New recorded species of Magelonidae and Maldanidae (Annelida: Polychaeta) from EL-Tina Bay, Mediterranean coast of Egypt.

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ABSTRACT

Sediment samples were collected from the eastern north coast of the Egyptian Mediterranean Sea, from El-Tina Bay, north Sinai, 31° 33′ 30″ N, 32° 45′ 22″ E, using Van Veen grab sampler, during June 2008. Twelve polychaete species were reported; eleven of them are new records for the first time in the Egyptian water. They affiliated to two families; Magelonidae and Maldanidae, including eight genera; *Magelona, Praxillella, Micromaldane, Axiothella, Clymenura, Lumbriclymene*, *Johnstonia and Euclymene*, and one species (*Euclymene lumbircoides*), that was recorded before by Fauvel (1937) in Alexandria.. A full description is provided for each with more details of the arrangement of setae as well as geographic distribution of the recorded species were discussed.

Key words: Annelida, Polychaeta, Maldanidae, Magelonidae, Mediterranean Sea.

INTRODUCTION

Maldanids are commonly known as "bamboo worms", due to the presence of some long segments giving cylindrical, jointed appearance of bamboo (Uebelacker and Johnson, 1984).

Maldanid polychaetes are common inhabitants of continental shelf sediments, and are also found in shallow depths from intertidal to abyssal depths (Rouse and Pleijel, 2001) and often reach densities of several hundred individuals per m^2 (Levin *et al*., 1997; Holte 2001; Wald-busser *et al*., 2004; Dufour *et al*., 2008).

The majority of maldanid species are tubicolous. They have tubes formed of mud, sand and shells (Rouse and Pleijel, 2001). They are known to vary in thickness, in shapes, and in the types and size of particles, that form them (Mangum, 1964). They take different shapes in different species; y-shaped, j-shaped and others (Dufour *et al*., 2008). The tubes may be lined with a membrane or mucus (Zorn *et at*., 2006).

All maldanids are deposit feeders ingesting sand grains, from which protozoans and diatoms, transporting particles from various feeding depths to sediment surface through their guts (Fauchald and Jumars, 1979; Kudenov,1982). Some of them transport freshly deposited surface particles to a feeding cavity at certain depth by " hoeing" surface sediments using their

posterior end (Weinberg, 1988; Levin *et al*., 1997) and the anal cirri serve as sensory organ (Day, 1967).

Clymenella torquata increases sediment pore, water pH and oxygen content as a result of its irrigation activity and it was classified as a geo-chemical key stone species (Wald busser *et al*., 2004).

The principal morphological characters include: (1) the structure of the head (2) the total number of segments, (3) distribution and kinds of notosetae and neurosetae, (4) the shape of the pygidium and the location of the anus, (5) distribution of glandular areas.

Studies and knowledge about the maldanid polychaetes in the Egyptian waters are very scarce, except Fauvel (1937) recorded four maldanid species in Alexandria and reported them without any description; these are *Euclymene lumbircoides, Praxillella praetermissa, Petaloproctus* sp. and *Maldane glebifex.*

Family Magelonidae is characterized by slender body, which is divided into two distinct regions; thoracic region of nine segments with capillary setae in the first eight segments but specialized setae in the ninth. Abdominal setae are mainly hooded hooks (Day, 1967). They are active burrowers in mud and sands, using the flattened prostomium and eversible proboscis to move through the sediment. No distinct tubes are present, but the worms maintain mucus- lined burrows (Fauchald and Jumars, 1979). Members of the family feed also as surface deposit- feeders (Uebelacker and Johnson, 1984).

At the present time, there are approximately 60 recognised magelonid species. Almost all are included in the genus *Magelona* Muller, 1858. Twenty three *Magelona* species have been described, twenty from the Indian Ocean, Indo-West Pacific region and North – South America. In addition three species from Seychelles were recorded by Mortimer and Mackie (2003).

One of the main objectives of the Institute of Oceanography and fishery in Alexandria (Egypt) is to study of benthic communities in order to make a biological mapping of the coastal line of Egypt.

So, the present study objective is to throw light on the maldanid and magelonid species encountered in the different sediment samples at El-Tina Bay, which is situated in the eastern Mediterranean coast of Egypt, north Sinai; 31° 33′ 30″ N, 32° 45′ 22″ E.

Detailed illustrative taxonomical characters and geographical distribution and habitats were also provided and discussed. This study may be considered as a necessary base for any future studies on these polychaete families.

MATERIALS AND METHODS

The benthic samples were collected using Van Veen grab from El- Tina Bay (Egyptian Mediterranean Sea) (Fig. 1), from three stations, depth was ranging from 30 m to 106 m within Atlas cruise as a part of a programme concerning investigating the Eastern part of the Egyptian Mediterranean Coast . The expedition was carried on board "Salsabil" during June 2008. The aims of

the expedition were to collect benthic samples for taxonomic research and biodiversity assessments .

On the board, the samples were preserved in 4% formalin. In the laboratory each sample was sieved and washed through 0.5 geological sieve. Polychaetes were separated from extracted species, then fixed into 10% formalin.

It is necessary to have complete specimens to get. Then event, sub-family, genus and species, or at least, one must have both anterior and posterior ends from the same specimen to get acurate and safely identification.

The study of specimens was done under stereo and compound microscopes. Drawings were done by camera lucida. Micrographs were done with a compound microscope equipped with digital camera.

