(?).

Colour. Colour of preserved specimens uniformly cream in alcohol. Darker colouration interparapodially in the abdomen (Figure 15F). Methyl green stain dissipates quickly leaving a very diffuse, overall stain (Figures 14C–D) (stain slightly darker and persisting longer on chaetigers 1–7 dorsally and 3–7 ventrally). However, dorsal transverse bands of light green/yellow persist between chaetigers 2–9, just posterior to parapodia. Those behind chaetiger 2 often appearing as patches rather than bands. These bands correspond with light speckled transverse bands visible in the same area without staining. An additional medial dorsal patch, just prior to chaetiger 1 is often present. Similar light green bands observed ventrally between 4–9.

Habitat. Type specimens found at low tide on Gorgona Island, Panamá.

Distribution. *Magelona pacifica* has been additionally recorded from Southern California (Hartman 1944; 1956; 1969), Gulf of California and the Pacific coast of México (Arias-González 1984; Padilla-Galicia 1984; Varela-Hernández 1993; De León-González 1994; Hernández-Alcántara & Solís-Weiss 2000). Ten records throughout the Tropical

Eastern Pacific (see, Salazar-Vallejo & Londoño-Mesa 2004), West of the Philippine Trench (10°26'N, 126°05'E, 1000 m) (Kirkegaard 1996), however, Kirkegaard's description states "without notopodial and neuropodial medial lamellae in posterior region". Although originally described as not present, *M. pacifica* has been shown herein to possess abdominal triangular processes (DML and VML) at the inner margins of chaetal rows. Therefore we cannot be sure whether Kirkegaard's material is actually *M. pacifica.* Paxton & Chou (2000) report the presence of *Magelona* cf. *pacifica* from the South China Sea.

Remarks. The poor condition of the material examined herein makes a full re–description of this species from type material difficult, particularly the parapodia between chaetigers 5–8. Examination of newly collected material from the type locality would be prudent. The species sharing the most morphological similarities with *M. pacifica* is *M. montera* sp. nov and their affinities are discussed above for the justification of the new species. Several features differ between Monro's original description and this re–description. In particular, the presence of triangular processes at the inner margins of chaetal rows (DML and VML) in the abdomen, where Monro states "I can see no cirriform processes". Also, the presence of triangular postchaetal lamellae in the neuropodia of the 8th chaetiger were not mentioned in the original description.

Discussion

Diversity of Arabian Peninsula species of Magelona

The review of known *Magelona* species by Mortimer (2010) described five species as being present in the seas surrounding the Arabian Peninsula: *Magelona cornuta, Magelona obockensis* and *Magelona pulchella* (all originally described from the region), *Magelona crenulifrons* (originally described from Vietnam) and an undescribed species, *M. cornuta* of Amoureux (1983) from the Red Sea (herein described as *Magelona montera* sp. nov). This current paper, a review of new material from the same region has revealed a further six species collected from seven surveys off the coasts of Iran and Qatar: *Magelona sinbadi* sp. nov. and *Magelona* cf. *agoensis* (a species likely to be new to science, although currently undescribed, see above); *Magelona conversa, Magelona* cf. *falcifera* and *Magelona symmetrica* (originally described from the Seychelles) and *Magelona* cf. *cincta* (sharing many similarities with both the South African holotype and *Magelona* cf. *cincta* from Hong Kong

as described by Mortimer & Mackie 2009). These descriptions bring the total number of species believed to be present in the region to eleven, the prostomia of which are represented in Figure 13.

The most abundant species present in the Gulf material, in terms of specimen numbers, were *Magelona* cf. *falcifera* (222), *M. crenulifrons* (133) and *M. symmetrica* (107) respectively. *Magelona crenulifrons* (found at 26 stations from 4 surveys), *Magelona* cf. *cincta* (found at 15 stations from 4 surveys, although predominately appearing in Qatar 2007 samples) and *M. symmetrica* (found at 12 stations from 6 surveys) were present at the highest number of stations. *Magelona* cf. *falcifera* was found at 12 stations (from five surveys), whilst *Magelona* cf. *agoensis* was present at 7 stations from two surveys. The remaining species: *M. montera* sp. nov., *M. sinbadi* sp. nov. and *M. conversa* were present in very small numbers from a small number of stations, and present only in one or two surveys (Figure 17). All species examined herein were collected subtidally within the Arabian Gulf, except for *M. montera* sp. nov., which was collected intertidally in the Red Sea area.

A variety of reasons may explain the patterns of species abundance seen here. Despite the different sampling dates, locations and devices (Table 1), sediment handling was performed by (or under the supervision of) the same team, using the same protocol (except for one specimen of *M. conversa* on loan from BMNH and *M. montera* sp. nov.). Sediments were always sieved through a 1 mm pore sieve and this relatively large mesh size may explain the low abundance of species characterized by small body sizes (e.g. *Magelona* cf. *agoensis*). On average, Iranian subtidal samples tended to be shallower than Qatari ones (15.6 ± 2.7 m vs 39.7 ± 22.1 m deep, respectively) (Table 2). However, those species found exclusively in Iranian coastal waters, occurred at similar depths to those found from both Iran and Qatar (15.2 ± 3.1 m vs 15.9 ± 1.1 m deep). Given these findings and the fact that the range in depths sampled during all surveys was not high, it is likely that depth alone cannot explain the distribution patterns seen here. Species distributions were also compared to sediment characteristics, such as organic matter and granulometry. All samples studied here showed very similar sedimental characteristics, in terms of percentage organic matter (expressed as organic carbon) being 0.41 ± 1.1% in Iranian and 0.33 ± 0.06% in Qatari samples. Correspondingly, those species found exclusively in Iranian samples occurred in similar sediments in terms of total organic carbon to those also found in Qatar (0.40 ± 0.08% and 0.43 ± 0.13%, respectively). The same pattern was seen in terms of granulometry, with different species located in similar sediments both in Iran and Qatar locations, irrespective of depth (Table 2). All *Magelona* species reported herein occurred in sediments containing sand

percentages higher than 65%. The most interesting result, is that irrespective of location (i.e. Iran or Qatar), each given species occurred in sediments with the same granulometrical characteristics: *Magelona* cf. *cincta* and *M. crenulifrons* in slightly more muddy sediments (silt content near 30%) and *Magelona* cf. *falcifera* and *M. symmetrica* in slightly more sandy ones (sand content around 85% or higher).

None of the species originally described from the region (*M. obockensis*, *M. pulchella* and *M. cornuta*) were present in the samples examined here (Figure 17). However, both *M. obockensis* and *M. pulchella* were originally described from the intertidal zone, the former from the Red Sea, and the latter from Kuwait at the northern end of the Gulf. *Magelona cornuta* was originally described sublittorally from the Gulf of Oman, further east than all samples investigated here.

The Strait of Hormuz is a narrow waterway separating the Gulf of Oman from the Arabian Gulf and may act as a biogeographical barrier between the two. It has been suggested that the Arabian Gulf behaves as a concentration basin (Tchernia 1978), in which evaporation processes dominate the evaporation/rainfall ratio (Sheppard *et al.* 1992). The main current from the Strait runs along the Iranian coastline towards the inner regions of the Gulf, turning to run along the Arabian coast before returning to the Strait. These circulation patterns have contributed to keeping certain species isolated to some degree within the Gulf (*Owenia persica*: Martin *et al.* 2006; *Spiochaetopterus creoceanae*: Bhaud *et al.* 2003). Whilst, this may explain why *M. cornuta* was not present in any of the samples examined here. Further studies throughout the area are needed to determine whether *M. cornuta* is a constituent of the Arabian Gulf fauna, and whether this or other factors explain its absence in examined material. This circulation pattern could also be an additional factor explaining the higher species diversity of the genus along the Iranian coast (i.e. eight species vs only four in Qatar; Figure 17), as the Iranian coastline could be influenced by factors from outside the Gulf, such as a higher nutrient input.

On the magelonid buccal organ

The observation of one specimen of *Magelona* cf. *agoensis* with an everted 'buccal organ/tube' between the structure normally termed a proboscis and the prostomium, poses several questions about the buccal region of *Magelona.* Several authors have looked at the morphology and behaviour of this region in *Magelona.* McIntosh (1911) stated that "the mouth opens at the base of the flattened snout as a somewhat triangular or T–shaped slit surrounded by lips of mucous membrane, and situated between or very slightly in front of the

bases of the tentacles. The anterior lip is sinuous but complete, while inferiorly is a wide fissure (bounded laterally by prominent margins) which runs a considerable distance backward. The lips are very mobile, and in life frequently expand to gulp water". In Jones (1968: figure 31) the mouth is figured situated between the prostomium and everted proboscis, and Dales (1962) detailed the musculature associated with the proboscis, describing it as a ventral structure. Orrhage (1973) undertook both sagittal and transverse sections of *M. papillicornis* (N.B. The re–description of *M. papillicornis* by Jones (1977) led to European records either being referred to *M. mirabilis* or *M. johnstoni*), showing the presence of a muscle bulb on the dorsal side of the proboscis. He concluded "*Magelona* has not only a ventral proboscis but also a sort of buccal organ". Dales (1977) further stated "that there is a region on the ventral side of the so–called esophagus which resembles a muscle bulb(...)This ventral muscle bulb was not detected in whole sagittal sections or on dissection, but it is not certain whether this muscle bulb is homologous with other buccal organs. Nevertheless, the proboscis of *Magelona* is a specialized ventral structure". It is clearly unusual to see this buccal 'organ/tube' everted, and although previous workers such as Dales and Orrhage have seen this structure in sections, we believe that this is the first time is has been drawn everted.

The function of the proboscis in *Magelona* is not thought to be related to feeding (Rouse 2001) and Jones (1968) whilst observing live *Magelona* suggested the proboscis was used in burrowing. He believed that it was used as an anchor whilst the remainder of the body was brought forward. When feeding, the palps were looped in order to transfer food along their length, and "when the non–papillated region (the proximal 20% of the tentacular length) was reached, the prospective food material seemed to undergo a free fall directly into the mouth". The definition of a proboscis according to Rouse & Pleijel (2001) is the eversible part of the buccal organ or pharynx. If this is so, then the everted 'buccal organ/tube' (appearing to carry the mouth) observed here could be termed a proboscis. However this then poses the question as to what the structure traditionally termed the proboscis in *Magelona* should be called. In order to examine this more closely it would be ideal to relax more live specimens in order to see if more 'buccal organs' can be everted, but also to study more live material. Further studies are needed to investigate this more thoroughly.

