

FAMILY PARAONIDAE (POLYCHAETA), A NEW RECORD TO THE EGYPTIAN MEDITERRANEAN WATERS

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ABSTRACT

The Paraonidae are a polychaete family which has not been reported from the Egyptian Mediterranean waters until recently. Ten species are recorded for the first time in the Egyptian waters affiliated to three genera. In order to achieve this study sediment samples were collected from different sites along the Egyptian Mediterranean Sea extending from El-Sallum to Port-Said. Detailed illustrative taxonomical characters and distribution are given for each species and discussed. Geographic distribution of the new findings indicated that all species recorded were previously encountered in both Mediterranean Sea and Atlantic Ocean. Two species are cosmopolitan namely *Levinsenia gracilis* and *Cirrophorus branchiatus*, whereas *Aricidea claudiae* seems to be Mediterranean species.

1. INTRODUCTION

Until now no species belonging to the paranoids has been reported from the Egyptian waters. Detailed accounts of the morphology, taxonomic history and biology of the paraonids are given in Hartman (1957), Day (1967) Gaston (1984) and Blake (1996). Family Paraonidae is known to has more than 50 species (Hartman, 1965 and Blake, 1996). Members of the Paraonidae are small, elongate, thread-like burrowing worms that rarely exceed 20 mm in length. Their bodies are somewhat flattened anteriorly, narrowing to numerous posterior segments. Generally, the paraonids are easily recognized. The main diagnostic characters for the distinction of the paraonid species are 1) the presence or absence of a median prostomial antenna 2) the disposition and shape of the modified spines (acicular, hooks or forkate). Members of this family burrow just below the surface of sandy-mud sediments. They are non selective deposit feeders and appear to live in vertical burrows (Gaston, 1984 and Blake, 1996).

Hartman (1957) referred to some resemblance of the Paraonidae to the Orbiniidae and Apistobranchidae in the presence of dorsally directed, laterally fimbriated branchiae, however, the branchiae in paraonids are not present before the fourth setiger or slightly further back and are restricted to a certain number of median setigers. Resemblance to the Spionidae is as well suggested by the shape of the prostomium and neuropodial hooded hooks. Finally, there is a resemblance between some of the paraonid *Cirrophorus* species and family Cirratulidae by the presence of heavy acicular spines in some parapodia.

The present study is the first extensive work on the Egyptian paraonids. Its purpose is to throw light on the newly recorded paraonid species encountered in the different sediment samples collected from the studied area. For each species, selected synonyms with references to the corresponding literature and figures are included. Additionally, the locality name and number of specimens (per site), depth and substrate type are given. Detailed illustrative

taxonomical characters and geographic distribution are also provided and discussed. This study could be considered as necessary base for any future studies on this polychaete family.

2. MATERIALS AND METHODS

Van Veen grab was used to collect sediment samples from the area extending from El-Sallum (at the far west of Egypt) to Port-Said (at the west). Furthermore, additional sediment samples collected during 1990; have been examined. Samples collected from the western sites are a part of a

programme concerning investigating the western north part of the Egyptian Mediterranean coast. The expedition was carried on board the R/V "Salsabil" during February and September 2006. On board the samples were sieved and preserved in 4% formalin. In the laboratory each sample was sieved and washed through 0.5 mm sieve. The extracted paraonid species were fixed in 10% formalin and examined under stereo and compound microscopes. Drawings were made by means of Camera Lucida. Micrographs were made with compound microscope equipped with digital Camera.

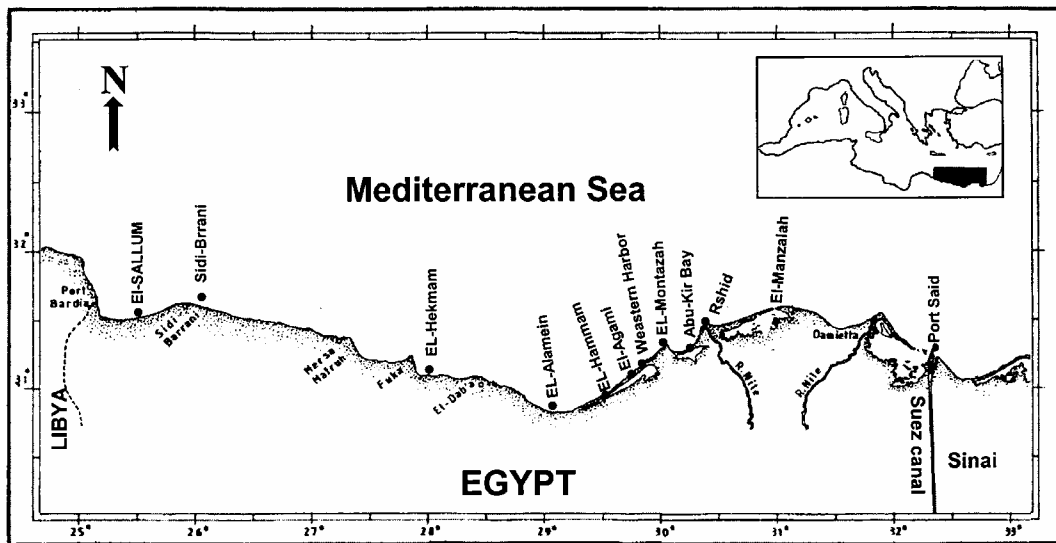


Fig. (1): Map showing locations of sampling sites.