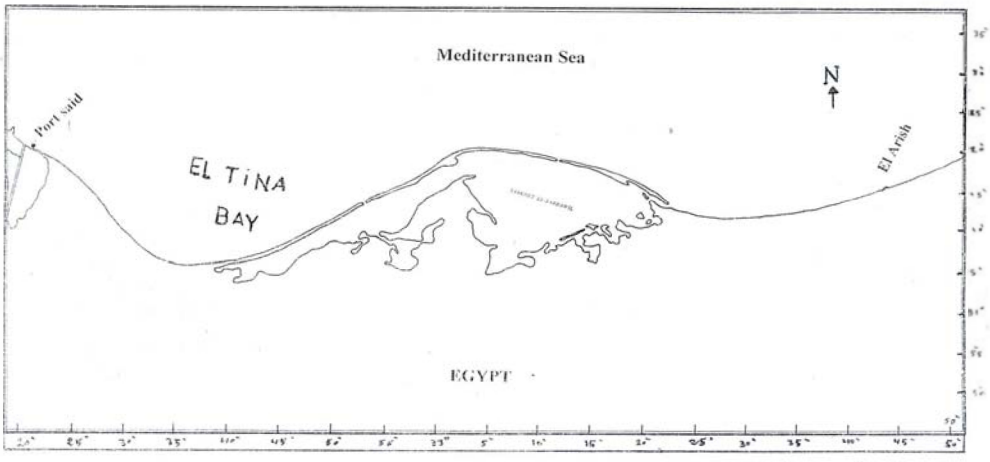

Fig. (1) Map showing location of sampling site

RESULTS

The present study added 11 new records to the Egyptian list of polychaetes species from families Magelonidae and Maldanidae, affiliated to eight genera. Two of them belong to genera *Magelona, Praxillella;* one to genera *Micromaldane, Axiothella, Clymenura, Lumbriclymene* and *Johnstonia.* And three belong to genus *Euclymene*; one of them was recorded by Fauvel (1937) in Alexandria.

Subclass: Palpata Rouse and Fauchald 1997
Order: Canalipalpata Rouse and Fachauld 1997
Clade : Spionida Rouse and Fauchald 1997
Family: Magelonidae Cunningham and Ramage, 1888
Genus: *Magelona* Muller, 1858
1. *Magelona papillicornis* Muller, 1858

Magelona papillicornis Fauvel, 1927: 64, Fig. 22 a-h and Day, 1967: 495, Fig. 19.i. a-d. Material examined: Station 3, 31° 40′ 30″ N, 32° 50′ 22″ E, depth: 106 m, muddy, collected in June 2008.

Body long up to 38 mm, 29 segments. Prostomium longer than wide, bluntly spear- shaped with a median thickening. Anterior end smoothly rounded. Prostomial horns and eyes are absent. Palps arise ventro-laterally from the base of prostomium (pl. 1- 1); they are long with papillae. Body divided into two distinct regions. The notopodia of the anterior part from setiger 1 to 8 are similar with rounded presetal lips and much larger tongue- shaped lamellae. In addition to a small, digitiform lobe above the notosetae. The anterior neuropodia have smaller lamellae than the notopodia. The presetal lamella of the neuropodia is produced inferioly below the neurosetae (Fig. 2 e). The postsetal lips are small, except on setigers 7 and 8. Setiger 9 is short with subequal presetal and postsetal lobes in both rami. Abdominal segments from setiger 10 onward have equal, tongue-shaped postsetal lamellae in both rami curving towards one another (Fig. 2 e).

Setae: Setigers 1-8 have narrow-winged capillaries in both rami (Fig.2 a). Setiger 9 has a few capillaries and 18 setae; each with sub-terminal expansion preceding the fine tip (Fig. 2 b). Abdominal setae are rows of 8 hooks; each with two teeth side by side above the main fang (Fig. 2 c).

Distribution: Atlantic from Scotland and English Channel to North Carolina and Brazil, W. Africa, Mediterranean Sea and Madagascar.

2. *Magelona capensis* Day, 1961

Magelona capensis Day 1967: 497, Fig. 19. 1. l-r.

Material examined: Station 2, 31° 35′ 62″ N, 32° 49′ 82″ E, depth: 54 m, muddy, fine sand, and fragments of empty shells; collected in June 2008.

Body is about 30 mm long , with 37 segments. Prostomium is broader than the long with antero-lateral corners, anterior margin slightly smooth, prostomial horns and eyes absent. Long palps arise ventrolaterally from the base of prostomium (pl.1-2). Notopodia of setiges 1-8 with a small superior lobe united to a much larger inferior lobe. Neuropodia with a tapered inferior lobe (Fig. 2 g). Setiger 9 slightly shorter without a superior lobe to the notopodia, with a small projection below the neuropodium (Fig. 2 h). Abdominal parapodia with subequal notopodial and neuropodial postsetal lamellae, which are oval in outline with constricted bases (Fig. 2 i). Setiger 9 with broad-winged capillaries, similar to those of setiger 1-8. Abdominal hooded hooks three size each of them with two teeth side by side above the main fang (Fig. 2 f).

Distribution: Mediterranean Sea and W. Africa.