Key to adult specimens of *Magelona* from the western Indian Ocean (revised from Mortimer (2010))

The western Indian Ocean is regarded here as including the seas around the Arabian Peninsula, the seas surrounding east Africa to its southern tip (including Seychelles), and those surrounding Pakistan and western India. The species discussed here are those known to occur in this region. Unconfirmed records have been omitted and confirmed localities are given for each species. Prostomial images are also provided in Figure 13.

1. Prostomium with conspicuous, well–delineated frontal horns … 2
- Prostomium without horns, or rudimentary horns present … 7
2. Anterior prostomial margin crenulate … 3
-Anterior margin smooth …4
3. Abdominal hooded hooks bidentate, unstained V shape present on venter of mid–thorax, when stained with methyl green (often seen in unstained material) … *M. crenulifrons* (Persian Gulf)
-Abdominal hooded hooks tridentate … *M. cornuta* (Gulf of Oman)
4. Abdominal hooded hooks bidentate, unstained X shape present on venter of mid–thorax when stained with methyl green … *M. pulchella* (Persian Gulf)
- Abdominal hooded hooks tridentate … 5
5. Thoracic notopodial lamellae with crenulate upper margins, prostomial horns distinctly separated from prostomium anterior margin, distal horn tips bulbous … *M. montera* sp. nov. (Red Sea)
- Thoracic notopodial lamellae with smooth upper margins, prostomial horns without bulbous distal tips, horns separated from prostomium anterior margin only at horn tips…6
6. Notopodia of chaetiger 9 with subtriangular postchaetal lamellae, with swollen bud–like tips, neuropodia of the same chaetiger with distinctly pointed postchaetal lamellae, and long and slender prechaetal lamellae …. *M. gemmata* (Seychelles)
- Notopodia of chaetiger 9 with digitiform lateral lamellae and broadly rounded triangular postchaetal lamellae; neuropodia with broadly rounded triangular postchaetal lamellae, and short, thick prechaetal lamellae … *M. sinbadi* sp. nov. (Persian Gulf)
7. Thoracic notopodia with dorsal processes … 8
- Thoracic dorsal processes lacking … 10
8. Anterior abdomen with lateral pouches, chaetiger 9 with modified chaetae …9

- No anterior abdominal pouches, chaetiger 9 with capillary chaetae; prostomium onion–shaped with rudimentary horns … *M. cepiceps* (Seychelles)

9. Abdominal hooded hooks bidentate; notopodial dorsal processes absent in anterior thorax … *M. conversa* (Seychelles, Persian Gulf)

-Abdominal hooded hooks tridentate; notopodial dorsal processes on all thoracic chaetigers (Note: those of chaetiger 9 may be difficult to discern)… *M. obockensis* (Gulf of Aden, Red Sea, Persian Gulf)

10. Anterior abdominal chaetigers with greatly enlarged re–curved hooded hooks … *M. falcifera* (Seychelles), *M.* cf. *falcifera* (Persian Gulf)

- No enlarged hooks … 11

11. Neuropodial lamellae of chaetigers 1–3 expanded distally, scoop–shaped; pigment band present in posterior thorax (Note: pigment band may fade) … *M. cincta* (South Africa), *M.* cf. *cincta* (Persian Gulf)

-Thoracic neuropodial lamellae not distally expanded … 12

12. Thoracic notopodial postchaetal lamellae larger than neuropodial ones; neuropodial lobes reduce in size in mid–thorax, abdominal hooded hooks bidentate … *M. mahensis* Mortimer & Mackie, 2006 (Seychelles)

- Thoracic postchaetal lamellae in both rami of a similar size and shape, abdominal hooded hooks not bidentate… 13

13. Abdominal hooded hooks polydentate (predominately quadridentate)… *M.* cf. *agoensis* (Persian Gulf)

-Abdominal hooded hooks tridentate…14

14. Postchaetal lamellae in thorax and abdomen long, sharply triangular; large, stout species … *M. symmetrica* (Seychelles, Persian Gulf)

- Thoracic postchaetal lamellae short, triangular; abdominal lamellae lanceolate, basally constricted; small, slender species … *Magelona pygmaea* Nateewathana & Hylleberg, 1991 (Seychelles)

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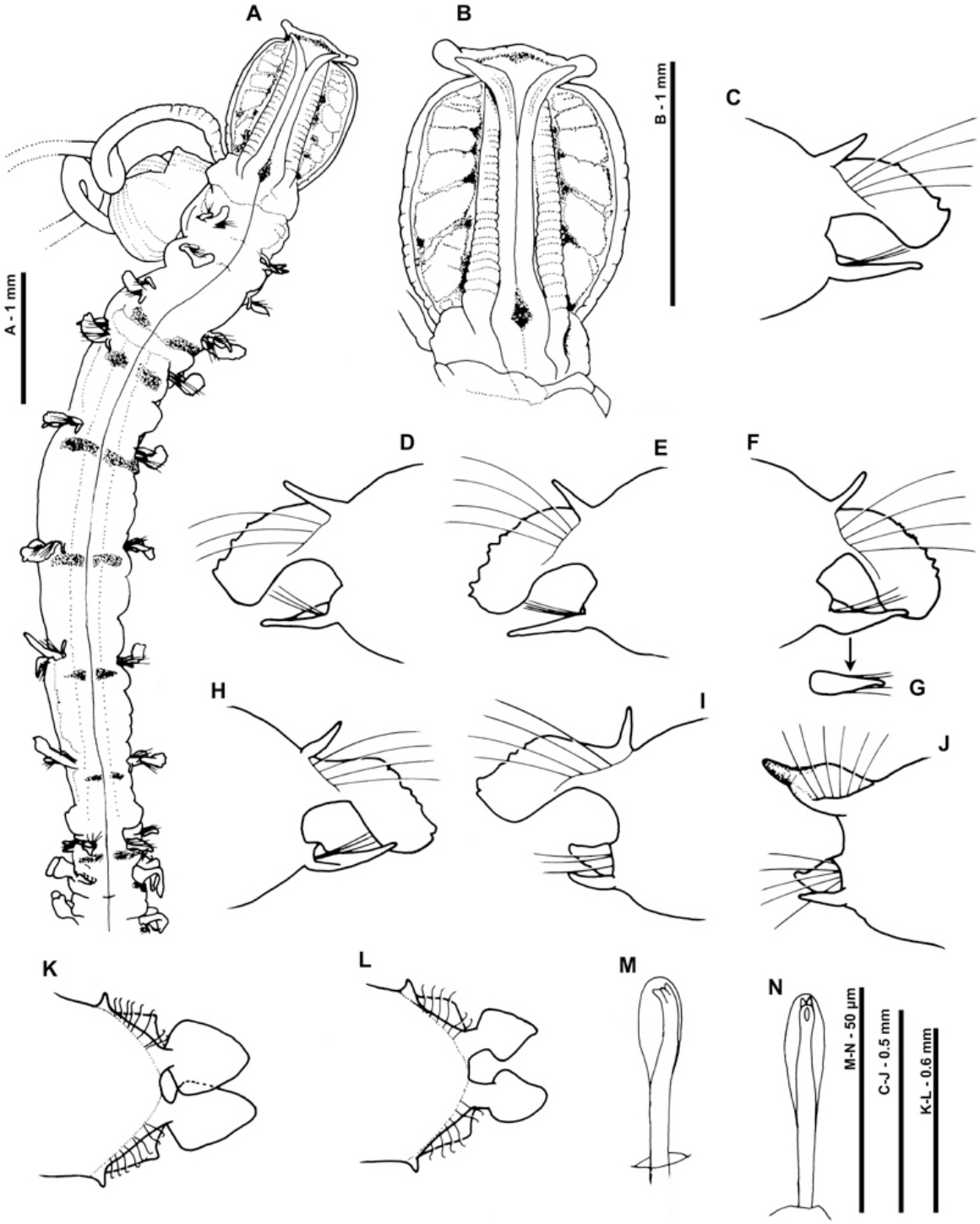

Fig. 1. *Magelona montera* sp. nov. (Holotype; MNHN A895): (A) anterior region, dorsal view, proboscis squashed to left side of body; (B) prostomium, dorsal view; (C–F) chaetigers 1, 2, 3, 4 (anterior views); (G) neuropodium of chaetiger 4 (ventral view); (H−L) chaetigers 6, 8, 9, 12 and 41 respectively (anterior views); (M–N) tridentate abdominal hooded hooks, lateral and frontal views respectively.