3. RESULTS

Note: The identification of the paronoid species depends mainly on the presence or absence of the median antenna and the shape of the modified setae that always appear in the branchial or postbranchial regions. Accordingly, the absence of the posterior region of some inspected specimens isn't precluding the identification of the species.

3.1. *Levinsenia gracilis* (Tauber, 1879)

Levinsenia gracilis Hartley, 1981:146; Gaston, 1984: 2-51-2-53 Fig. 2-52 a-c; Cantone, 1994: 39; Blake, 1996: 33-34 Fig. 2.1. a-d; Castelli *et al.*, 1995: 55; Simboursa and Nicolaidou, 2001:55; Wehe and Fiege, 2002:99.

Paraonis gracilis Hartman, 1957:330-331 pl. 44, Fig. 4-5.

Paraonis gracilis gracilis Day, 1967:566 Fig. 24.4 a-b.

Material examined: El-Sallum, 85 m, silty sand (2 specimens); El- Hekma, 65 m, silty sand (1); El-Hammam, 31, 65 m, medium sand.

Largest specimen measuring 7.5 mm long, 0.5 mm wide for 70 segments. Body slender thread-like (Fig. 2a), slightly expanded in branchial region, cylindrical posteriorly. Branchiae starting from setiger six, numbering 11 pairs. Branchiae foliaceous and elongated with blunt tips. Middle branchiae longest and overlapping on the midline of the dorsum, then gradually decreasing in length. Prostomium nearly triangular with terminal sensory organ. Nuchal organs occurring as two anterolateral slits. Eyes and antenna absent. Pygidium narrow with two anal cirri.

Notopodial postsetal lobes short, finger-like in prebranchial segments, becoming cirriform, longer in branchial region, thinner in postbranchial region. Neuropodial post setal lobes inconspicuous. Capillary noto and neuropodial setae of prebranchial and branchial regions longest, thickest with thin

limb. Postbranchial capillaries thinner and stouter. Transitional neurosetae (Fig. 2b) appearing from setiger 19 with wide, thick, curved shafts and pointed long tips. True modified neurosetae (Fig. 2c) appearing from setiger 20-21 as stout curved hooks with faint pubescent on convex sides of shafts.

Previously reported habitat: *Levinsenia gracilis* was reported from wide variety of habitats, salinities and depths in fine sediments in shallow subtidal levels down to 3000 m. (Blake, 1996), mud and muddy gravel substratum at 220-650 m (Cantone, 1994).

Distribution: *Levinsenia gracilis* is one of the most widespread paronoid species. Mediterranean Sea, Red Sea, Atlantic Ocean, Black Sea, Gulf of Mexico, Pacific Ocean, Indian Ocean, Arctic and Antarctic Oceans.

3.2. *Cirrophorus branchiatus* Ehlers, 1908

Cirrophorus branchiatus Day, 1963:423-425 Text Fig. 9 l-o; Laubier, 1971:259-262 Fig. 1 D-F; Fauchald, 1977:18; Hobson and Banse, 1981: 133; Gaston, 1984:2-6-2-7 Fig. 2-2.; Blake, 1996:38 Fig. 2.4. A-E, Castelli *et al.*, 1995:55; Simboursa and Nicolaidou, 2001:40, Wehe and Fiege, 2002:99.

Aricidea (Cirrophorus) branchiata Hartman, 1957:323.

Aricidea (Cirrophorus) aciculata Hartman, 1957:323-324 pl. 43 Fig. 4.

Material examined: El- Hekma, 65 m, silty sand (1); El-Hammam, 31, 96 m, medium sand (2); Western Harbor of Alexandria, 5 m, coarse sand (1); El-Montazah, 5, 3 m, medium to fine sand (5); Abu-Qir Bay, 3 m, muddy (3); Port-Said, 5 m, muddy sand (3).

Body up to 20 mm long, 0.5 mm wide for 130 segments. Anterior few setigers bent, anterior one-third of body coiled. Body flattened through branchial region, thereafter becoming thinner and cylindrical. Prostomium bluntly conical (Fig. 2d), with pair of nuchal organs. Median antenna short, cirriform. Peristomium reduced dorsally.

Branchiae starting from setiger five, numbering 13. First pair foliaceous, shortest, then elongated with rounded tips. Pygidium well developed, bulbous, with three cirriform anal cirri, the median shortest.

Notopodial postsetal lobes in prebranchial four setigers longest, becoming shorter in branchial region, inconspicuous in postbranchial region. Noto and neurosetae (Fig. 2e) long, slender, simple capillaries without serrated fringes. Notopodial modified spines (Fig. 2f) first appearing from setiger nine; accompanied by simple capillaries.

Previously reported habitat: *Cirrophorus branchiatus* was collected from muddy to fine sandy sediments, coarse to medium fine sand, silty clay, from 25- 1600 m (Gaston, 1984; Blake, 1996).