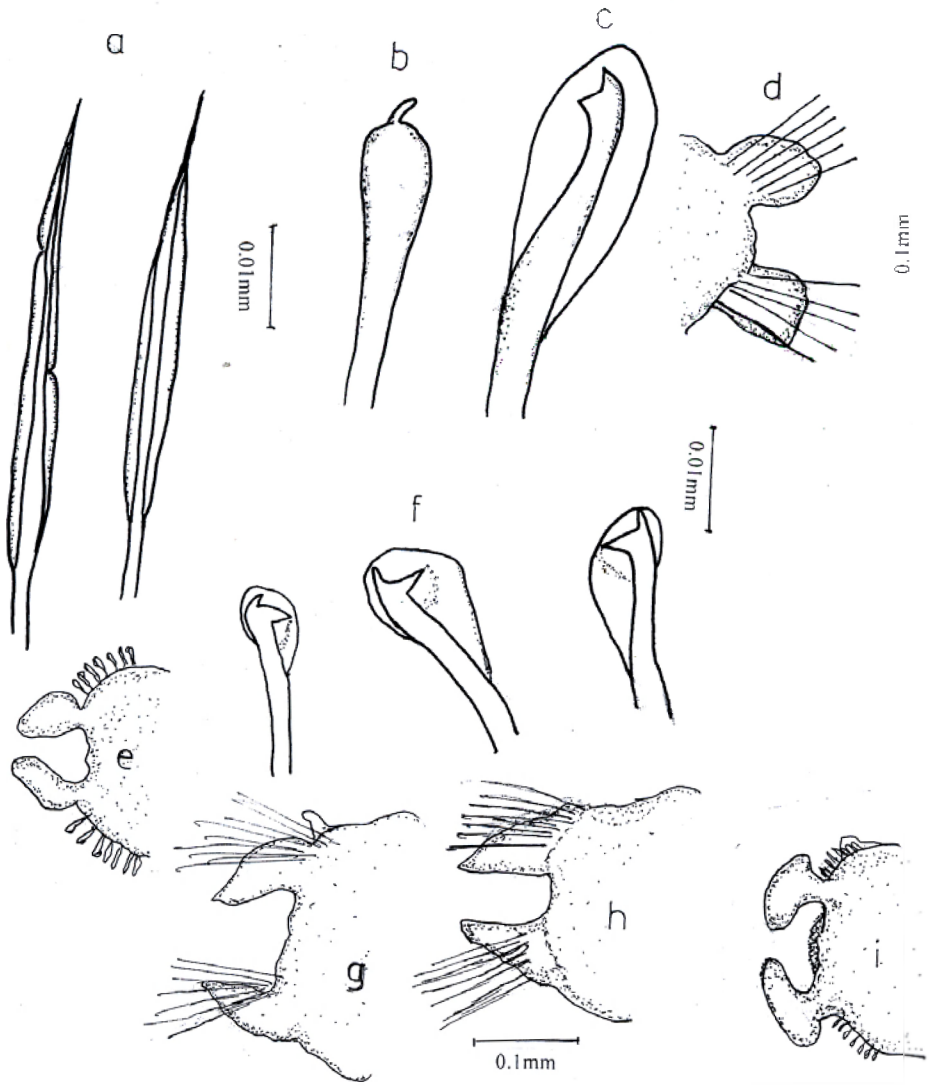

Fig. (2). *Magelona papillicornis* (a) Notosetae from anterior parapodia. (b) Notosetae from ninth parapodia. (c) Hooded hooks setae. (d) Thoracic parapodia. (e) Abdominal parapodia. *Magelona capensis* (f) Hooded hooks setae. (g) Thoracic parapodium. (h) Ninth parapodium. (i) Abdominal parapodium.

CLade: SCOLECIDA ROUSE AND FAUCHALD 1997
Family: Maldanidae Malmgren, 1867
Micromaldane Mesnil, 1897 : Genus
3. Micromaldane ornithochaeta Mesnil, 1897.
Micromaldane ornithochaeta: Fauvel 1927,193, Fig. 67, i-r ; Ben-Eliahu 1976,131 and Gherardi *et al*., 2002, 136, Fig.1 a-d.
Material examined: Station 3, 31° 40′ 30″ N, 32° 50′ 22″ E, depth: 106 m, muddy, collected in June 2008.
Description: Holotype has 21 segments measures 9mm in length, both cephalic and anal plates are present. The holotype has lateral flanges extending to rounded palpode, bent down wards with a pair of eyes. Nuchal slits are long and curved (Fig.3 a & pls. 1-3). Buccal segment long , the second one short and then segments increase in length. Posteriorly later 4 segments short, pygidium with a shallow funnel whose margin is crenulate, no ventral valve (Fig. 3 b).
Setae: Notosetae include hastate bladed capillaries and fine capillary forms on all setigers (Fig.3 c). Neurosetae are similar in all parapodia, all avicular with a vertical crest of 6 teeth above the main fang and a swelling at the inflection of the S-shaped shaft (Fig. 3 d). The arrangement of neurosetae is as follows: Setigers from 1-3 : with 2 neurosetae plus two notosetae. Setiger number 4: with 5 neurosetae plus notosetae. Setiger no. 5: with 4 neurosetae plus notosetae, subsequent they become 3 then 2 on the preanal setiger.
Remarks: The present specimen similar to that of Fauvel (1927), Day (1967) and Gherardi *et al*. (2002) specimens, but later author recorded 10-12 anal cirri and considered this species as a larval satge of *Nicomache trispinata.* This description not agrees with that was given by Ben- Eliahu (1976) where her specimens were without uncini at the first 3 setigers.

Habitat: The species was found associated with the sponge *Geodia cydonium* (Gherardi *et al*. 2002), also was found with Rizoms of *Posidonia oceanica* (San Martin *et al.*, 1990)
Distribution: Mediterranean Sea, Atlantic Ocean.
Genus *Axiothella* Verrill, 1900
4. *Axiothella constricta* Clapare`de 1868
Axiothella constricta: Fauvel 1927: 183, Fig. 63, i-m; Simboura & Nicolaidou 2001, p. 36; Castelli *et al.*, 1995, p. 10.

Material examined: Station 2, 31° 35′ 62″ N, 32° 49′ 82″ E, depth: 54 m, muddy, fine sand, and fragments, of empty shells collected in June 2008.

Description: Holotype has 19 segments measures 11mm in length. The specimen is complete both cephalic and anal plates are present. The holotype with a flattened cephalic plate with raised rim. Prostomium conical frontly, clusters of ocelli present on the anterioventral margin of palpode. Cephalic rim high, smooth, nuchal slits well- developed, slightly curved and parallel. First setiger with 2 red bands anteriorlly and posteriorly. First three chaetigers with collars but chaetiger no. 4 has a smooth collar on its anterior border. There are 3

preanal setigers, anus sunk in a funnel terminate with 28 equal cirri and one long, no ventral valve (Fig. 3 g).

Setae: Notopodia bear narrow winged capillaries chaetae (Fig. 3 e).

Neuropodia present from setiger one bear rostrate uncini throughout the body; they are hooks with 4 teeth above the rostrum, which are stronger and of greater size, subrostral flange with a capilliform tuft, a distinct neck and swelling is present after neck (Fig. 3 f). Except setae of the first setiger, they are limbat cabillary beside one acicular hook with 3 dents above the main fang without capillary tuft.

Remarks: This description agrees with that given by Fauvel (1927), but he did not mention the number of anal cirri.

Distribution: Mediterranean Sea (Simboura & Nicolaidou, 2001).

Genus *Clymenura* Verril,1900

5.*Clymenura clypeata* (Saint Joseph,1894)

Praxilla simplex: Claparide, 1868, p.452, pl.xxvii, Fig.7

Leiochone clypeata: Fauvel, 1927.p.188, fig.65, h-q.

Clymenura clypeata: Simboura & Nicolaidou, 2001. p.40.

Material examined: Station 1: 31° 33′ 82″ N, 32° 45′ 97″ E, depth: 30, muddy, fine sand bottom, collected in June 2008.

Body long, thin cylindrical, fragile, 19mm. long with 18 setigers.

Prostomium conical in front with numerous small ocelli and continuous with a faint cephalic ridge behind and straight long nuchal grooves (pls. 1- 4).