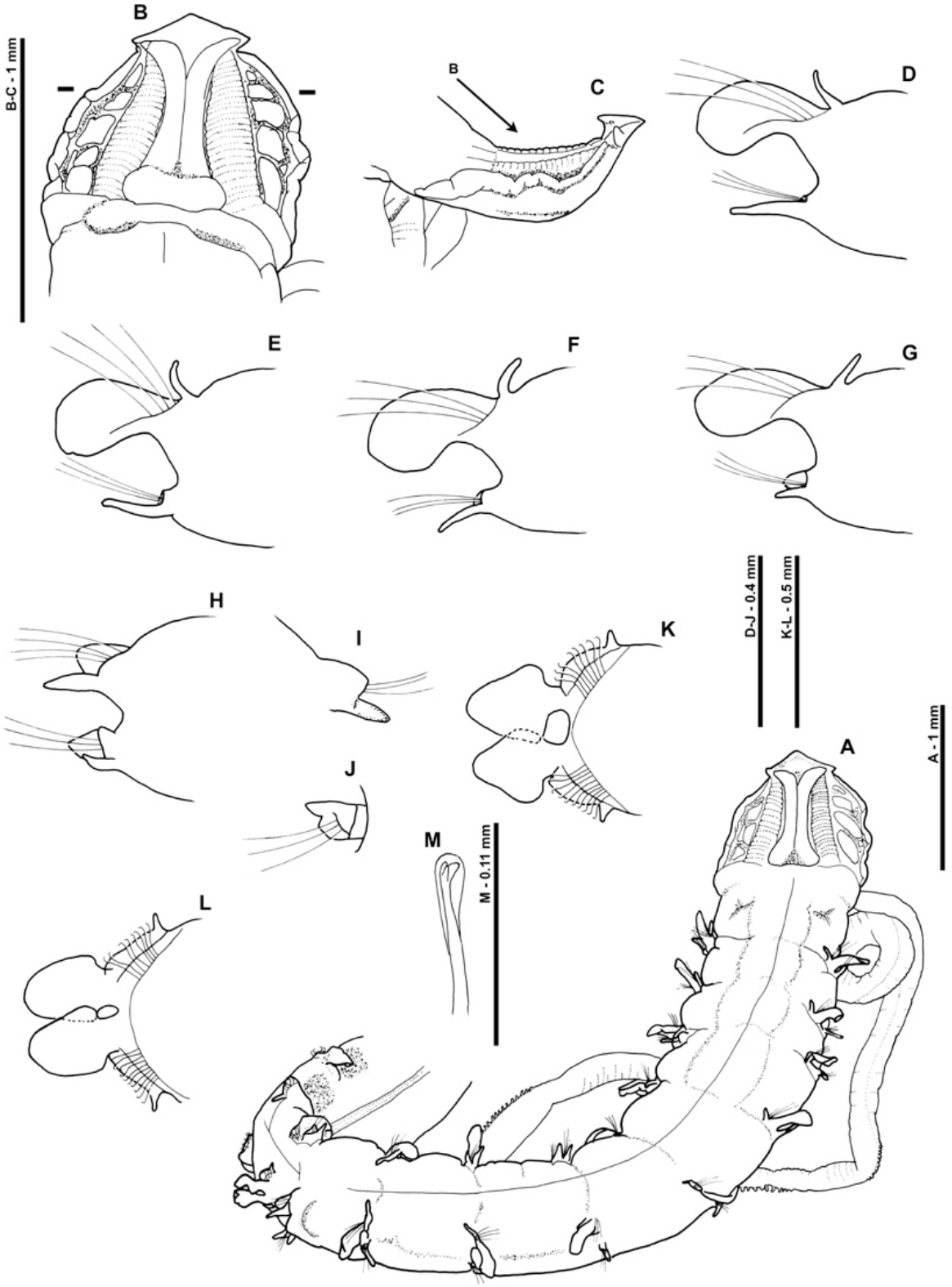

Fig. 2. *Magelona sinbadi* sp. nov. (NMW.Z.2010.037.0001): (A) anterior region, dorsal view; (B) prostomium, dorsal view (Note: prostomium highly curved as shown in C, black marks indicate the point at which prostomium is bent upwards); (C) prostomium, lateral view (arrow indicates the view point from which B was drawn); (D–H) chaetigers 2, 4, 7, 8, and 9 respectively (anterior views); (I–J) notopodium of chaetiger 9,

posterior and dorsal/anterior views respectively; (K–L) chaetigers 10 and 18 respectively (anterior views); (M) tridentate abdominal hooded hook, lateral oblique view.

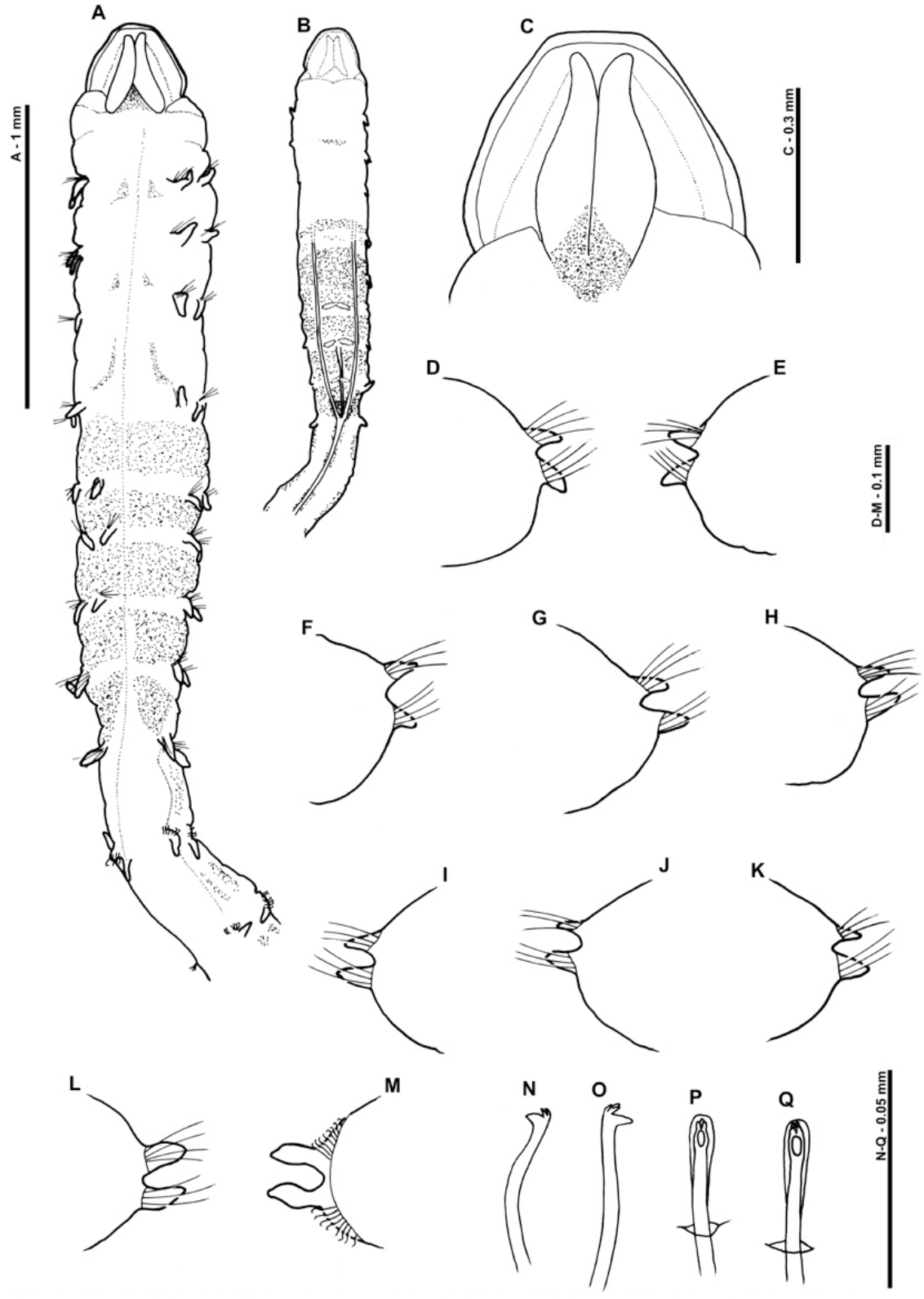

Fig. 3. *Magelona* cf. *agoensis* (A–B, D–Q, NMW.Z.2010.037.0005; C, NMW.Z.2010.037.0004): (A) anterior region, dorsal view, showing methyl green staining pattern; (B) methyl green staining pattern of venter, anterior region; (C) prostomium, dorsal view; (D–M) chaetigers 1–10 respectively (anterior views); (N–P) quadridentate

abdominal hooded hooks, lateral, lateral oblique and frontal views respectively (N, O hoods omitted for clarity); (Q) pentadentate abdominal hooded hook, frontal view.

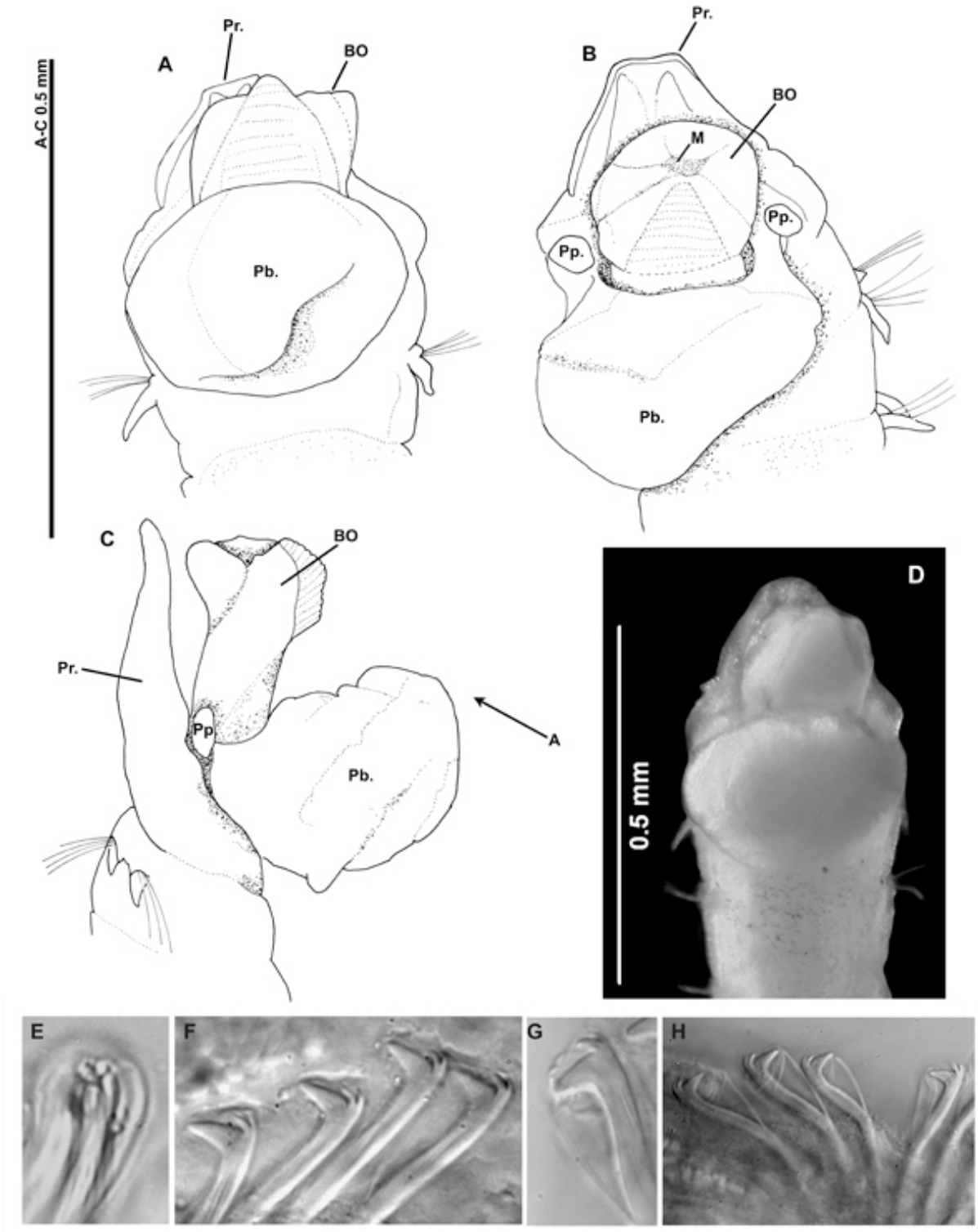

Fig. 4. *Magelona* cf. *agoensis* (A–D, NMW.Z.2010.037.0006): (A) anterior, ventral view; (B) anterior, ventral view; (C) anterior, lateral view, showing view point from which figure A was drawn from; (D) anterior, ventral view; (E–H) polydentate abdominal hooded hooks. Pr = prostomium; Pb = proboscis; Pp = palp attachment site; BO = 'buccal organ/tube', M = mouth.