Distribution: *Cirrophorus branchiatus* is a widely distributed species. Mediterranean, Red Sea, Atlantic Ocean, South Africa, Pacific Ocean, Western Canada to Southern California, Gulf of Mexico, Japan.

3.3. *Aricidea (Aricidea) wassi* Pettibone, 1965

Aricidea (Aricidea) wassi Hobson and Banse, 1981:32; Hartley, 1981:136; Gaston, 1984:2-13 Fig. 2-12; Blake, 1996:44-45 Fig. 2.7. A-F; Simboura and Nicolaidou, 2001:35; Aguado and Lopez, 2003:366; Simboura and Zenetos, 2005:78.

Material examined: El- Hammam, 31 m, medium sand (2); Abu-Qir Bay, 4 m, muddy (5).

Body up to 5 mm long, 0.45 mm wide for about 175 segments. Body threadlike, (Fig. 2g) flattened in branchial region, narrowest, cylindrical posteriorly. Prostomium completely fused with peristomium, forming elongated triangular-shaped head, rounded anteriorly. Antenna too long, pseudoarticulated (Fig. 2h), with 5-6 articles. A pair of nuchal slits directed posterolateral to antenna. Branchiae appearing from setiger four, up to 16 pairs. These varying in shape. First seven pairs foliaceous, widest basally, with cirriform tips posteriorly. Pygidium

(Fig. 2i) bulbous, with three filiform anal cirri, the median, the shortest,

Notopodial postsetal lobes reduced on setigers 1-2, becoming elongated on setiger three, digitiform on branchial region, threadlike posteriorly. Neuropodial lobes reduced to small knob. Noto and neuropodial lobes bearing fringed capillary setae (Fig. 2f-x), arranged in many rows anteriorly, becoming fewer in number, more slender (Fig. 2l) in postbranchial region. Modified neurosetae (Fig. 2m), with curved tips and subterminal arista; appearing in postbranchial setigers, continuing posteriorly.

Previously reported habitat: *Aricidea (Aricidea) wassi* was previously collected from shallow to abyssal depths. It was found in silty clay, clayey sandy silt associated with shells (Gaston, 1984 and Blake, 1996).

Distribution: Mediterranean Sea (Greece), Adriatic Sea, North Sea, off Britain, Atlantic: New England to Virginia, Gulf of Mexico, Pacific, central and southern California.

3.4. *Aricidea (Aedicira) cf. belgicae* (Fauvel, 1936)

Aricidea (Allia) cf. belgicae Hartley, 1981:137-138.

Aricidea (Aedicira) belgicae, Hartman, 1957:327.

Aedicira belgicae Day, 1963:424; 1967:563-564 fig. 24.3. f-j, Simboura and Nicolaidou, 2001:29.

Material examined: El-Hammam, 46 m, medium sand (1).

Incomplete specimen, up to three mm long, 1.5 mm wide for 35 setigers. Body flattened in branchial region, thereafter cylindrical. Prostomium triangular (Fig. 3a), broadly rounded anteriorly, flattened basally, eyes inconspicuous. Median antenna, basally thickened, with rounded tip. Peristomium invisible dorsally. Foliaceous branchiae beginning on setiger four, continuing dorsally to setiger 13. Branchiae stout, conical slightly tapered distally. Last few branchiae basally swollen, tapering abruptly with cirriform tips.

Notopodial postsetal lamellae of anterior setigers well developed with tapered tips. In postbranchial region becoming more slender, cirriform, remains the same length. Neuropodial postsetal lobes inconspicuous. Capillary setae of both noto and neuropodia (Fig. 3b) in anterior region, numerous, curved. In postbranchial region capillary setae decrease in number and notopodial capillaries (Fig. 3c) becoming very fine, while neuropodial ones (Fig. 3d) considerably longer and more thickened.

Remarks: The subgenus *Aedicira* is characterized by the absence of specialized setae. As the inspected specimen is broken at setiger 35, some doubt with the identification of *Aricidea* (*Aedicira*) *cf. belgicae* must remain.

Distribution: *Aricidea* (*Aedicira*) *cf. belgicae* is an Antarctic species (Hartman, 1957 and Day, 1963). Mediterranean Sea, South Africa, Antarctic Ocean.

3.6. *Aricidea* (*Acmira*) *cerrutii* Laubier, 1966

Aricidea (*Acmira*) *cerrutii* Gaston, 1984:2-36-2-39 Fig. 2-34 a-c.

Aricidea *cerrutii* Laubier, 1967:102 Fig. 1A-E.

Aricidea jeffreysii Fauvel, 1927:75 Fig. 25 a-e; Renaud, 1956:26; Hartman, 1957:322 pl. 43 Fig. 2; Day, 1963:423; 1967:558 Fig. 24.1. f-I; Bellan, 1964:114.

Material examined: Sidi-Barrani, 60 m, coarse sand (1); El-Hammam, 100 m and El-Hammam 96 m and El-Alamein 50 m, medium sand (6), El-Agamy, 3m, fine sand (3), Rashid, 3 m, muddy (1).

The largest specimen with 90 setigers, measuring 11 mm long, by 0.4 mm wide.