Three achaetous preanals setigers. Anus terminal cone shape with an enlarged ventral value without any cirri (Fig. 3 n). From setiger one to eleven one ring of gland present at each one, but big glandular ring are present at setiger number 8.

Setae: Notosetae include winged, fine capillary and feathered forms, from setiger number 8, capillary setae of spinous tips present beside normal winged capillary and feathered one (Fig. 3 j, k, l).

Neurosetae: Similar to the hooks of succeeding segments though the denticles (1-3) on the rostrum are poorly devoleped (Fig. 3 h,i). Later hooks with a vertical series of (5- 6) teeth above the main fang and tendonus below (Fig. 3m).

The arrangement of setae:

Setiger no.1: with both noto and neurosetae, which are rostrate uncini with 0-1 teeth above rostrum. Setiger no.2: the same, like number one. Setiger no.3: with 2 acicular setae with 3 teeth. Setiger no.6: with normal hooks have 5 dents above the rostrum then the same setae are present untile the preanal setigers.

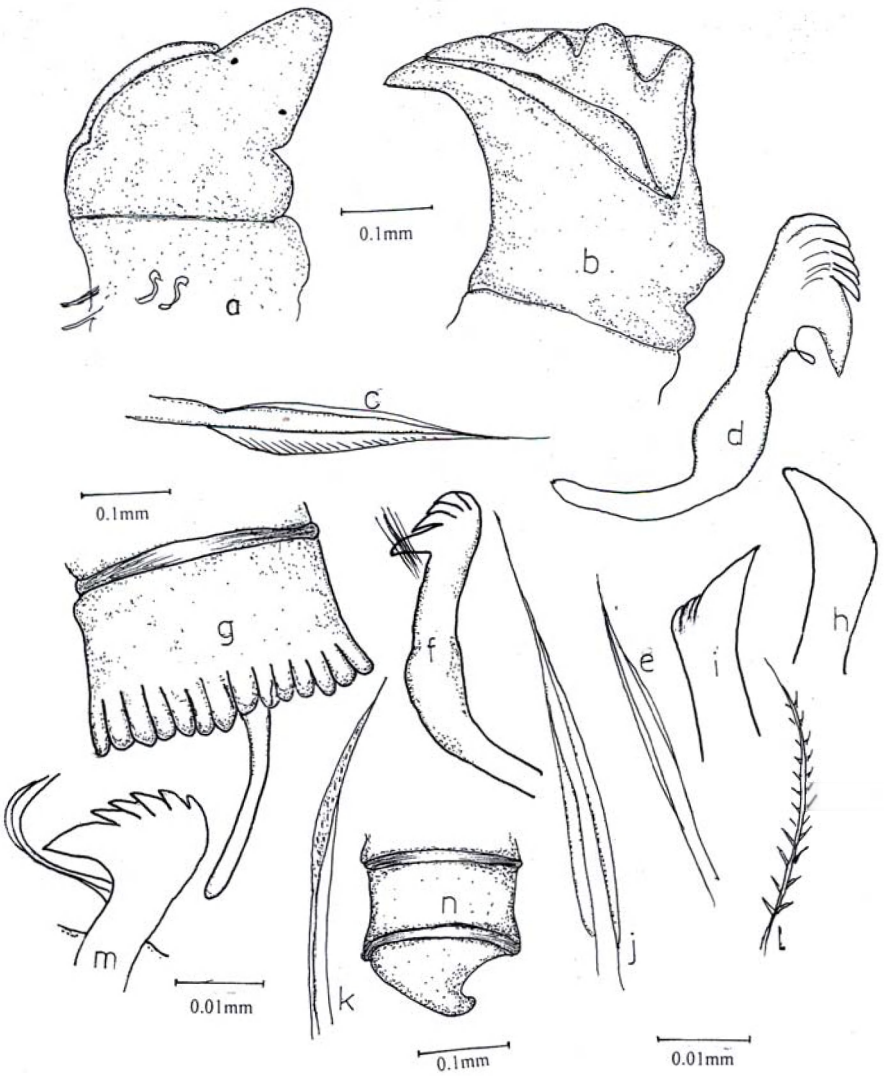

Fig. (3). *Micromaldane ornithochaeta* (a) Anterior part of the body (b) Poterior end. (c) Notoseta. (d) Neuroseta. *Axiothella constricta* (e) Capillary seta. (f) Normal hook seta. (g) Posterior end . *Clymenura clypeata* (h) First neuroseta. (i) Third neuroseta. (j) Capillary seta. (k) Capillary seta from setiger 8. (l) Feather capillary seta. (m) Hook seta. (n) Posterior end.

Remarks: This description agrees with that given by Fauvel (1927), but Fauvel recorded 7-8 teeth of normal hooks at the beginning of setiger no. 4, while in present specimens, there are 5-6 teeth above the rostrum.

Habitat: This species was collected from infralittoral zone in sand, muddy sand (Giangrande & Gambi,1985) in Italy.

Distribution: Atlantic Ocean, Mediterranean Sea and Adriatic Sea.

Genus *Praxillella* Verrill, 1881

Praxillella affinis (Sars, 1872) 6.

Clymene (Praxillella) affinis: Fauvel, 1927 180, Fig. 62 f-i.

Praxillella cf affinis: Day, 1963a: 430, Fig. 10 k-I; 1967: 644, Fig. 30.7. m-p; *Praxillella affinis:* Simboura & Nicolaidou, 2001 p.77 and Castelli *et al.*(1995), p.1

Holotype up to 18mm in length with 21 setigers prostomium bluntly triangular without eye spots. Nuchal grooves about three quarter of cephalic plate.

Cephalic rim with a pair of lateral notches and a single posterior notch. Rim high anteriorly in front of the lateral notche (Fig. 4a & pls. 1-5, 6). Three achaetous pre-anals setigers.

Pygidium bears a circle of 12-18 sub-equal cirri and ends in a protuberant anus with a marked ventral valve (Fig. 4b &pl. 1-7). Setigers 1-8 longer than the broad. Setiger 2 - 8 markedly with glandular ring, then glandular line present from number 8 onwards.