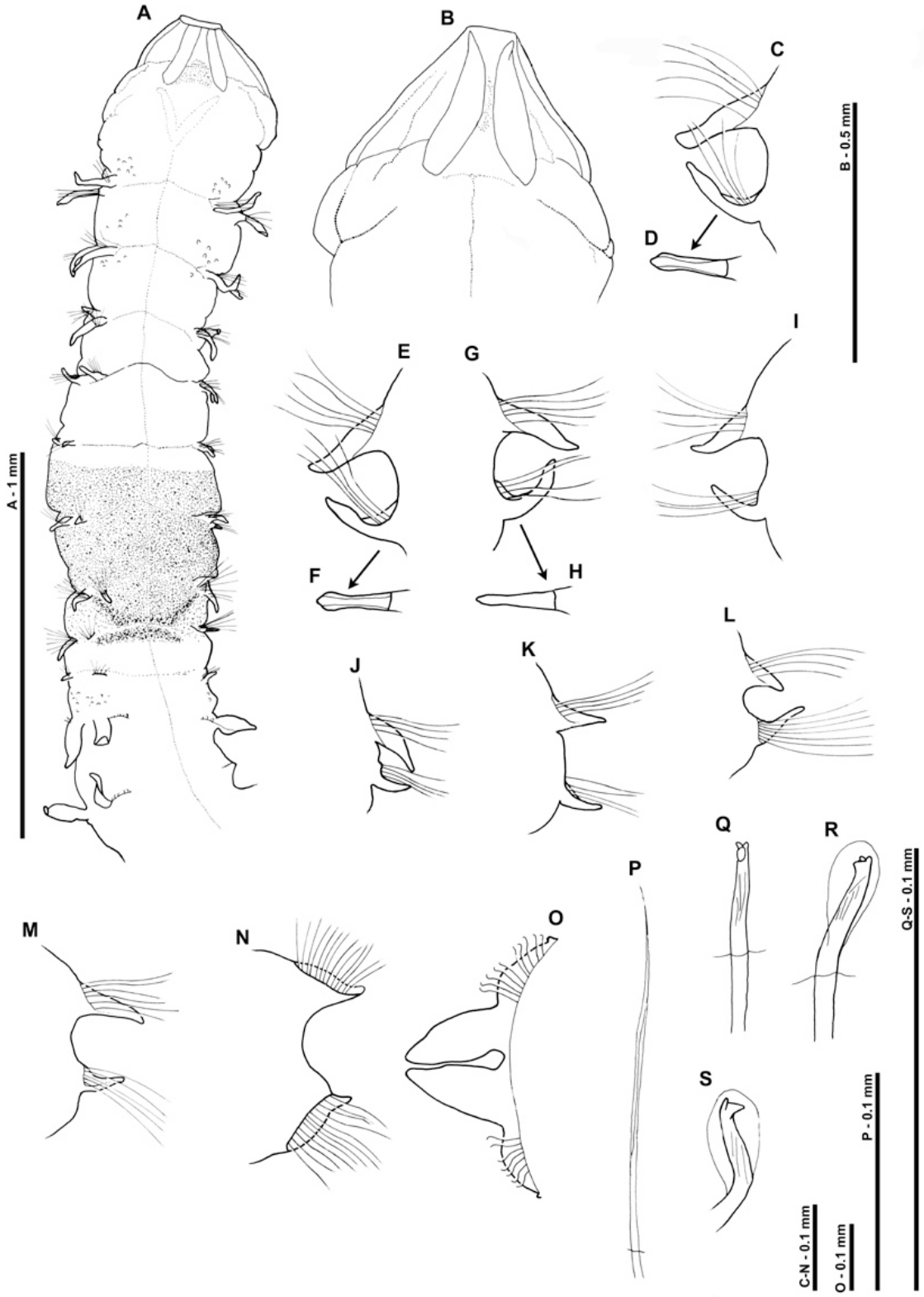

Fig. 5. *Magelona* cf. *cincta* (A, NMW.Z.2010.037.0038; B, NMW.Z.2010.037.0041; C−S, dissected specimen NMW.Z.2010.037.0037): (A) anterior, dorsal view, showing thoracic pigment band; (B) prostomium, dorsal view (note that right–hand side is slightly folded upwards); (C, E, G, I−O) chaetigers 1−9, 12 respectively (anterior views); (D, F, H) neuropodia of chaetigers 1−3 respectively (dorsal views); (P) thoracic capillary

chaeta; (Q−S) tridentate abdominal hooded hooks from 13th chaetiger (oblique frontal, oblique lateral and lateral views respectively) (Q, hood omitted).

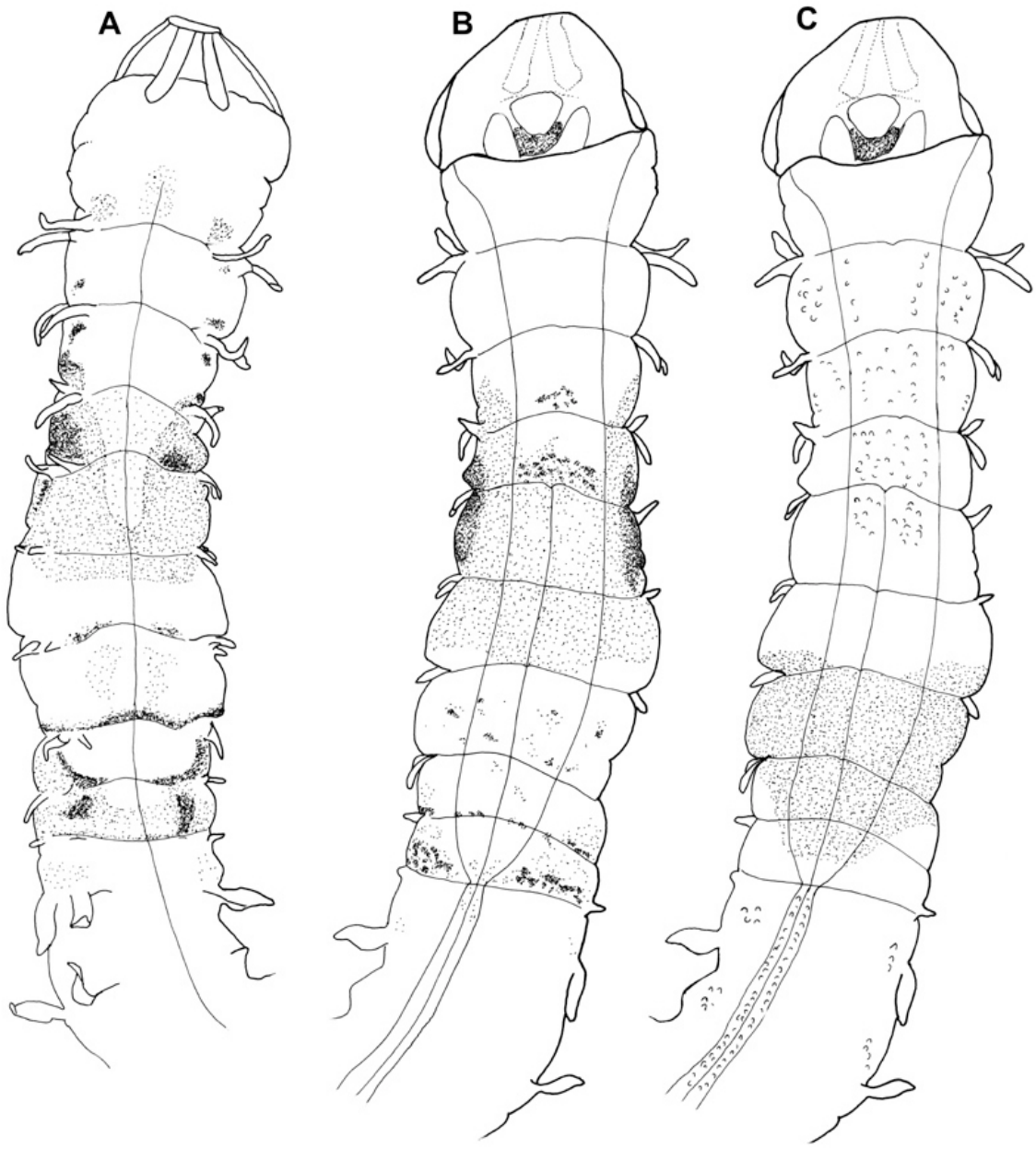

Fig. 6. Persian *Magelona* cf. *cincta* (NMW.Z.2010.037.0038): (A) methyl green staining pattern, anterior, dorsal view; (B) methyl green staining pattern, anterior, ventral view; (C) anterior, ventral view, showing thoracic pigment band and white speckled areas.

