

## Mediterranean Marine Science

Vol 12, No 1 (2011)



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doi: [10.12681/mms.52](https://doi.org/10.12681/mms.52)

#### To cite this article:

ABD-ELNABY, F., & MARTIN, G. (2011). Syllinae (Syllidae: polychaeta) from the Mediterranean coast of Egypt with the description of two new species. *Mediterranean Marine Science*, 12(1), 43–52. <https://doi.org/10.12681/mms.52>

## **Syllinae (Syllidae: polychaeta) from the Mediterranean coast of Egypt with the description of two new species**

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Received: 16 June 2010; Accepted: 30 November 2010; Published on line: 12 January 2011

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### **Abstract**

This is the second paper dealing with the Syllidae collected on soft and hard bottom from the north-western coast of Egypt (Mediterranean Sea) and southern part of the Suez Canal. Eleven species were reported, two of them seem to be new to science, (*Syllis* sp.1 and *Syllis* sp.2), but need further examination. Six species namely *Opisthosyllis brunnea*, *Syllis columbretensis*, *Syllis gerlachi*, *Syllis ergeni*, *Syllis pulvinata* and *Trypanosyllis coeliaca* were recorded as new for Egyptian waters.

**Keywords:** Syllidae; *Syllinae*; New species; Taxonomy; Mediterranean; Egypt.

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### **Introduction**

The Syllidae Grube, 1850 is a large and complex family of polychaetes, comprising about 70 genera and 700 valid species world-wide (KUDENOV & HARRIS, 1995, SAN MARTÍN, 2003); AGUADO & SAN MARTÍN, 2009. It is a widely distributed group found from the intertidal zone to the abyssal plains all over the world (GLASBY, 2000). This wide environmental range is a consequence of the wide range of body dimensions (from less 1mm to more than 90 mm), feeding habits (from detritivores to carnivores) and their adaptive character (GIANGRANDE *et al.*, 2000). The most

speciose genus within the family is *Syllis* Savigny in Lamarck, 1818, on which a recent partial revision has been performed (under the genus name *Typosyllis* Langerhans, 1879) (LICHER, 1999). Few studies on this family have been carried out on the Mediterranean coast of Egypt and the Suez Canal. FAUVEL (1927) recorded 8 Syllid species dwelling in the Suez Canal waters of which 6 belonged to the genus *Syllis*, namely *Syllis gracilis*, *S. zonata*, *S. (Haplysyllis) spongicola*, *S. (Typosyllis) bouvieri*, *S. (Typosyllis) exilis* and *S. (Typosyllis) variegata*. On his work on the polychaetes collected from the fishery grounds near Alexandria, FAUVEL (1937) gave a checklist without any illus-

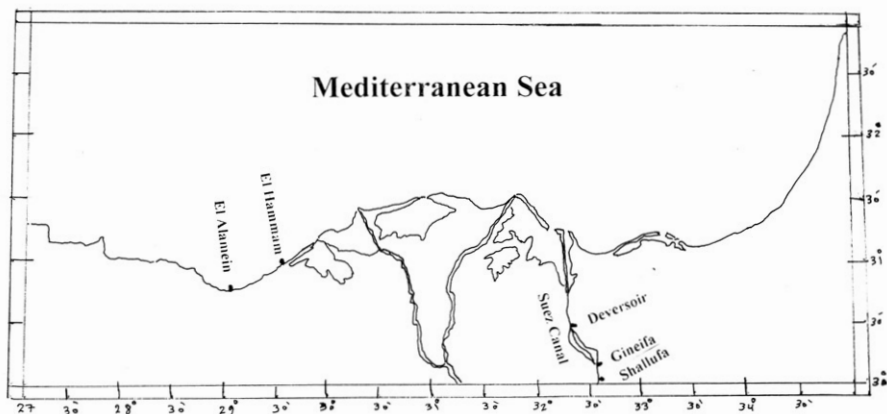
trative taxonomical structures for these animals. The number of recorded species belonging to the family Syllidae was 16 species. Recently, within the strategy of National Institute of Oceanography and Fishery, Alexandria, several species of syllids were reported by SELIM (2008), 11 new records belonging to Syllids *Eusyllinae* and *Exogoninae* and (SELIM, 2009), 16 species reported from the northern part of the Suez Canal. ABD ELNABY (2005, 2009a, b) reported several undescribed species. A more detailed study comprising syllids in the area was carried out by ABD-ELNABY & SAN MARTÍN, 2010. The present paper is focused on the subfamily Syllinae and includes descriptions of two new species (*Syllis* sp.1 and *Syllis* sp. 2) as well as six species newly recorded from Egyptian waters.