Setae: Notosetae include a few winged capillaries and a few fine capillaries (Fig. 4 c). Neuroseta: Setiger 1-3 with hooks per neuropodium each of them with three teeth above the rostrum, and a faint tendon below (Fig. 4d). Later neurosetae are well developed hooks. From setiger number four well developed 5 hooks are present with a vertical series of five teeth above the main fang and obvious tendons below (Fig. 4e &pl. 1-8).

The arrangement of setae as follows, hooks from the first setiger on words are 2, 2, 2, 5, 6, 7, 4, 3. The first three; each with 2-3 teeth, while the rest with five teeth.

Remarks: Day (1967) recorded the glandular rings from setiger 4 to 8 and pygidium
bears a circle of 12 sub-equal cirri, while in the present specimens they are 12-18.

Fauvel reported 2-4 dents of acicular hooks on the first three setigers, and about 12-27 cirri in the pygidial circle.

Distribution: North Atlantic Ocean, Japan, Greece Italy, South Africa and Red Sea.

7. *Praxillella lophoseta* (Orlandi, 1898)

Clymene (Praxillella) lophpseta: Fauvel 1927,p. 181, Fig. 62, q-u.

Praxillella lophoseta Castelli *et al.*, 1995: p.10; Simboura and Nicolaidou 2001, p. 77.

Material examined: Station 3, 31° 40′ 30″ N, 32° 50′ 22″ E, depth: 106 m, muddy, collected in June 2008.

Holotype has 19 segments measures12mm in length. The holotype and paratype has lateral flanges extending to obtus palpode. Nuchal slits faint and straight. Cephalic rim with 4 lobes in the posterior side of cephalic plate. First chaetigers short, with collars, then become thin and not observed (pls. 2-9). Three achaetos pre-anal segments.

Setae: Neurosetae on setiger 1 to 3 are thick acicular hooks with 2 dents above the rostrum, all following setigers (Fig. 4f) from setiger 4 to posterior region with a normal hooks have 4 teeth above the rostrum, which are stronger and of greater size, subrostral flange with a capilliform tuft, a distinct neck and manubrial swelling is present (Fig. 4g).

All following notopodia with simple capillaries. Anal funnel cone shape in the holotype terminates with about 22 cirri extending up around to the posterior valve and one long cirrus (Fig. 4h).

Distribution: Mediterranean Sea, Atlantic Ocean.

Genus *Euclymene* Verrill, 1900

8.*Euclymene santanderensis* (Rioja, 1917)

Clymene (Euclymene) santanderensis: Fauvel 1927: 177, Fig.61, a-h. *Euclymene santanderensis*: Castelli *et al.*, 1995, p.10.

Station 1: 31° 33′ 82″ N, 32° 45′ 97″ E, depth: 30 m, muddy, fine sand bottom, collected in June 2008.

Body up to 42 mm long, broad with 28 setigers. Prostomium triangular. No ocelli, cephalic plate oval shape with one faint lateral notch and one posterior, with thick crenulate mass posteriorly, nuchal grooves straight and three- quarter the length of the cephalic plate (pls. 2-10). Anterior four setigers short and succeeding ones long, but the last few decrease again and preanal setiger much shorter and poorly defined.

Body with 3 preanal achaetous setigers followed by the pygidial ring and funnel with 20 long beside 10 short cirri (Fig. 4l). Glandular rings on setigers 2-7, and a narrow glandular ventral streak from setiger 7 onwards.

Setae: Notosetae include 10 wide capillaries, and fine capillary setae beside 3 feathered tips capillary (Fig. 4i).

Neurosetae: A single neuropodial acicular seta with a smooth bent tip in each of the first three setigers (Fig. 4j), later neurosetae are well developed hooks about 20 hooks in one rows with a vertical series of 5 dents above the main fang and faint tendons below (Fig. 4k).

Habitat: Mastrototaro *et al.* (2008) recorded this species in muddy bottoms rich in organic matter in the (eastern-central Mediterranean Sea)in the Taranto Sea (Mar Grande and Mar Piccolo)

Distribution: Atlantic Ocean, Mediterranean Sea.

9.*Euclymene oerstedii* (Clapare`de, 1863)

Euclymene cf. oerstedii : Day, 1963: 429, Fig. 10g, 1967: 66, Fig. 30. 5. a-d Euclymene oerstedii *:* Fauvel 1927, p. 173, Fig. 60, a-i.; Castelli *et al.*, 1995, p.10 and Simboura & Nicolaidou, 2001, p.43.

Material examined: Station 1: 31º 33′ 82″ N, 32º 45′ 97″ E, depth: 30 m, muddy, fine sand bottom, collected in June 2008.

Body slender, 19 setigers with 15 mm long, bluntly triangular without ocelli . Nuchal grooves long straight, equal to four-fifth the length of the cephalic plate, cephalic margin high, smooth laterally but with a single median posterior notch., cephalic slit present, cephalic keel present (Fig. 5 a & pls. 2-12)).

Glandular bands strongly marked on setigers 2-6. Faint mid-ventral streak are present from setiger 1 onwards. First setiger long, from 2-5 are short then increase in length, posterior end with two achaetous pre-anal setigers, then pygidial ring and funnel with 20 cirri long and short without ventral valve (Fig. 5 e).

Setae: Notosetae include 12-14 winged capillaries and fine capillary beside feathred forms (Fig. 5 b). Setigers 1-3 with 1-2 acicular spines with abruptly bent tips bearing three teeth beside the main rostrum (Fig. 5 c & pls. 2-11). Later hooks with 4-6 teeth above the rostrum and strong tendons below (Fig. 5 d).

The arrangement of setae: The first three setiger with: 1, 2, 2, acicular setae have 3 teeth, setiger 4 with 4 hooks have 4 teeth, no. 5 with 4 hooks have 5 teeth, while no. 6 with 6 hooks have 6 teeth. Notosetae from setiger 1 to 4 are winged capillary plus fine, from the fifth one, feathers setae present beside winged and fine capillary.

Remarks: this description agrees with that given by Day (1967), but Day recorded 18- 24 long and short anal cirri and later hooks with six to seven teeth, while here there are 20 anal cirri and normal hooks with 4-6 teeth above the main rostrum, also Fauvel (1927) recorded glandular bands extending to segment number 14.