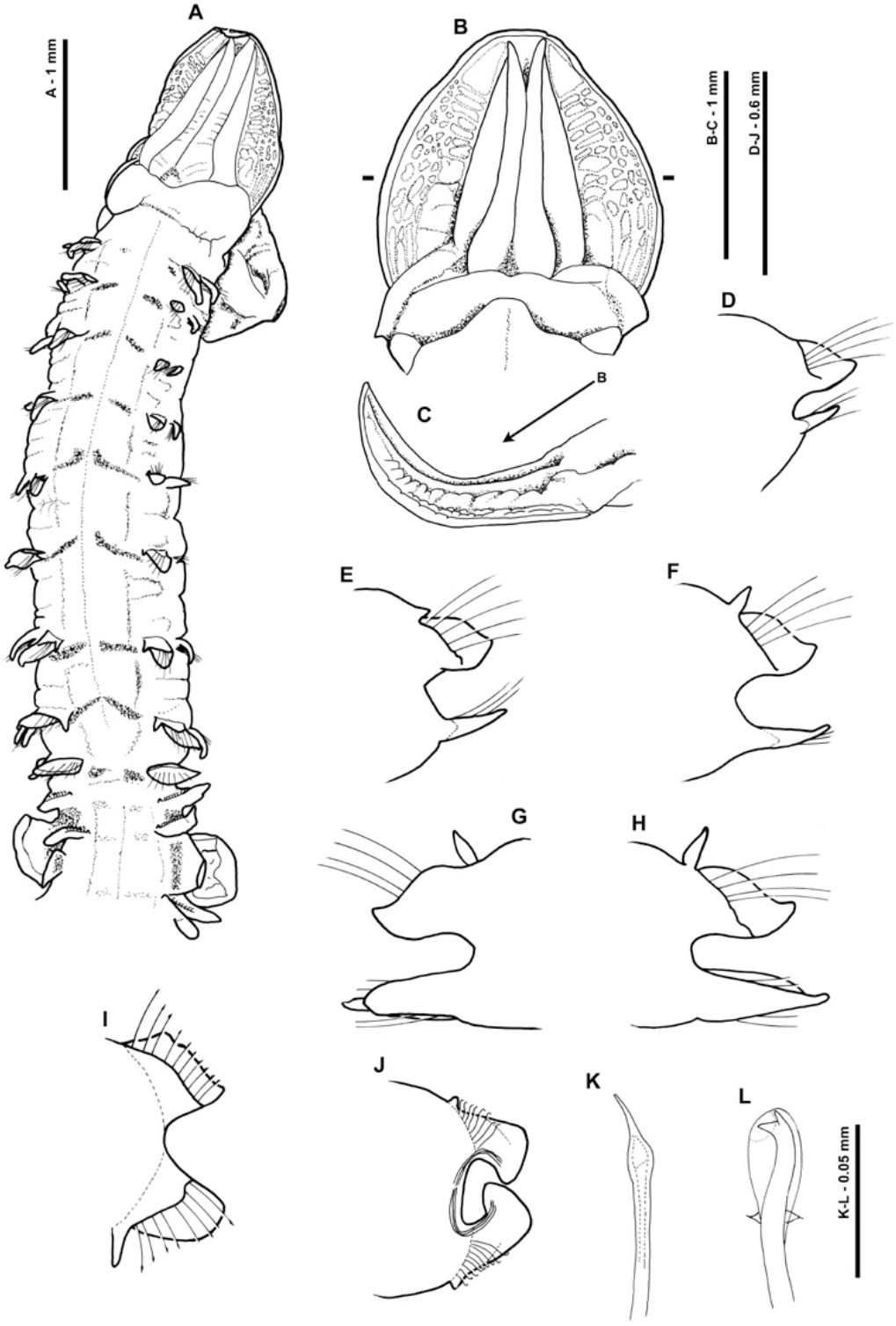

Fig. 7. *Magelona conversa* (A, D–L, NMW.Z.2010.037.0007; B–C, BMNH.2010.234): (A) anterior region, dorsal view; (B) prostomium, dorsal view (black marks indicate point at which prostomium is bent upwards, as shown in C); (C) prostomium, lateral view (arrow indicates the view point from which figure B was drawn); (D–F) chaetigers 1, 5, and 7 respectively (anterior views); (G–H) chaetiger 8, posterior and anterior views respectively; (I–J) chaetigers 9–10 (anterior views); (K) mucronate chaeta from chaetiger 9; (L) bidentate abdominal hooded hook lateral view.

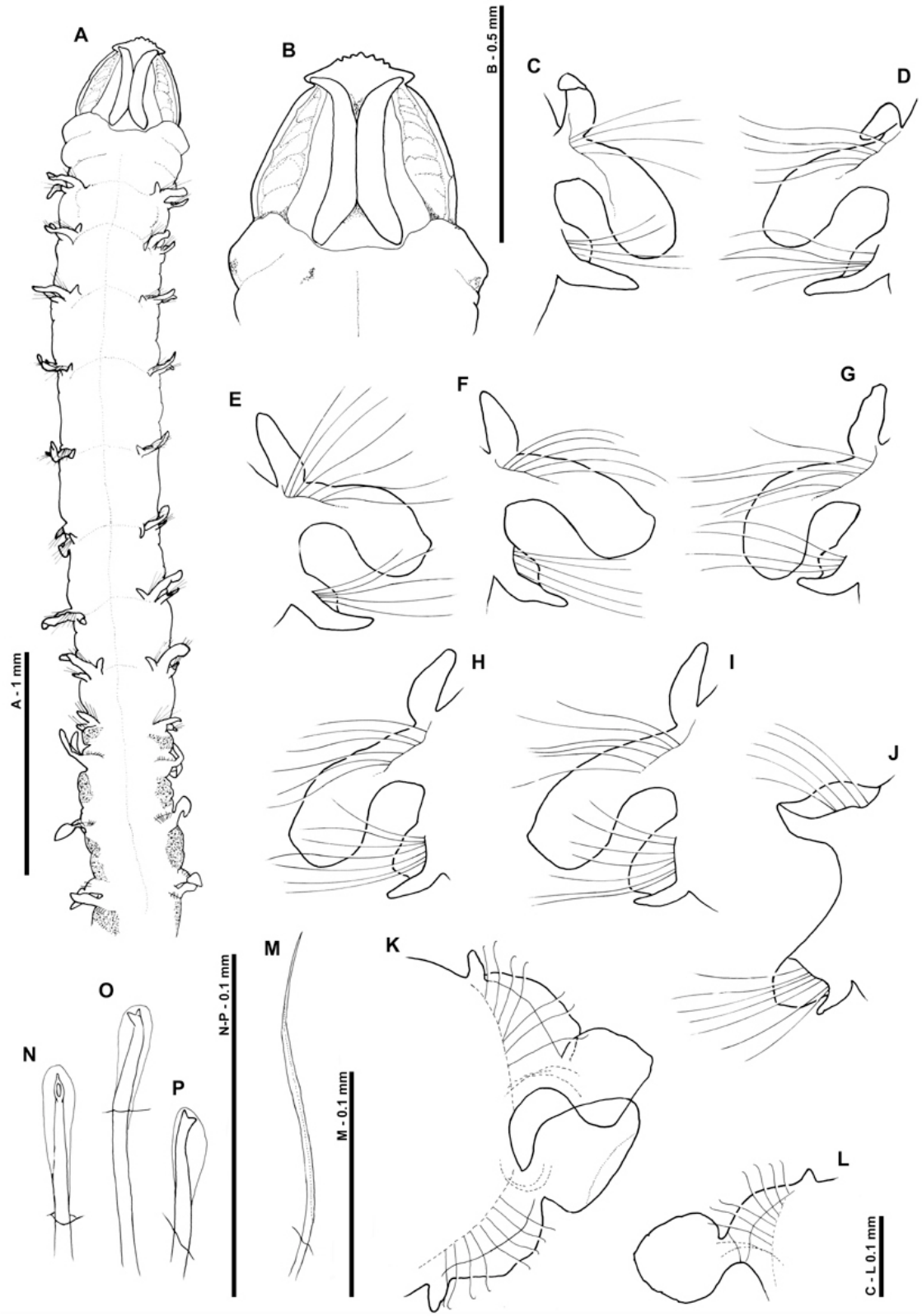

Fig. 8. *Magelona crenulifrons* (A, B NMW.Z.2010.037.0036b; C−L, Slide preparations: dissected specimen NMW.Z.2010.037.0034b): (A) anterior, dorsal view, showing interparapodial abdominal glandular regions; (B) prostomium, dorsal view; (C−K) chaetigers 1, 2, 3, 5, 6, 7, 8, 9, 10 respectively (anterior views); (L) notopodium of chaetiger 24 (anterior view); (M) lateralmost thoracic capillary chaeta from notopodia of 3rd chaetiger; (N−P) bidentate abdominal hooded hooks (frontal, oblique lateral and lateral views respectively).

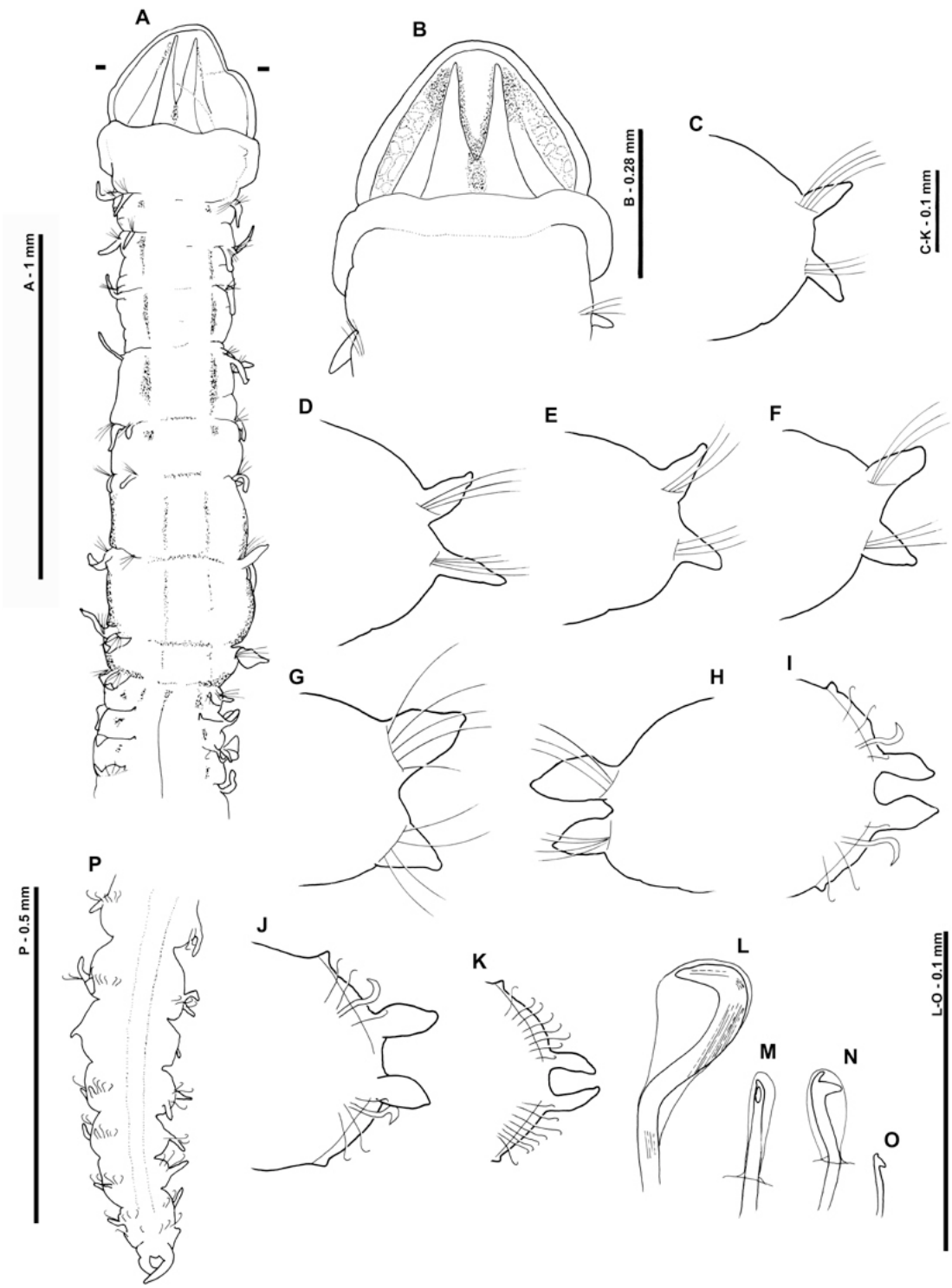

Fig. 9. *Magelona* cf. *falcifera* (A, NMW.Z.2010.037.0009, complete specimen; B–O, dissected 53 chaetiger specimen, NMW.Z.2010.037.0008b; P, NMW.Z.2010.037.0013, 53 chaetiger complete specimen): (A) anterior, dorsal view (Note: prostomium slightly folded on right–hand side, indicated by dashed lines, distal tip folded upwards, marked by black lines either side of prostomium. White speckled areas between chaetigers 1−5 as dotted areas); (B) prostomium, dorsal view; (C–K) chaetigers 2, 3, 4, 7, 8, 9, 12, 13, 40 respectively (anterior views); (L) large sickle–shaped abdominal hooded hook; (M–N) bidentate abdominal hooded hooks, frontal and lateral views respectively; (O) small bidentate hooded hook, lateral oblique view (hood omitted for clarity); (P) posterior fragment, ventral view.