### Material and Methods

Sandy samples were collected at 0-20 m depth at two stations (El Hammam, El Alamein) located on the north-western Mediterranean coast of Egypt, in Spring

2008, Autumn 2008 and Spring 2009. Some samples were also collected at 0-20 m depth in the southern part of the Suez Canal in April 2007 (Fig. 1). Sediment samples (Half of one replicate from each depth) were collected by a Van Veen grab (0.25 m<sup>3</sup>). Hard bottom samples from the Suez Canal at Ggineifa, Elshallufa and Deversoir were collected from rocks with algae by using a knife. All samples were fixed in 10% formaldehyde in sea water-solution. Soft bottom sediment samples were washed up and sieved through a 0.3 µm sieve, then sorted under a stereomicroscope. Specimens of Syllidae were separated from other specimens and preserved in 70% alcohol. Identification was made by using stereo- and compound microscopes. Drawings were made by a camera lucida. All measurements were calculated by an eye piece which was calibrated by stage micrometer.

Specimens and the new species were deposited at the Marine Reference Collection Center of National Institute of Oceanography and Fisheries, Alexandria under Code Numbers.



**Fig. 1:** Map showing the sampling sites (North -Western Coast of Egypt and Southern part of the Suez Canal).

## Results

*Genus Opisthosyllis* Langerhans, 1879

*Opisthosyllis brunnea* Langerhans, 1879

*Opisthosyllis brunnea* Langerhans, 1879: 541, fig. 7. BEN-ELIAHU (1977): 47; ÇINAR & ERGEN (2003): 790; SAN MARTÍN (2003): 329-332 fig. 183 A-I; AGUADO & SAN MARTÍN (2007): 211; SAN MARTÍN *et al.* (2008): 23, figs. 16 A-I, 17 A, B.

**Material examined.** Museum code (N. Sp. 5/8/3). April 2007, Suez Canal, Gineifa, 1.5 m depth, rocks. 2 specimens.

**Distribution:** Circumtropical, Mediterranean Sea (ÇINAR & ERGEN, 2003).

*Genus Syllis* Lamarck, 1818.

*Syllis* sp. 1

**Material examined:** Museum code (N. Sp. 6/8/3). Spring 2009, Elhamman, Mediterranean Sea, 20 m depth, coarse sand, 2 specimens.

Description: Largest specimen complete, 4.5 mm long, 1 mm wide, with 43 chaetigers, without colour marking, with a group of granules on both sides of each segment. Prostomium oval (75 µm); four eyes in trapezoidal arrangement. Palps elongated (105 µm). Median antenna inserted in middle of prostomium, with 11 joints, slightly longer than prostomium and palps together; lateral antennae inserted in front of anterior pair of eyes, with 9 joints (Fig. 2A). Dorsal tentacular cirri similar in length to median antenna with 11 joints; ventral tentacular cirri with 7 joints. Dorsal cirri relatively short, delicate, slender with few (4-8) elongated joints (Fig. 2B), dorsal cirri on chaetiger 1 longer than subsequent ones with 11 joints. Blades of compound chaetae short, with moderately long spines on cutting edge, distinctly bidentate (7-10 µm anteriorly), shorter posteriorly (5-7.5 µm), with thick shafts (Figs. 2C, E & H). Dorsal simple chaetae

from chaetiger 19 relatively thick, smooth, unidentate (Fig. 2F, I). Ventral simple chaeta thick, smooth, bidentate (Fig. 2J) on posterior parapodia. Anterior parapodia with two aciculae (Fig. 2D); middle and posterior parapodia with solitary, thick acicula, with acuminate tip (Fig. 2G). Pharynx through 5 segments (200 µm long); pharyngeal tooth near middle of pharynx. Proventricle extending through 5 segments (230 µm long) with 27 muscle cell rows.