Habitat: typically found in the infralittoral zone at the water's edge at a mean distance from sea level of 18 meters. Desroy and Retie`re (2001) recorded this species in muddy fine sand, also it was recorded with algae by Antoniadou and Chintiroglou (2006), recorded in shallow water by Simboura and Zenetos (2002).

Distribution: Mediterranean Sea, Atlantic Ocean.

10. *Euclymene lumbricoides* (Quatrefages, 1865)

Clymene (Euclymene) lumbricoides: Fauvel, 1927: 172,Fig. 59 a-i.

Euclemene lombricoides: Day 1967, 636, Figs . 30.50 e-k.

Euclymene lumbricoides: Simboura & Nicolaidou, 2001 p.43.

Material examined: Station 1: 31º 33′ 82″ N, 32º 45′ 97″ E, depth: 30 m, muddy fine sand bottom, collected in June 2008.

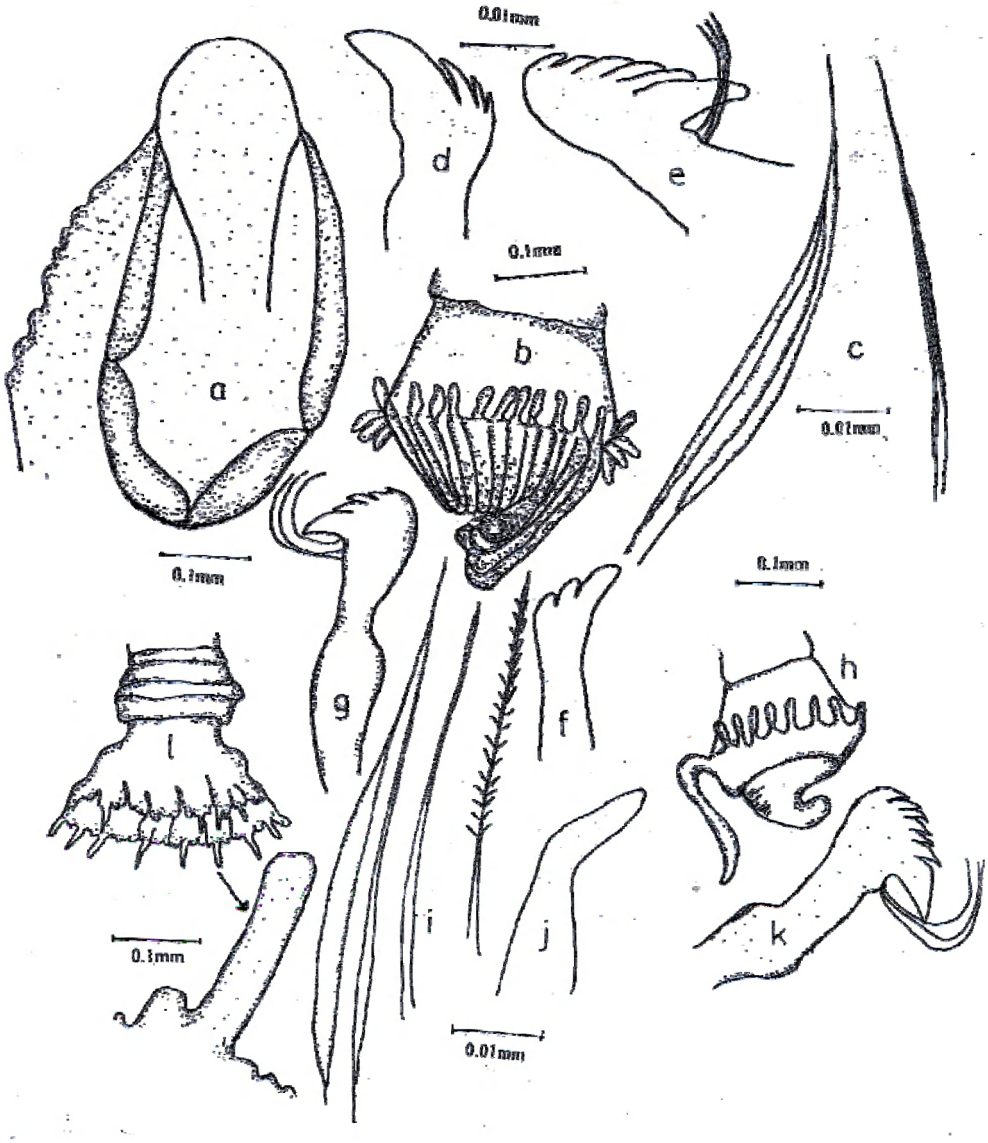

Fig. (4). *Praxillella affinis* (a) Anterior part showing cephalic plate. (b) Posterior end. (c) Capillary setae. (d) Hooks of the first three setigers. (e) Normal hooks. *Praxillella lophoseta* (f) Neuroseta of the first three segments. (g) Normal hook. (h) Posterior end. *Euclymene suntanderensis* (i) Three forms of capillary setae. (j) Acicular hook of the first three setigers. (k) Normal hook. (l) Posterior end.

Body long 58mm. Prostomium broadly rounded in front with few indistinct ocelli. Nuchal groove straight and half the length of the cephalic plate. Cephalic rim with the posterior part divided into about 8 lobes (Fig. 5 f). Body with 19 setigers.

Anterior segments little longer than the broad. Setigers 2-8 with anterior glandular rings, setigers from 8 to 14 with a dorsal glandular streak. Posterior ones two to four times as long as broad, three pre-anal decreasing in length followed by pygidial ring and funnel. Anal funnel sunken without a ventral valve, with 30 unequal cirri long and short (Fig. 5 j).

Setae: Notosetae include winged capillaries and feathered forms (Fig. 5 g).

Setigers 1-3 each with one smooth acicular neurosetae (Fig. 5 h). Later neurosetae are numerous hooks about 20 hooks in one row, each with a vertical series of five to six teeth above the main fang and well marked tendons below (Fig. 5 i).

Remarks:Day (1967) recorded 10 lobes in the posterior margin of the cephalic rim and glandular ring are present from 8 -12 setigers, while in the present study they are from 8 to 14 setigers.

Habitat: This species is listed as being the most typical for the infratidal and shallow subtidal benthic fauna of Red Sea (Fishelson, 1971), also collected from shallow sand by Simboura and Zenetos (2002).

Distribution: Atlantic Ocean, Mediterranean Sea, South West Africa, Red Sea.