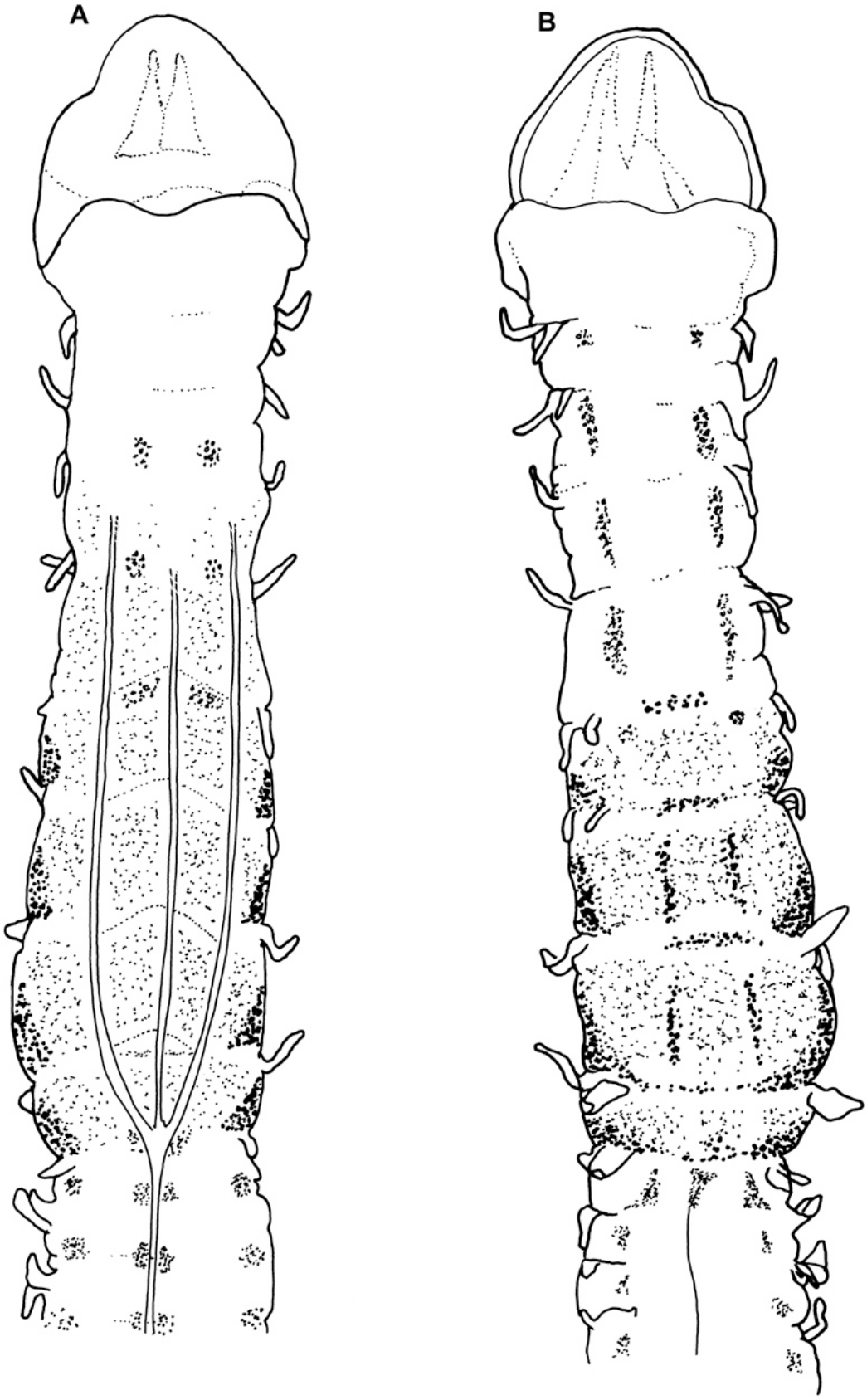

Fig. 10. Persian *Magelona* cf. *falcifera*, methyl green staining pattern: (A) anterior, ventral view; (B) anterior, dorsal view.

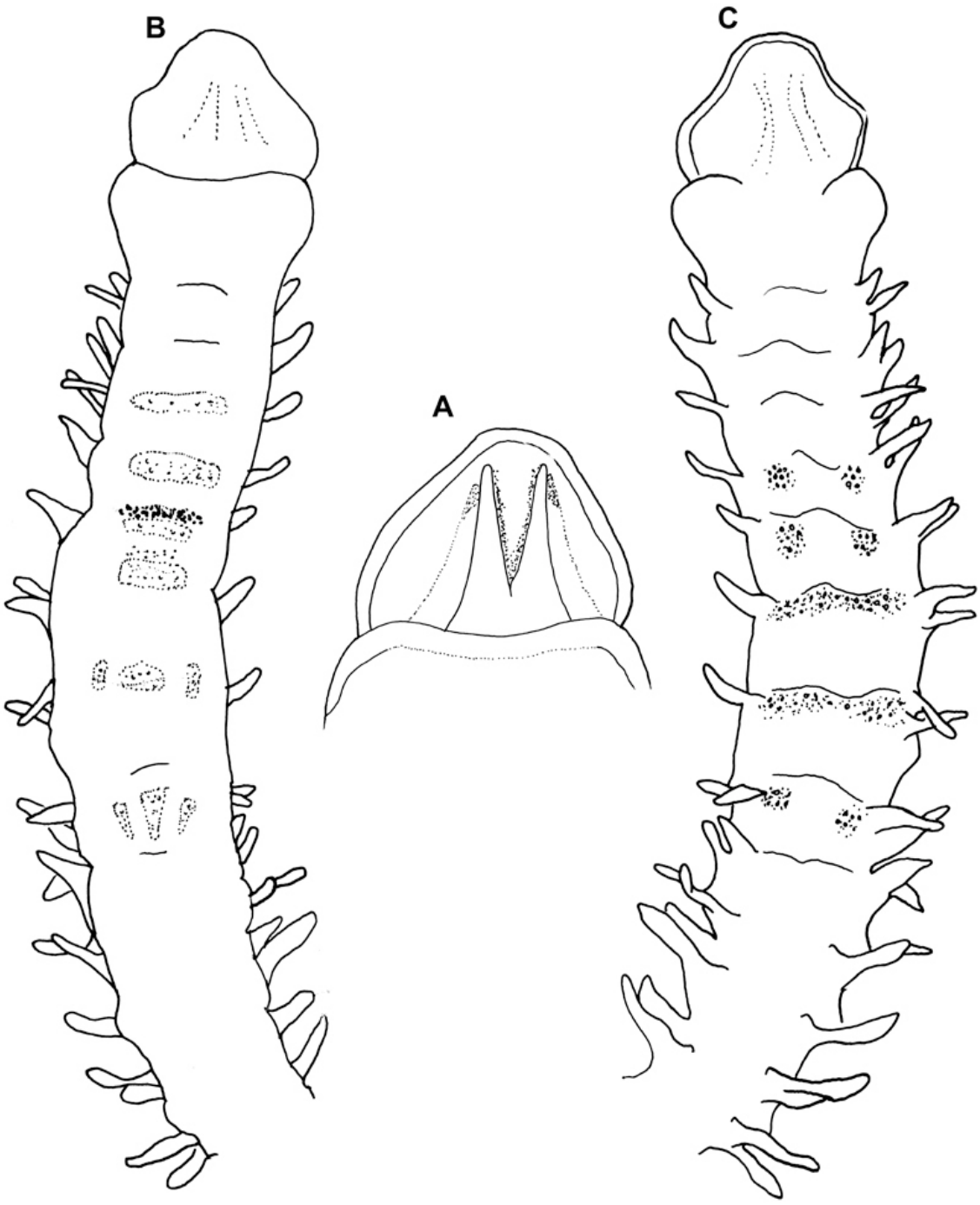

Fig. 11. Seychelles *Magelona falcifera* (A, paratype, NMW.Z.2000.020.0014): (A) prostomium, dorsal view; (B–C) anterior region, methyl green staining patterns, ventral and dorsal views respectively. White bands and patches shown as dotted areas. Ventral strong green speckled transverse line demarked by darker dotted area in the region of chaetiger 5.