**Remarks:** Our specimens agree quite well with Licher's description of *Typosyllis benguelana* (Day, 1963), having short, delicate dorsal cirri and almost identical compound and simple chaetae, as well the aciculae (LICHER, 1999). There are some differences between the original description (DAY, 1963, 1967) and the LICHER (1999) redescription, because Day described the compound chaetae as unidentate, and Licher as bidentate. Also, our specimens differ from both in the position of the pharyngeal tooth, near the middle of the pharynx instead the anterior rim. Our specimens are probably juveniles, because are smaller than those of Day, so we prefer to consider this report provisionally without any formal identification, waiting for more specimens in future collections.

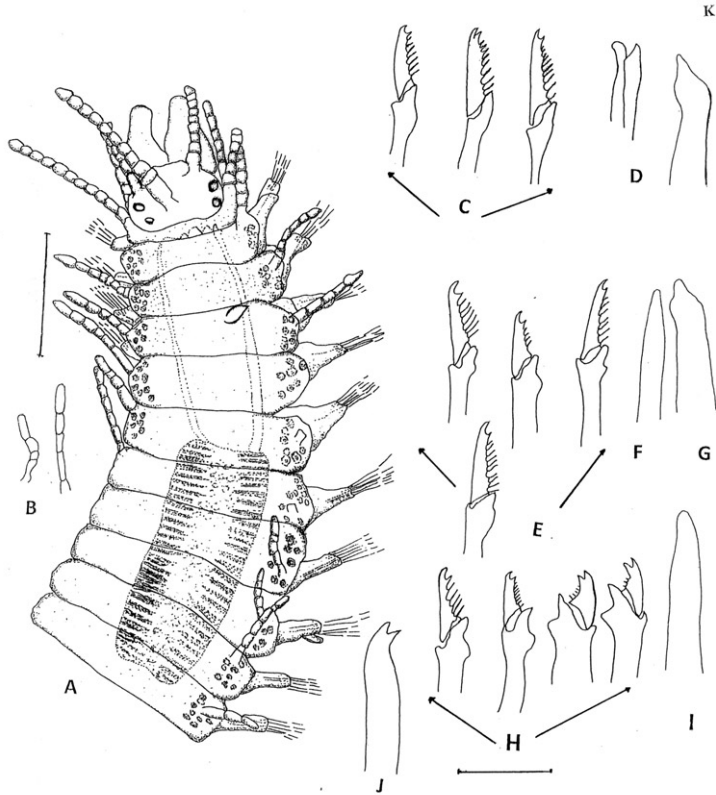
*Syllis columbretensis* (Campoy, 1982)

*Typosyllis columbretensis* Campoy, 1982: 413

*Syllis columbretensis* SAN MARTÍN (2003): 443-447, figs 244, 245; ÇINAR & ERGEN (2003): 780; PARAPAR *et al.* (1996): 57, figs. 2a, 3a-h.

**Material examined:** Museum code (N. Sp. 7/8/3), Autumn 2008, El Alamein, Mediterranean Sea, 20 m depth, coarse sand, one specimen.

**Distribution:** Atlantic Ocean and Mediterranean Sea (AGUADO & SAN MARTÍN, 2007).



**Fig. 2:** *Syllis* sp.1, n. sp. **A**, anterior end, dorsal view. **B**, dorsal cirri. **C**, falcigers, anterior parapodium. **D**, anterior aciculae. **E**, falcigers, middle parapodium. **F**, dorsal simple chaeta, middle parapodium. **G**, acicula, middle parapodium. **H**, falcigers, posterior parapodium. **I**, dorsal simple chaeta, posterior parapodium. **J**, ventral simple chaeta. **K**, acicula, posterior parapodium. Scale (A) 0.2 mm; (C-K) 20 µm.

*Syllis garciai* (Campoy, 1982)

*Langerhansia garciai* Campoy, 1982: 386, p. 375.

*Syllis garciai* SAN MARTÍN (2003): 400, Figs. 219 A-J, 220 A-H, 221 A-G.

**Material examined:** Museum code (N. Sp. 8/8/3). Spring 2009, Elhammam, Mediterranean Sea, 20 m depth, coarse sand, 2 specimens.

**Distribution:** Mediterranean Sea and Atlantic Ocean (AGUADO & SAN MARTÍN, 2007).

*Syllis gerlachi* (Hartman-Schröder, 1960)

*Typosyllis gerlachi* Hartman-Schröder, 1960: 81-82, pl. 6, figs 43. LICHER (1999): 127-129, fig. 57.