Body flattened dorsally in branchial region, becoming cylindrical in middle and posterior segments. Pygidium bulbous with three anal filiform cirri, the median, the shortest. Prostomium (Fig. 3h) subtriangular with truncate margin, two small eyes, nuchal slits directed anterolaterally. Median antenna short, extending to end of setiger one, thickest in posterior and middle regions, tapering to pointed tip. Peristomium reduced and fused to prostomium. Branchiae beginning on setiger four, numbering 9-14 pairs, foliaceous, flattened basally, terminally tapering. Anterior pairs overlapping on midline of dorsum, becoming slightly shorter posteriorly.

Postsetal notopodial lobe of setiger one, shortest, becoming foliaceous on setiger two, elongated from setiger three, filiform on postbranchial region, but remain the same length. Neuropodial postsetal lobes reduced to small knob. Anterior noto and neurosetae with numerous capillaries, arranged in several rows. In postbranchial segments capillaries decreasing in number, becoming slenderer. From setiger 13 four to five hooded hooks (Fig. 3i) added to neuropodial capillaries. The shafts of hooks, elongated posteriorly.

Previously reported habitat: *Aricidea* (*Acmira*) *cerrutii* was previously found in coarse to fine-very fine sand, silty fine sand (Laubier, 1967 and Gaston, 1984).

Distribution: Mediterranean Sea, Red Sea, South Africa, Baltic Sea, East coast of North America, Gulf of Mexico, Scandinavia, Ireland North Sea.

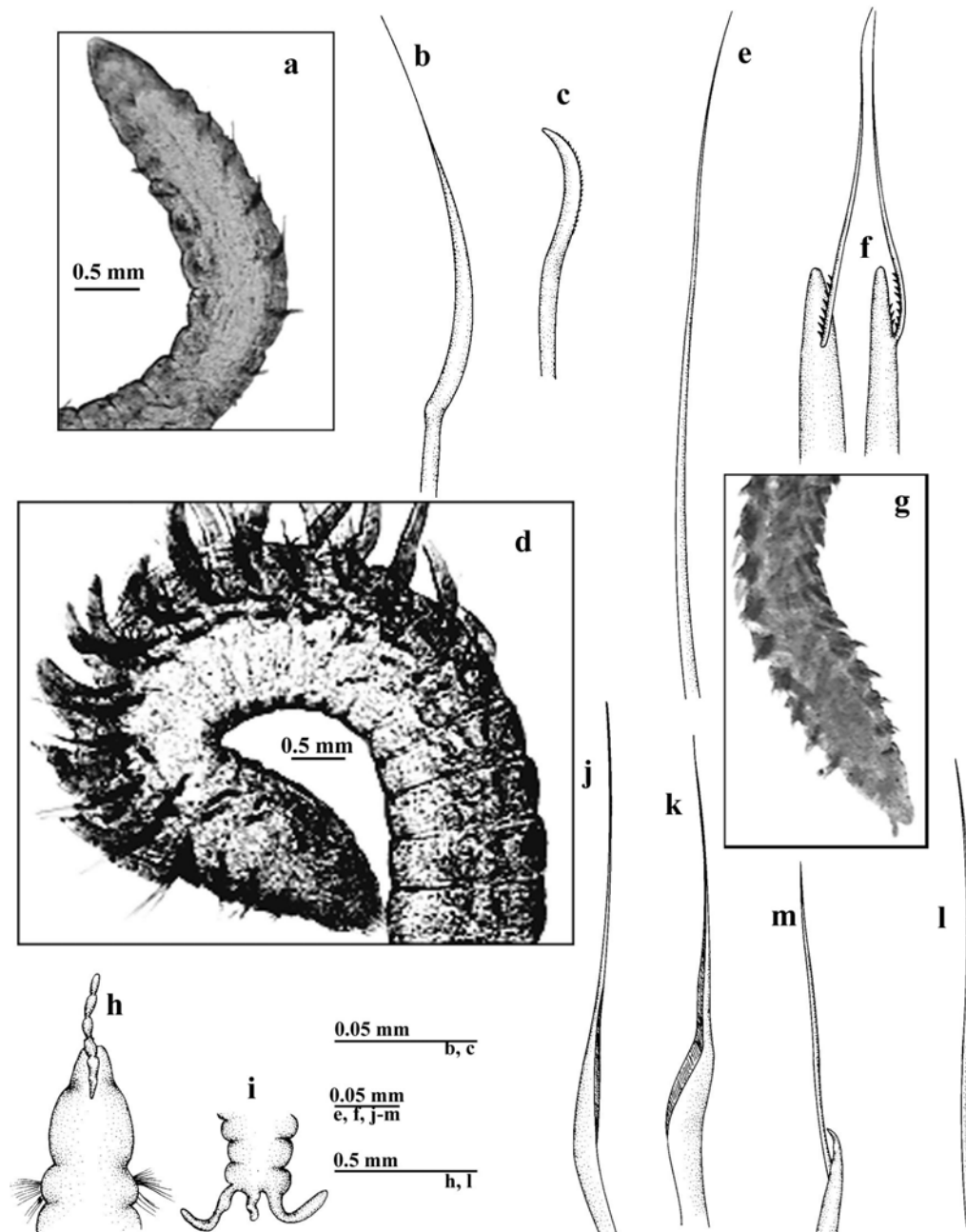


Fig (2): *Levinsenia gracilis*: a, anterior end, dorsal view; b, transition neuroseta; c, modified neuroseta. *Cirrophorus branchiatus*: d, anterior end, lateral view; e, capillary seta; f, modified notopodial spine. *Aricidea wassi*: g, anterior end, dorsal view; h, prostomium with antenna; i, pygidium; j, notopodial capillary from branchial region; k, neuropodial capillary from branchial region; l neuropodial capillary from postbranchial region, m, modified neuroseta.