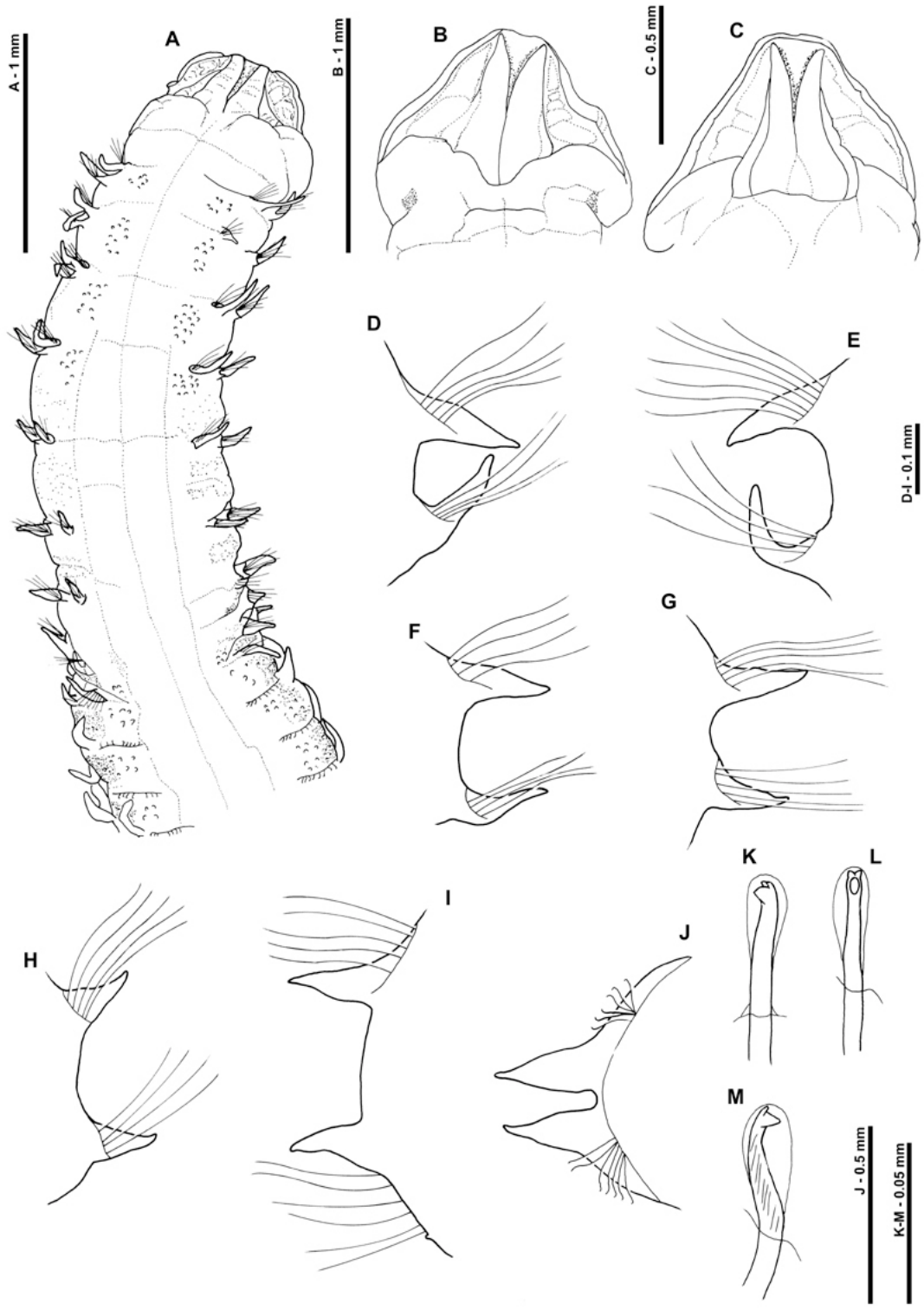

Fig. 12. *Magelona symmetrica* (A, NMW.Z.2010.037.0055; B, NMW.Z.2010.037.0047b; C–M, dissected 23 chaetiger specimen NMW.Z.2010.037.0044b): (A) anterior, dorsal view, showing methyl green staining between chaetigers 4−9, abdominal interparapodial glandular areas and dorsal white speckled areas between chaetigers 1−4 and 8−12 (note distal tip of prostomium curled downwards); (B−C) Prostomia dorsal views; D−J, chaetigers 1, 3, 4, 7, 8, 9, 13 respectively (anterior views); (K−M) tridentate abdominal hooded hooks (oblique lateral, frontal and lateral views respectively).

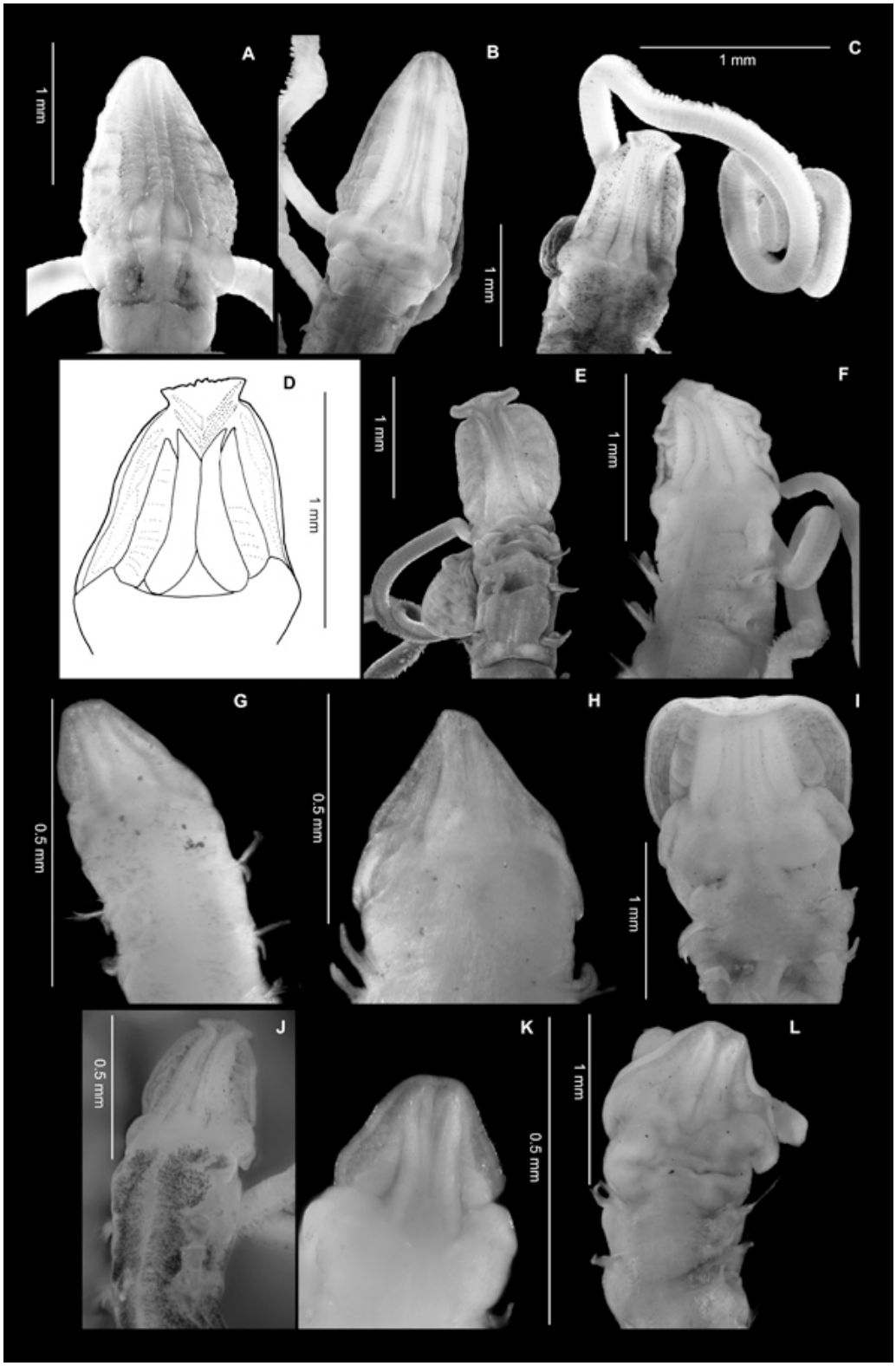

Fig. 13. Prostomia of Arabian Peninsula *Magelona* species, dorsal views: (A) *M. obockensis*, 39 chaetiger anterior fragment, proboscis not everted, both palps attached, syntype, MNHN Type 1357; (B) *M. obockensis*, BMNH:ZB.1971.54; (C) *M. pulchella,* holotype, BMNH 1969.391; (D) *M. cornuta*, holotype, ZMUC–POL–969; (E) *M. montera* sp. nov. MNHN A895; (F) *M. sinbadi* sp. nov., NMW.Z.2010.037.0001; (G) *M.* cf. *agoensis*, NMW.Z.2010.037.0004; (H) *M.* cf. *cincta*, NMW.Z.2010.037.0041; (I) *M. conversa*, BMNH.2010.234; (J) *M. crenulifrons*, NMW.Z.2010.037.0024; (K) *M.* cf. *falcifera*, NMW.Z.2010.037.0010b; (L) *M. symmetrica*, NMW.Z.2010.037.0047b.

Fig. 14. *Magelona pacifica* syntypes (A, C–D, 42 chaetiger af, left hand palp attached, proboscis partially everted; B, 41 chaetiger af, proboscis everted, no palps): (A–B) anteriors, dorsal views (N.B. various thoracic chaetigers previously dissected); (C–D) methyl green staining patterns (dorsal and ventral views respectively).