Genus *Johnstonia* Quatrefages, 1865

11. *Johnstonia clymenoides* Quatrefages 1865

Johnstonia clymenoides: Fauvel 1927, p. 184, Fig 64, a-h. and Day 1967, p 631, Fig. 30.4-f-h.

Material examined: Station 1: 31° 33′ 82″ N, 32° 45′ 97″ E, depth: 30 m, muddy, fine sand bottom, collected in June 2008.

Fragment not complete specimen. Anal part not present. Prostomium rounded frontly. Cephalic plate broad with a slightly scalloped rim, ocelli present. Nuchal grooves straight. Glandular rings on setigers 1-7 (pls. 2-13).

Setae: Notosetae include broadly winged and feathered capillaries from setiger 1-10, 6 winged capillaries are present, from setiger 11, 3 winged capillaries plus 3 feathered forms setae.

Neurosetae of setiger 2 has one tooth above the apex, while number 1 and 3 have hooks with three denticles above the apex (Fig. 5 k), the subsequent setigers have 3 hooks each one with 6-7 denticles in vertical series (Fig. 5 l).

Remarks: Day (1967) recorded neurosetae of setiger 1-3 with one to two vestigial denticles above the apex. In the present study, setiger 1,3, 4 with 2 teeth above the main apex, while setiger number 2 with one tooth . Fauvel (1927) recorded only one tooth above the main fang from setiger 1 to 3 and 4-5 teeth above the rostrum in later hooks.

Distribution: Atlantic, Mediterranean Sea, West Africa.

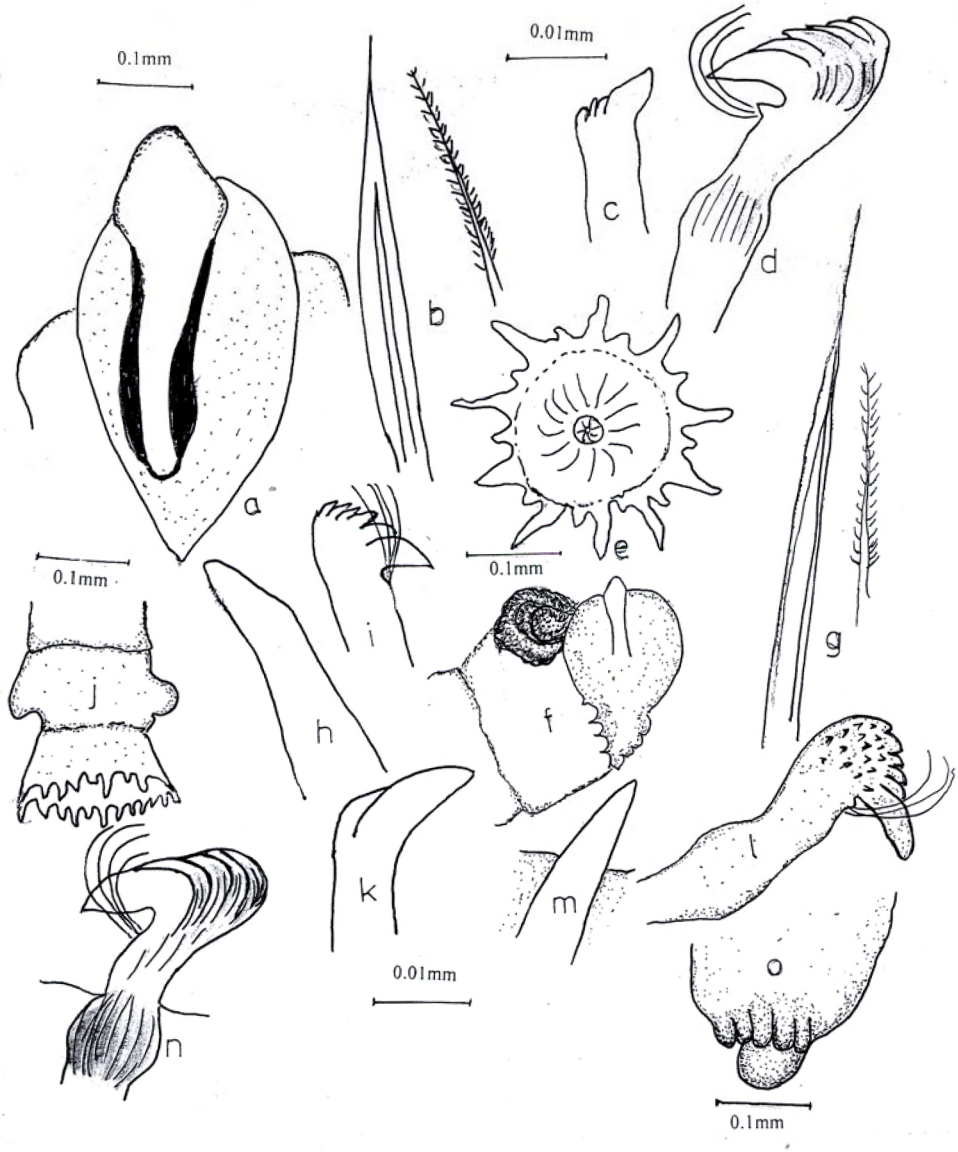

Fig. (5). *Euclymene oerstedii* (a) Anterior part showing cephalic plate. (b) Two forms of capillary setae. (c) Acicular seta. (d) Normal hook. (e) Pygidium with cirri in posterior view. *Euclymene lumbricoides* (f) Anterior part. (g) Winged capillary and feathered setae (h) Acicular neuroseta of setiger 2. (i) Normal hook. (j) Posterior end. *Johnstonia clymenoides* (k) Acicular seta of anterior parapodia. (l) Normal hook. *Lumbriclymene minor* (m) Acicular spin of the first parapodium. (n) Normal hook. (o) Pygidium.

Genus *Lumbriclymene* Sars, 1872

12. *Lumbriclymene minor* Ardwidsson, 1906

Lumbriclymene minor Fauvel, 1927: 169, Fig. 68 k-q; Day, 1963: 366; 1967: 626, (Fig 30.2. n-p).

Material examined: Station 1: 31° 33′ 82″ N, 32° 45′ 97″ E, depth: 30 m, muddy, fine sand bottom, collected in June 2008.