*Syllis gerlachi* SAN MARTÍN (2003): 376, figs. 205 A-H, 2006 A-F; ÇINAR & ERGEN (2003): 783; AGUADO & SAN MARTÍN (2007): 216.

**Material examined:** Museum code (N. Sp. 9/8/3). April 2007, Elshallufa, Suez Canal, 8m depth, rocks, one specimen.

**Distribution:** Red Sea, Mediterranean Sea and South and East Atlantic Ocean (AGUADO & SAN MARTÍN, 2007).

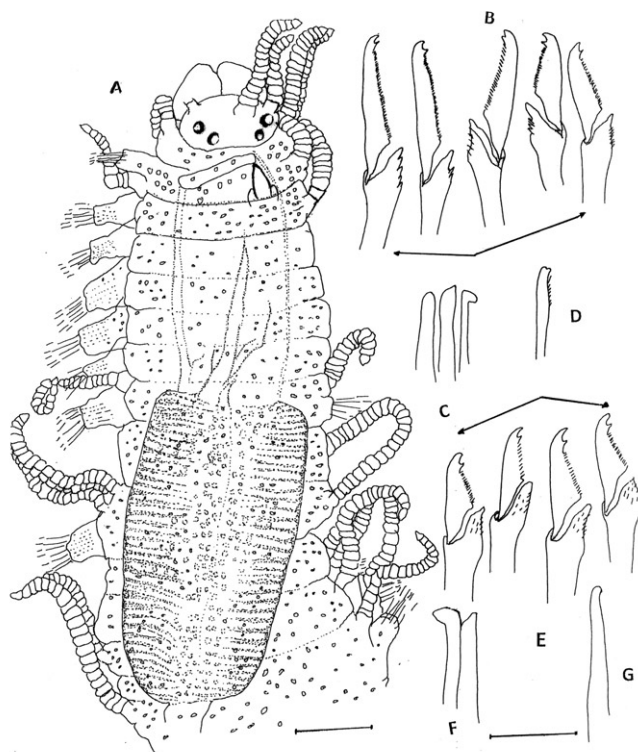
*Syllis ergeni* Çinar, 2005

*Syllis ergeni* Çinar, 2005: 45, figs. 2-4.

**Material examined:** Museum code (N. Sp. 3/8/3). Autumn 2008, El Alamein, Mediterranean Sea, 20 m depth, coarse sand, 2 specimens.

**Description:** Two specimens, 5-6 mm long, with 21-25 segments. Dorsal side of body characterized by the presence of numerous granules. Prostomium with two pairs of eyes

in trapezoidal arrangement, and two small anterior eyespots. Lateral antennae with 15 joints and the median one with 20 joints (Fig. 3A). Dorsal tentacular cirri with 19 joints, while ventral ones with 15 joints. Dorsal cirri with 20-33 short articles. The dorsal cirri of first parapodia with 31 joints. Ventral cirri short, digitiform. Anal cirri with 10 joints and middle papillae present. Anterior parapodia with 10 compound falcigers, reach 12 posteriorly, bidentate blades (17.5- 22.5 µm) shafts margin with fine spines, blade edge with dorso-ventral serration (Fig. 3B), posterior compound chaetae slightly short bidentate blades (13.8-



**Fig. 3:** *Syllis ergeni* Çinar, 2005. **A**, anterior end, dorsal view. **B**, falcigers, anterior parapodium. **C**, anterior aciculae. **D**, dorsal simple chaeta. **E**, falcigers, posterior parapodium. **F**, acicula, posterior parapodium. **G**, ventral simple chaeta. Scale (A) 0.2 mm; (B-G) 0.01 mm.

17.5  $\mu\text{m}$ ) (Fig. 3E), also all shafts with distal spines. Anterior parapodia with 3 aciculae, two straight, stout, with truncate tip, the other thinner, with tip curved at right angle (Fig. 3C). Midbody and posterior parapodia with 2 aciculae as anterior ones except one with a rounded tip (Fig. 3F). Dorsal simple setae thick, slightly bidentate, with short subdistal spines (Fig. 3D), showing from chaetiger 17. Ventral simple chaetae, with rounded edge (damaged?), appears far posterior (Fig. 3G). Pharynx slightly longer than proventricle, extending through 7 segments, pointed tooth on right side anteriorly. Proventricle extending through 6 segments with about 31 rows of muscular cells.