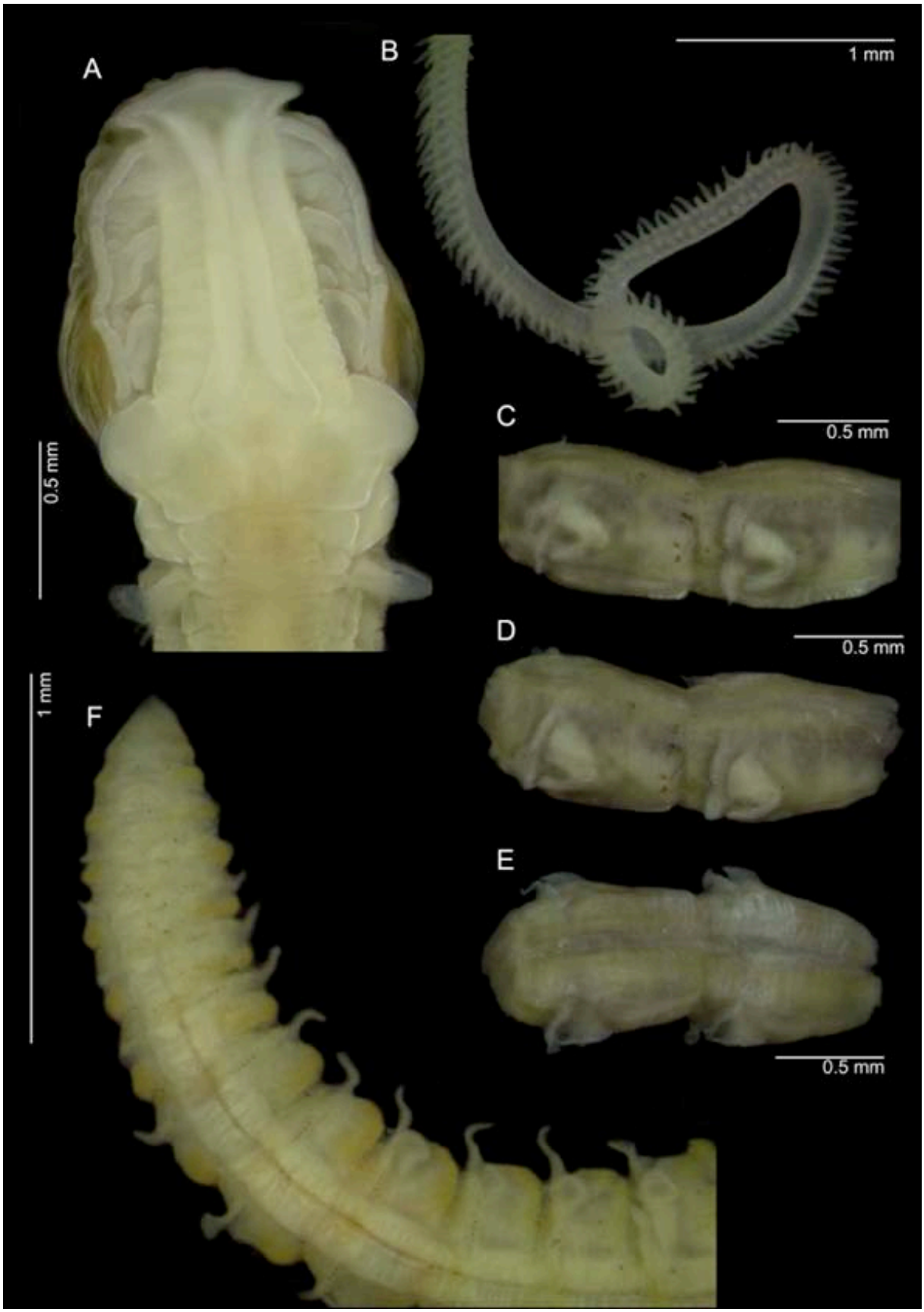
A
B
1 mm
0.5 mm
C
0.5 mm
D
0.5 mm
1 mm
F
E
0.5 mm

Fig. 15. *Magelona pacifica* syntypes: (A) prostomium, dorsal view (41 chaetiger af, proboscis everted, no palps); (B) median to distal tip of loose palp; (C–E) 2 chaetiger fragment showing posteriorly open pouches, medially split and on consecutive segments (lateral and ventral views); (F) posterior fragment (dorsal view).

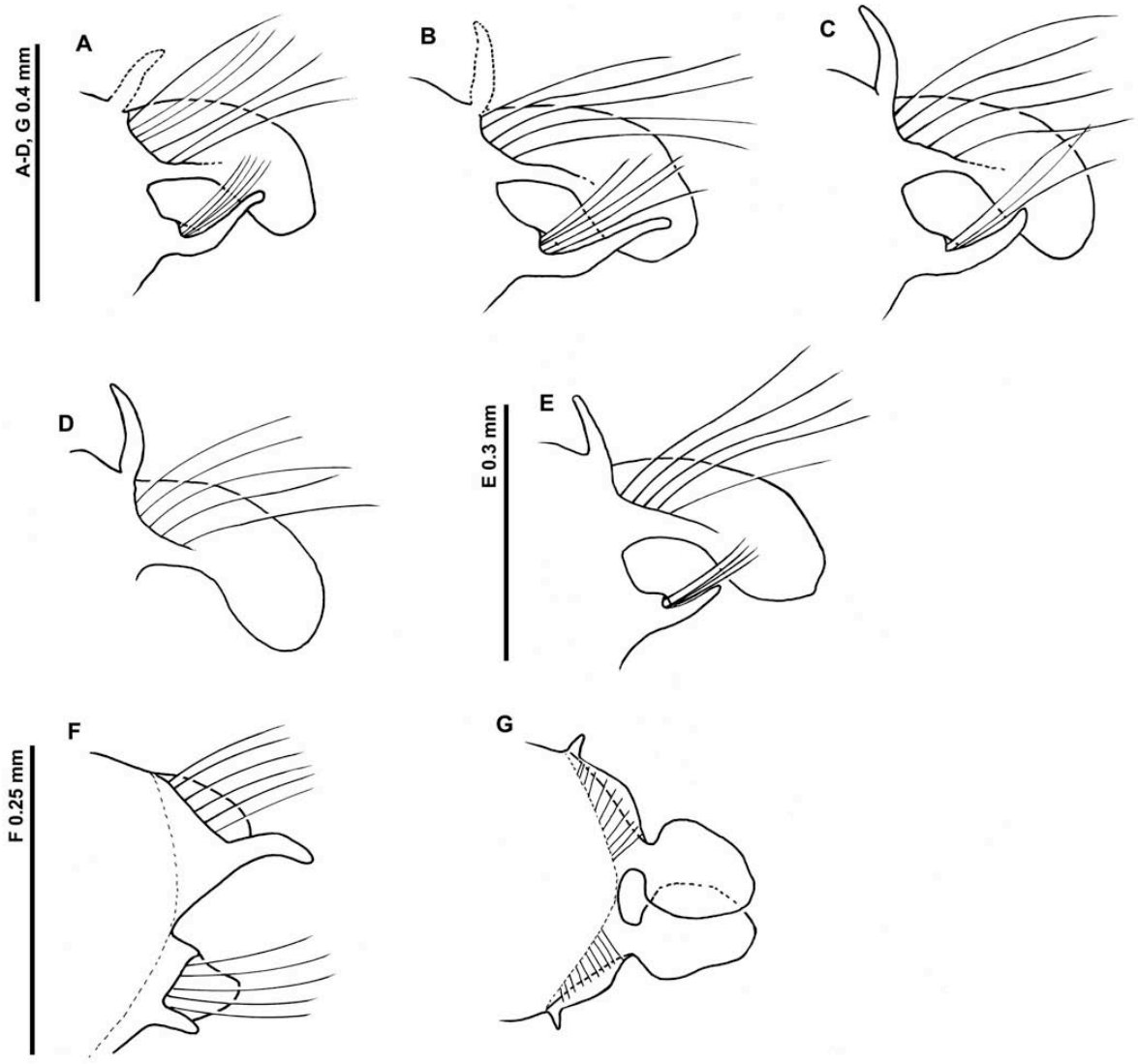

Fig. 16. *Magelona pacifica* syntypes (A–D, G, 41 chaetiger af, proboscis everted, no palps; E, 41 chaetiger af, proboscis partially everted, no palps; F, 60 chaetiger af): (A–C, E–G) parapodia from chaetigers 1–3, 7, 9 and 14 respectively (anterior views) (Note: the dorsal superior processes of chaetigers 1 and 2 were drawn from the parapodia on the opposite side of the body, indicated by dotted lines); (D) notopodium from chaetiger 4 (anterior view) (neuropodium damaged, parapodia absent) (N.B. A complete set of parapodial drawings from one specimen was not possible due to the condition of all syntype material).

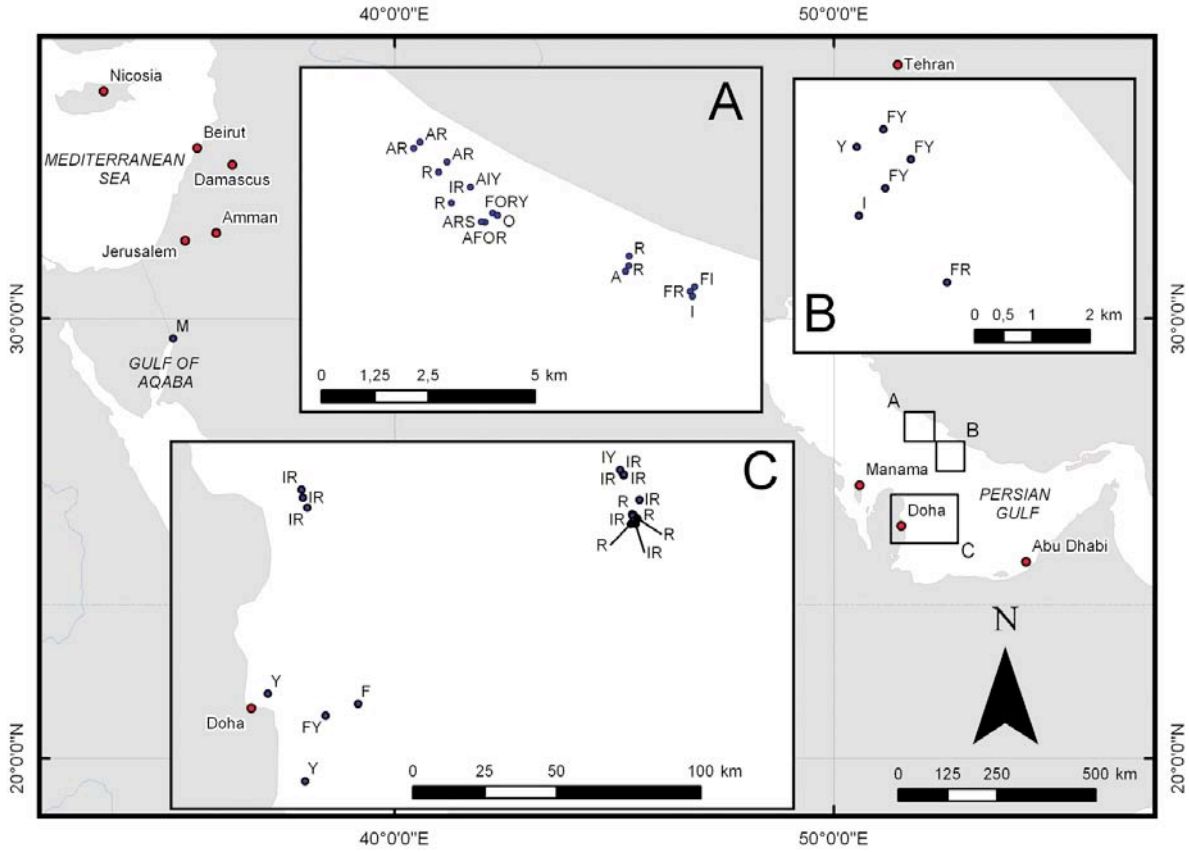

Fig. 17. Location of the different species of *Magelona* within the study area: (M) *M. montera* sp. nov.; (S) *M. sinbadi* sp. nov.; (A) *M.* cf. *agoensis*; (I) *M.* cf. *cincta*; (O) *M. conversa*; (R) *M. crenulifrons*; (F) *M.* cf. *falcifera*; (Y) *M. symmetrica*.