3.5. *Aricidea (Allia) suecica* Eliason, 1920

Aricidea (Allia) suecica Hartley, 1981:138 Fig. 3 A-B; Gaston, 1984:2-20 Fig. 2-16 a-e; Castelli *et al.*, 1995:8.

Aricidea suecica Hartman, 1957:318-319; 1965:137; Hartman and Fauchald, 1971:97.

Material examined: El-Hekma, 65 m, silty sand (1); El-Manzalah Lake, 2 m, silty sand (3).

The largest fragment measuring 25mm long for 60 setiger, and 0.6 mm wide. Body cylindrical dorso-ventrally flattened in branchial region. Prostomium (Fig. 3e) completely fused with peristomium, forming pear-shaped head region with rounded tip. Eyes present. Pair of nuchal slits directed anterolaterally. Median antenna cylindrical, gradually tapering distally, extending to end of setiger one. Branchiae starting on setiger four, numbering 20 pairs, overlapping on midline of dorsum, broad and flat basally, gradually tapering to point, more slender basally in posterior branchial region.

Notopodial postsetal lobes cirriform from setiger one, gradually elongated through branchial region, becoming filiform in postbranchial region. Neuropodial postsetal lobes ovate, becoming indistinct posteriorly. Capillary noto- and neurosetae, densely arranged in anterior segments; postbranchial notosetae fewer, more slender, while neurosetae (Fig. 3f) stouter, curved, tapering to fine points. Modified acicular hooks (Fig. 3g) with terminal arista beginning on setiger 35.

Remarks: Egyptian specimens agree well with Mexican specimens (Gaston, 1984), but differing in the occurring of modified hooks on setigers 25-30 instead of 35.

3.6. *Aricidea (Acmira) catherinae*, Laubier, 1967

Aricidea (Acmira) catherinae, Gaston, 1984:2-43-2-45 Fig. 2-44 a-c; Blake, 1996:56-57, Fig. 2.14. A-D; Aguado and Lopez, 2003:366.

Aricidea catherinae Laubier, 1967:112-118 Figs. 4A-E, 5A-D; Simboura and Nicolaidou, 2001:33

Aricidea lopezi Hartman, 1963:38.

Material examined: El-Sallum, 85 m, silty sand (2); El-Hammam, 31, 53, 62 m, medium sand (8); El-Agamy, 3 m, fine sand (4); Rashid, 3m, muddy (3), El-Manzalah Lake, 2 m, silty sand (2).

Incomplete specimens, the largest measuring 18 mm long, by 0.6 mm wide for about 90 segments. Body cylindrical (Fig. 4a), slightly flattened in branchial region. Prostomium completely fused with peristomium, subtriangular, flattened basally, rounded anteriorly, eyes present, a pair of nuchal slits directed anterolaterally. Median antenna bulbous in middle, terminally tapering to pointed tip. Branchiae well developed, foliaceous, starting on setiger four, calculating 14 pairs, becoming longer, thinner, terminally tapered posteriorly, with last pair shortest.

Notopodial postsetal lobes less developed in first two setigers, appearing as small knob, becoming longer, cirriform on setiger three with flattened bases, becoming thinner on postbranchial region. Neuropodial postsetal lobes, tuberculate. Parapodia of anterior setigers bearing capillary setae, arranged in several rows, decreasing in number, becoming slenderer, longer on postbranchial region. Modified hooked neurosetae (Fig. 4b) -accompanied by few fine capillaries- appearing from setiger 22. Hooks with faint sheath and terminal arista.

Previously reported habitat: previously reported from coarse to fine sand, muddy ooze and mud with shell fragments; 1-2000+ m (Gaston, 1984).

Distribution: Mediterranean Sea, Western North Atlantic, Gulf of Mexico, Pacific Ocean.

3.7. *Aricidea (Acmira) lopezi* Berkeley and Berkeley, 1956

Aricidea (Acmira) lopezi Blake, 1996:57-59 Fig. 2.15. A-E; Aguado and Lopez, 2003:366.

Aricidea lopezi Hartman, 1957:318.

Aricidea fauveli Hartman, 1957:318 pl. 43 Fig. 1; Day, 1967:560 Fig. 24.2 a-d.

Material examined: El-Manzalah Lake, 2 m, silty sand (2).

Incomplete specimens, the largest measuring 4 mm long, 0.6 mm wide for 42 setigers. Body subcylindrical, slightly flattened in branchial region. Prostomium (Fig. 4c) bluntly subtriangular, completely fused with peristomium. Median antenna elongate, slightly thickened initially, reaching about setiger eight. Branchiae from setiger four and extended over 26 setigers. All branchiae relatively thick, with last pair shortest.