**Distribution:** Eastern Mediterranean (Turkey), first report in Egypt.

**Remarks.** This species is characterized by a dorsal surface provided with numerous, scattered refringent granules, also occasionally present on specimens of other species, but not so dense and numerous. Two other similar species from Australia and México are in process of description, but differ in details of the compound and simple chaetae. *Syllis microoculata* (Hartmann-Schröder, 1965) from Hawaii has similar structures and similar compound chaetae, but after detailed examination (LICHER, 1999), the structures are small papillae, not refringent granules, and the aciculae are also different, being distally rounded in *S. microoculata* and straight and distally bent in *S. ergeni*. Also the dorsal side of *S. ergeni* reported by ÇINAR, 2005 was dark in colour, while here the specimens are white transparent with red pharynx.

*Syllis krohnii* Ehlers, 1864

*Syllis* (*Typosyllis*) *krohnii* FAUVEL (1923): 259, Fig. 96 a-e.

*Syllis krohnii* SAN MARTIN (2003): 386 fig. 211 A-K, 212 A-H.

**Material examined:** Museum code (N. Sp. 10/8/3), Spring 2009, Elhammam, Mediterranean Sea, 20 m depth, coarse sand, 2 specimens.

**Distribution:** Mediterranean Sea and Atlantic Ocean (ÇINAR & ERGEN, 2003).

*Syllis lutea* Hartmann-Schröder, 1960

*Syllis jorgei* SANMARTIN & LOPEZ, 2000: 430-432, figs 5-6, ÇINAR & ERGEN, 2003: 785

**Material examined:** Museum code (N. Sp. 11/8/3). April 2007, Deversoir, Suze Canal, 5 m depth, shore collection, April 2007. 2 specimens

**Distribution:** Mediterranean Sea and East Atlantic (Canary Islands) (ÇINAR & ERGEN, 2003).

*Syllis pulvinata* (Langerhans, 1881).

*Syllis pulvinata* SAN MARTÍN (2003): 372, fig. 202A-G.

**Material examined:** Museum code (N. Sp. 12/8/3), Autumn 2008, El Alamein, Mediterranean Sea, 20 m depth, coarse sand, one specimen.

**Distribution:** Canary Islands, Mediterranean Sea (ÇINAR & ERGEN, 2003).

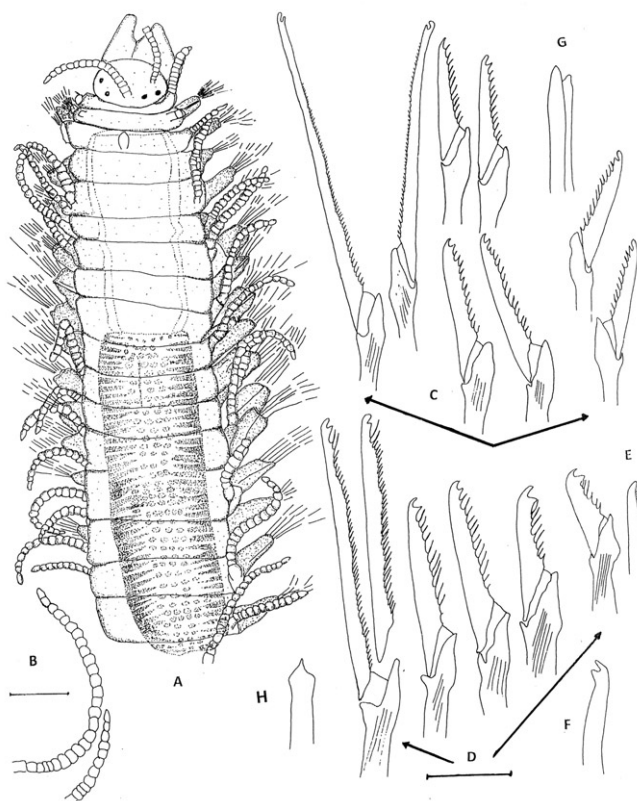
*Syllis* sp. 2

**Material examined:** (N. Sp. 4/8/3), Autumn 2008, El Alamein, Mediterranean Sea, 20 m depth, coarse sand, one specimen.