Body 17 mm long, with about 19 setigers, head rounded anteriorly without a well defined prostomium and dorsal crest are present. Nuchal grooves poorly defined, curved almost semicircular. No ocelli. The setigersous segments not differ greatly in length, intersegmental constrictions poorly marked and glandular bands are present on the first six segments , three poorly marked achaetous pre-anal and a blunt, ventrally flattened pygidium with a dorsal anus. No anal cirri (Fig. 5 o).

Setae: Notosetae are all winged capillaries, with smooth margins but some striated Distally (Fig. 5 m). Neurosetae of setiger 1-4 are represented by a single, stout, smoothly pointed acicular seta. Subsequent neurosetae are rows of five hooks, each with five teeth in a vertical series above the main fang and a few lateral denticles, the neck is short and there is a well defined swelling preceding the smoothly tapered shaft (Fig. 5 n). Before the pre-anal setiger the number of hooks decreased to four hooks on later three setigers.

Distribution: Sweden, Greenland.

DISCUSSION

Magelonids and maldanids are homogeneous polychaete group with few structures

useful in separating species and genera. Complete specimen also gives an accurate identification (Day, 1967; Wolf, 1984; Rouse, 1990).

Magelona capensis appears to be closely allied with *M. pettiboneae* (Uebelacker and Jones, 1984), it differs from the latter in having abdominal parapodia with subequal notopodial and neuropodial postsetal lamellae, which are oval, while in *M. pettiboneae*, abdominal parapodia with fairly small, foliaceous lateral lamellae, then decreasing in size and becoming digitiform.

The thoracic notosetae are generally not diagnostic, with the exception of the setae of setiger 9 in magelonids species, which may be modified (specialized) in some species, such as in *M. papillicornis*. Moreover, the morphology of abdominal hooded hooks is very important at the species level, such as in *M. capensis*, where it has hooks of three distinctly different sizes similar *M. pettiboneae* (Uebelacker and Jones, 1984).

In Maldanidae, some of the recorded species characterized by cone shape pygidium such as *Lumbriclymen minor* and *Clymenura clypeata* , while it is flattened with a dorsal anus in the first one. Others with anal cirri and cone valve, such as in *Paraxillella lophoseta* and *P. affinis* . Another species with a

funnal shape pygidium which have equal or long and short anal cirri (Fauvel, 1927; Day, 1967, Wolf,1984). So, the present maldanid species can be divided into two groups; cone shape pygidium and funnal shape pygidium, while they share similar characters to other members of the same genera, therefore other factors must be used in identification of maldanids.

Notosetae are various forms of capillaries wind capillary, fine capillary and featered forms , which are common in posterior segments (Bartolomaeus *et al*., 2005), who discussed the polychaete phylogeny based on morphological data and mentioned that Scolecida are weakly supported by two characters; the setae in both rami of parapodia and the pygidial cirri; present or absent. Moreover, Day (1967) mentioned that notosetae are seldom of systematic value. In contrast Fauchal and Rouse (1997) suggested that the chaetae play a remarkable items of morphologies, which has made them an often used feature for identification and phylogenetic analysis.

In juveniles, the neurosetae first appear as S-shaped hooks with a crest of denticles and swelling in shaft, therefore Gherardi *et al.* (2002) considered *Micromaldane ornithochaeta* as a larval stage of *Nicomache trispinata,* but differs in the number of anal cirri.

Also, hooked setae act as anchors for tube –dwelling worms helping them resist external forces that could draw the worm out of their tubes (Woodin and Merz, 1987), therefore, neurosetae gained immense significance for species determination, making them the best studied structures in polychaetes. All hooks in malanids with strong rostrum beside number of teeth above it and most of them with capillary tuft except *Micromaldane.* The arrangement of neurosetae also provides useful information for systematic taxonomy, hooks in maldanids are groups form one or two transverse rows usually have a certain turnover (Hausen, 2005).

The shape of cephalic plate is considered a guide and each species shows a specific pattern of cephalic characters and chaetae. All these characteristic features are well detected in the present study for the Egyptian specimens.

Although all species in the present study were previously reported from the Mediterranean and Atlantic Ocean, which means that they have wide distribution, they here are recorded for the first time in the Egyptian waters.

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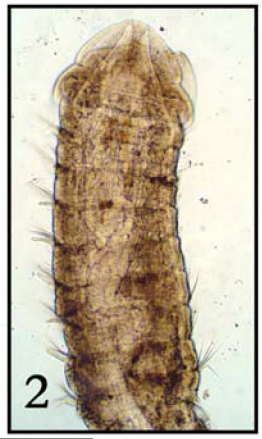
Plate 1

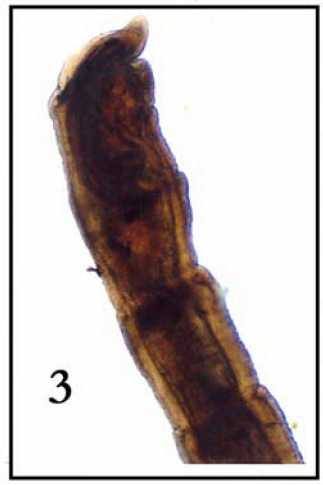
1- Anterior part of *Magelona papillicornis*
2- Anterior part of *Magelona capensis*
3- Anterior part of *Micromaldane ornithochaeta.*
4- Anterior part of *Clymenura clypeata*
5- Anterior part of *Praxillella affinis*
6- Dorsal view of *Praxillella affinis*
7-Pygidium of *Praxillella affinis*
8- Hooks of *Praxillella affinis*

Plate 2

9- Anterior and posterior part of *Praxillella lophoseta*
10- Anterior part of *Euclymene santanderensis*
11- Acicular setae of *Euclymene oerstedii*
12- Anterior part of *Euclymene oerstedii*
13- Anterior part of *Johnstonia clymenoides*

plate1





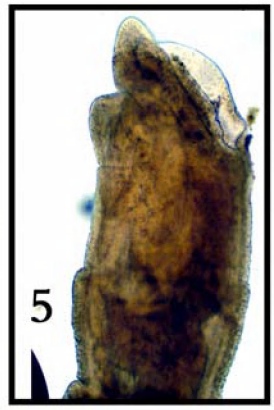


plate2