Notopodial postsetal lobes cirriform on first two setigers, becoming longer from setiger three till the end of branchial region, slenderer in postbranchial region. Neuropodial postsetal lobes flattened. From setigers 1-16; noto and neuropodial capillary setae arranged in several rows, then gradually diminishing in number, becoming longer and thinner posteriorly. Modified neuropodial hooks (Fig. 4d) appearing from setiger 30; accompanied by few thin capillaries. Hooks calculating 4-7; with curved tips and fine arista emerging from convex margin.

Previously reported habitat: Subtidal, 12-1100 m (Blake, 1996), in mud (Gaston, 1984).

Distribution: Mediterranean Sea, off Morocco, South Africa, Eastern Pacific, Canada to Southern California, Sea of Japan.

3.8. *Aricidea (Acmira) simplex* Day, 1963

Aricidea (Acmira) simplex Blake, 1996:63-64 Fig. 2.18. A-D.

Aricidea simplex Simboura and Nicolaidou, 2001:35.

Aricidea suecica simplex Day, 1963:364-365 Fig. 3 a-b; 1967:558 Fig. 24.1 f-i.

Aricidea neosuecica Hartman, 1965:137; Hartman and Fauchald, 1971:96-97 pl. 13 Figs. d-f.

Material examined: El-Hammam, 96 m, medium sand (1); Port-Said, 5 m, muddy sand (4).

The longest specimen with 25 mm long, 1.6 mm wide for about 85 setiger. Body massive, stout, with compact segments, dorsally depressed, becoming cylindrical posteriorly. Prostomium partially fused with peristomium, forming rounded head (Fig. 4e), basally wider, eyes absent, antenna short, clavate, pair of nuchal slits directed anteriorly. Branchiae arising from setiger four, numbering 22 pairs. All branchiae similar in length and size, except last few the shortest.

Notopodial postsetal lobes of setigers 1-2 smaller than the following, starting to elongate on setiger three, becoming more elongated in branchial region, more slender in postbranchial region. Neuropodial postsetal lobes inconspicuous. All noto and neurosetae very slender, long, becoming thread-like in postbranchial region and throughout. Modified neurosetae (Fig. 4f) -including capillaries- appearing from setiger 40, numbering 10-12 per fascicle.

Previously reported habitat: *Aricidea (Acmira) simplex* was reported from muddy bottoms; 35-1072 m (Gaston, 1984). It is widespread in outer shelf and continental slope, 100-3000+ m (Blake, 1996).

Distribution: Mediterranean Sea, South Africa, Uruguayan shelf, Patagonian shelf, Scotia Sea, Antarctic Ocean, New Zealand slope, Bering Sea, Japan, Caroline Island, California.