Description: Holotype complete, 8mm long, 1mm width, tapered posteriorly, 45 chaetigers. Prostomium broad, oval, with two pairs of small eyes disposed in trapezoidal arrangement. Palps broad, fused basally, slightly longer than prostomium (15.5  $\mu\text{m}$  long). Median antenna inserted between posterior pair of eyes, somewhat longer than

prostomium and palps together, with 16 articles, approximately one and half times longer than lateral antennae; lateral antennae inserted in front of anterior pair of eyes, with 11 articles (Fig. 4A). Peristomium shorter than subsequent segments; dorsal tentacular cirri with 11 articles, ventral ones with 7 articles. Dorsal cirri of 1<sup>st</sup> chaetiger shorter than tentacular ones, with 7 articles. Subsequent cirri considerably longer, alternating long and shorter (Fig. 4B), with 9-16 articles anteriorly, 11-19 and 11-26 articles on mid-body and posterior parapodia respectively, spindle-shaped, with granular material inside; far posterior dor-

sal cirri distinctly short. Ventral cirri oval, short, not extending beyond tips of parapodia. Anterior parapodia with 9-13 compound chaetae, superior 4-5 chaetae with elongated, pseudospiniger bidentate blades (62.5-42.5  $\mu\text{m}$  long), with broad distal tooth and small proximal tooth, shorter posteriorly (40-30  $\mu\text{m}$  long), with rounded distal tooth, and acute, small proximal tooth, and straight, fine spines on margins; 1-2 distal spines on mid-body and distal spines on posterior parapodia distinctly long, reaching or surpassing level of proximal tooth, not reaching level of distal tooth; remaining chaetae falcigers, with blades measur-



**Fig. 4:** *Syllis* sp. 2. **A**, anterior end, dorsal view. **B**, dorsal cirri. **C**, pseudo-spinigers, anterior parapodium. **D**, pseudo-spinigers, posterior parapodium. **E**, dorsal simple chaeta. **F**, ventral simple chaeta. **G**, anterior aciculae. **H**, acicula, posterior parapodium. Scale (A) 0.2 mm; (C-H) 20  $\mu\text{m}$ .



ing 22.5-12.5  $\mu\text{m}$  long in anterior parapodia, 27.5- 17.5  $\mu\text{m}$  long in posterior parapodia; bidentate, with distal tooth stronger than proximal one, except in posterior parapodia, margin with fine spines; posterior falcigers with longer spines on edges, and proximal tooth slightly larger than distal tooth (Figs. 4C, D). Dorsal simple chaetae thin, unidentate, with slightly curved pointed tip and fine subdistal spines (Fig. 4E). Ventral simple chaetae thick, smooth on margin, distinctly bidentate (Fig. 4F). Anterior parapodia with two aciculae, stick-like with slightly rounded edge (Fig. 4G). Mid-body and posterior parapodia with solitary acicula, with acuminate, pointed tip (Fig. 4H). Proventricle through 9 segments, with 37 muscle cell rows. Pharynx extended through 7 segments, with oval tooth on anterior margin.

**Remarks.** This species is mainly characterized by having mid-body dorsal cirri with marked alternation in lengths, unidentate dorsal simple chaeta, strongly bidentate ventral simple chaetae, acuminate aciculae and short pseudo-spinigers, with long distal spines, surpassing the level of proximal tooth. No other species of the genus has this combination of the characters (see LICHER, 1999). The most similar species is *S. beneliahuae* (CAMPOY & ALQUÉZAR, 1982). This species has also similar body shape, aciculae and chaetae, but the distal and other spines of compound chaetae are almost similar in length. Falcigers in *S. beneliahuae* have long, coarse spines basally, whereas those in *Syllis* sp. 2 have short, fine spines basally. *Syllis caeca* (KATZMANN, 1973) from the Mediterranean Sea also has similar spiniger-like compound chaetae, but this species lacks eyes, the spiniger-like chaetae are longer, without the distal long spines on margin, and the aciculae are slender and straight (LICHER, 1999).

Genus *Trypanosyllis* Claparède, 1864  
*Trypanosyllis coeliaca* Claparède, 1868  
*Trypanosyllis coeliaca* FAUVEL (1923): 270, figs. 101 F-H; SAN MARTIN (2003): 308, figs. 169 A-H, 170 A-H; ÇINAR (2003): 802.

**Material examined:** Museum code (N. Sp. 13/8/3), Autumn 2008, El Alamein, Mediterranean Sea, 20 m depth, coarse sand, one specimen.

**Distribution:** North Atlantic, Mediterranean Sea, Pacific Ocean (NUÑEZ *et al.*, 1992).

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