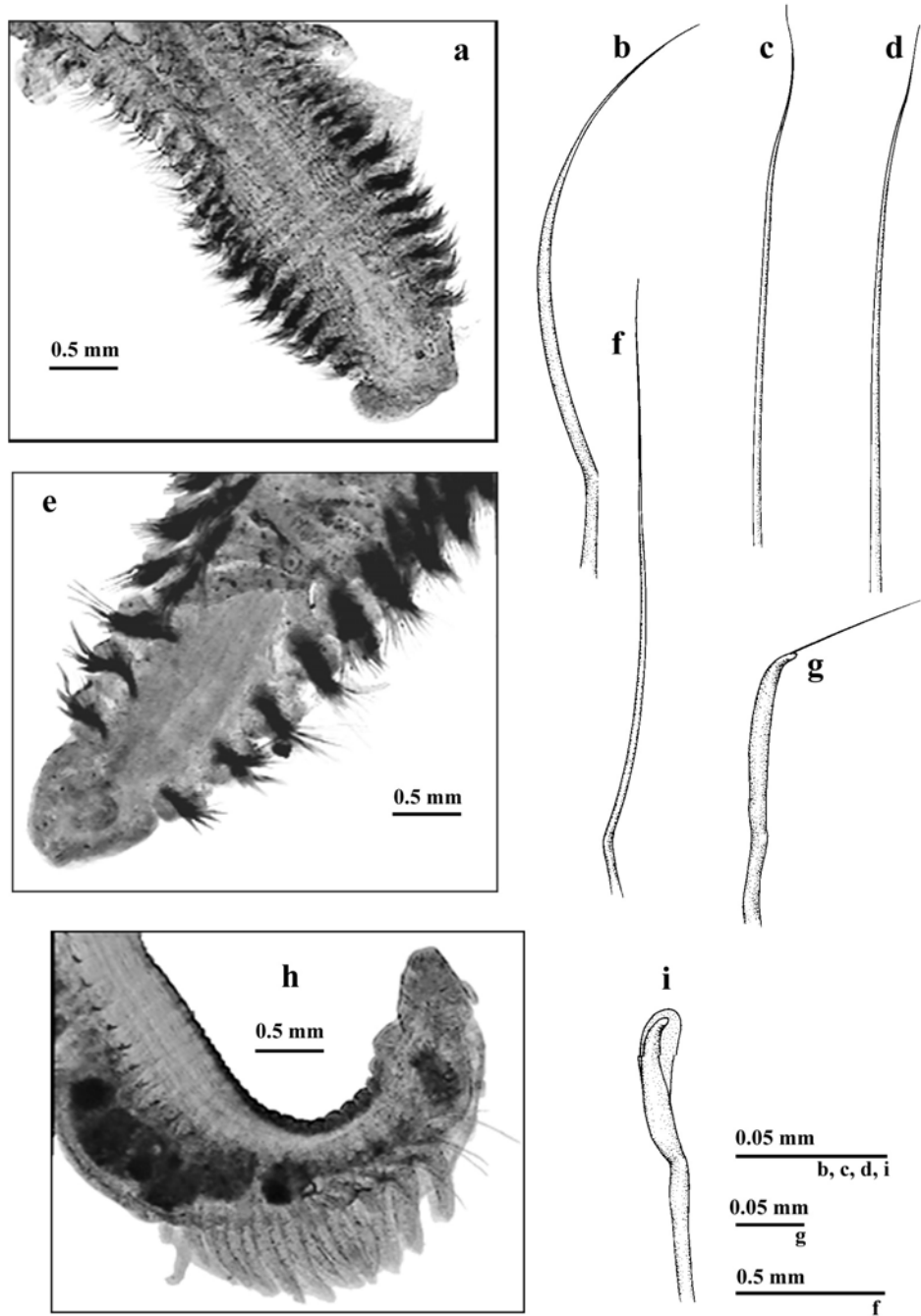


Fig. (3): *Aricidea belgicae*: a, anterior end, dorsal view; b, capillary seta from branchial region; c-d, noto & neuropodial setae from postbranchial region; *Aricidea suecica*: e, anterior end, dorsal view, f, neuroseta from postbranchial region, g, modified neuropodial hook; *Aricidea cerrutii*: h, anterior end, lateral view; i, neuropodial hooded hook.

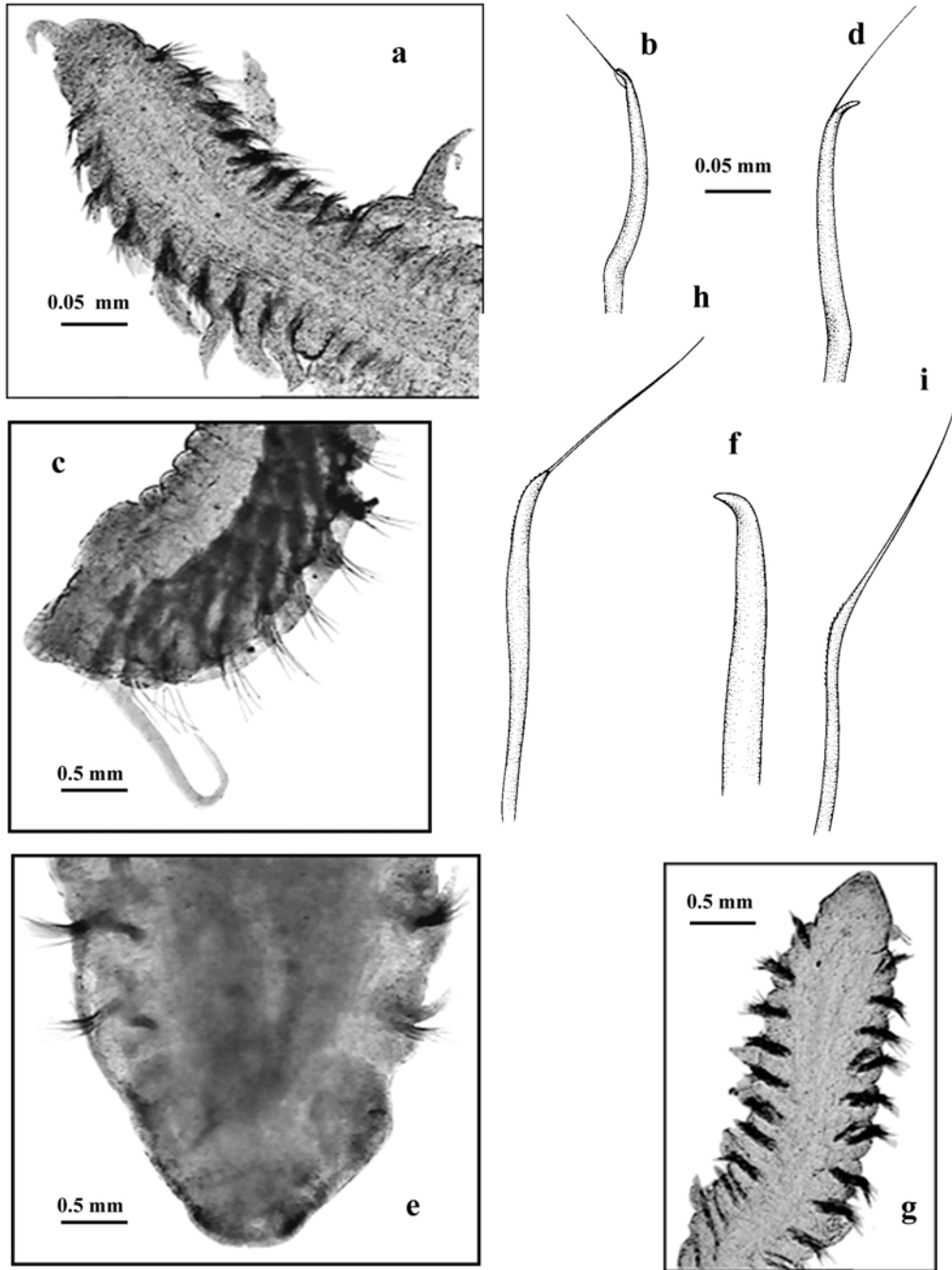


Fig. (4): *Aricidea catherinae*: a, anterior end, ventral view; b, modified neuropodial hook; *Aricidea lopezi*: c, anterior end, antero-lateral view; d, modified neuropodial hook; *Aricidea simplex*: e, anterior end, dorsal view; f, modified neuropodial hook. *Aricidea claudiae*: a, anterior end, ventral view; h-i, modified neuropodial spines.

3.9. *Aricidea claudiae* Laubier, 1967.

Aricidea claudiae Laubier, 1967:124-128 Figs. 8 A-E, 9 A-E; Castelli *et al.*, 1995:8; Simboursa and Nicolaidou, 2001:33; Surugiu, 2005:55.

Material examined: El-Hekma, 65 m, silty sand (4); El-Hammam, 46 m, medium sand (2).

Incomplete specimens, the longest measuring 6 mm long, 0.5 wide for 39 setigers. Body flattened anteriorly, becoming cylindrical in postbranchial region. Branchiae foliaceous, beginning on setiger four, numbering 12 or 14 pairs. Prostomium (Fig. 4g) triangular basally flattened, slightly rounded anteriorly. Peristomium fused with prostomium; forming its base. Median antenna, cylindrical, thickened, tapering to pointed tip, eyes inconspicuous.

Notopodial postsetal lobes of the first two setigers short, finger-like, becoming cirriform on setiger three, progressively well developed in branchial region.; notopodial lobes in postbranchial region more slender, longer. Neuropodial postsetal lobes tuberculate. Noto- and neuropodia bearing capillary setae heavily arranged in several rows in anterior segments; postbranchial capillaries fewer, slender, elongate, arranged in simple bundles. Three to five modified neurosetal spines appearing on setiger 20 (Fig. 4h,i), continuing posteriorly; spines accompanied by capillaries.

Previously reported habitat: *Aricidea claudiae* was previously reported from muddy bottom, at 35-200 m (Laubier, 1967).

Distribution: Mediterranean Sea (France, Banyuls), Black Sea.

4. DISCUSSION

The above results reveal that some of the recorded species are readily recognized; others are confused as follows:

Cirrophorus branchiatus is readily recognized by the characteristic shape of the

modified notopodial hooks. As well *Aricidea (Acmira) cerrutii* has unique shape of modified neuropodial setae; similar to spionid hooks. This specialized hook is useful as a taxonomic character for the identification of this species. It should be mentioned that Laubier (1967) renamed *Aricidea jeffreysii* as *A. cerrutii*. He also has redescribed Mediterranean *Aricidea jeffreysii* and found that the species illustrated and described by Fauvel (1927) under the name of *A. jeffreysii* is *A. (Acmira) cerrutii*. On the other hand, *Aricidea (Acmira) catherinae* may be confused with *Aricidea (Acmira) lopezi* (Blake, 1996). It is apparent that the main difference between the two species is the shape and length of the median antenna. In the present study *A. (Acmira) lopezi* has longer antenna that reaches back to setiger eight, instead of two as in *A. (Acmira) catherinae*. The antenna of the latter species has also a characteristic shape (as mentioned above). *Aricidea (Allia) suecica* may be confused with other species e.g. *Aricidea laubieri* (Hartley, 1981). Recently, a number of species similar to *A. suecica* have been described. Therefore, the wide distribution of such species in the Northern hemisphere (Strelzof, 1979 c.f. Hartley, 1981) may be doubtful. As a result, the taxonomic status of *Aricidea (Allia) suecica* has been questioned and many records of the species need critical assessment.

It is worth to note that *Aricidea (Aricidea) wassi* in the north Atlantic coast is a typical sandy bottom species (Simboursa and Zenetos, 2005), whilst the Egyptian specimens inhabit muddy bottoms. This observation is in agreement with Greek members (Simboursa and Zenetos, 2005).

Analyzing the geographic distribution of the encountered species; notably all species recorded were previously reported from the Mediterranean Sea and Atlantic Ocean. Two species described as cosmopolitan: *Levensenia gracilis* and *Cirrophorus branchiatus* (Gaston, 1984 and Blake, 1996). *Aricidea claudiae* is restricted to

Mediterranean Sea (Laubier, 1967; Castelli *et al.*, 1995; Simboura and Nicolaidou, 2001 and Surugiu, 2005), so it seems to be a Mediterranean species.

It is interesting to note that, some of the recorded species –in the present study– such as *Levinsenia gracilis* and *Aricidea (Aricidea) wassi* twist their bodies into a tight corkscrew. This spiral shape may facilitate water movements through the burrow (Blake, 1996). Gaston (1992 *c.f.* Blake, 1996) found the same orientation in *Paraonis fulgens*, and noted that the worm moved up and down in spirals as part of its feeding behavior.

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