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## A revision of *Syllidia* (Psamathini, Hesionidae, Polychaeta)

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### Abstract

*Syllidia* Quatrefages, 1866 (Psamathini, Hesionidae, Polychaeta) is revised based on examination of all extant types, other museum specimens, and a large number of newly collected specimens. *Syllidia hongkongensis*, new species, is described from Hong Kong and Hawaii, and *Syllidia armata* Quatrefages, 1866 from western France is redescribed. *Syllidia hongkongensis* is unique within the genus in having neuropodial lobes and neurochaetae from segment 3, rather than from segment 4. The generic names *Magalia* Marion and Bobretzky in Marion 1874 and *Pseudosyllidia* Czerniavsky, 1882 are treated as junior synonyms of *Syllidia*, and the specific names *Magalia assimilis* Pryde, 1914, *M. capensis* McIntosh, 1924, and *Psamathe britannica* Chamberlin, 1919 as junior synonyms of *S. armata*; the latter two represent new synonymies. A lectotype is designated for *P. britannica*. *Syllidia inermis* (Ehlers, 1912) from the Antarctic is treated as *incertae sedis*; it belongs within Psamathini but is not a member of *Syllidia*. *Syllidia liniata* Hartmann-Schröder, 1962 from Peru appears close to *S. armata*, but is regarded as a *nomen dubium* and requires recollection of specimens and redescription.

**Keywords:** *Hesionidae*, *new species*, *Polychaeta*, *Syllidia*, *Syllidia hongkongensis*, *taxonomy*

### Introduction

*Syllidia* Quatrefages, 1866 (Psamathini, Hesionidae, Polychaeta) includes five nominal species (Pleijel 1998): *Syllidia armata* Quatrefages, 1866, *S. assimilis* (Pryde, 1914), *S. capensis* (McIntosh, 1924), *S. inermis* (Ehlers, 1912), and *S. liniata* Hartmann-Schröder, 1962. The type species, *S. armata*, was described by Quatrefages (1866) from material collected in La Rochelle, France. Subsequently, Marion and Bobretzky (in Marion 1874) erected the genus *Magalia* for *Magalia perarmata*, based on material from Marseille, France. *Magalia perarmata* has been treated as a junior synonym of *S. armata* by a number of authors (e.g. Chamberlin 1919; Day 1967; Kirkegaard 1992; Pleijel 1998), and *Magalia* consequently also as a junior synonym of *Syllidia*. Other species that originally were

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introduced as members of *Magalia*, i.e. *M. assimilis*, *M. inermis*, and *M. capensis*, are today also referred to *Syllidia*. There is no type material remaining of either *S. armata* or *M. perarmata*, but based on the original descriptions and newly collected specimens from the original or near the original localities we agree with this synonymy. We here present a revision of the taxonomy of *Syllidia*, accompanied by a redescription of *S. armata* and the introduction of a new species from Hong Kong and Hawaii, characterized by the presence of neurochaetae from segment 3, rather than from segment 4 as is the case with other members of the taxon. We also newly synonymize *S. capensis* (McIntosh, 1924) and *Psamathe britannica* Chamberlin, 1919 with *S. armata*, and remove *S. inermis* from *Syllidia*.

### Material and methods

Descriptions are based on types and other deposited specimens, together with newly collected specimens, for *S. armata* from Sweden, seamounts off Portugal and from Spain, France and Italy, and for *S. hongkongensis* from China. Specimens were collected by scuba, by snorkelling, or by dredging, examined alive, relaxed in isotonic MgCl<sub>2</sub>, fixed in 10% formaldehyde in filtered seawater for one to a few days, rinsed in freshwater, and transferred to 70% ethanol (all newly collected specimens were fixed in this way unless otherwise noted in the Material Examined sections). Specimens for scanning electron microscopy (SEM) were similarly relaxed, preserved for a few hours in 1–2% osmium tetroxide in filtered seawater or in the MgCl<sub>2</sub> solution, rinsed and stored in distilled water, dehydrated in a graded alcohol series, critical-point dried and sputter coated with gold. Specimens for histology and transition electron microscopy (TEM) were fixed in 3% glutaraldehyde (in 0.2 M sodium cacodylate buffer) and post-fixed in 1% osmium tetroxide. Live, relaxed specimens were also mounted for light microscopy (LM) in BDH Gurr Aquamount® on slides for studies of jaws and chaetae. Specimens preserved for DNA sequencing are fixed and stored in 70–95% ethanol.

Institutions and museums are indicated by the following abbreviations: BMNH, The Natural History Museum, London, UK; BPBM, Bernice P. Bishop Museum, Hawaii, USA; HZM, Zoologisches Institut und Museum, Universität Hamburg, Germany; MNHN, Muséum national d'Histoire naturelle, Paris, France; SMNH, Swedish Museum of Natural History, Stockholm, Sweden; ZMUC, Zoological Museum, University of Copenhagen, Denmark. "SEAMOUNT 1" refers to a French expedition in 1987 to seamounts off the Portuguese coast (see <http://www.ifremer.fr/sismer/catal/campagne/campagne.htql?crno=87003011>). Specimens labelled FP are currently in the second author's personal collection for further studies, but will eventually be deposited at MNHN and SMNH.

### *Syllidia* Quatrefages, 1866

*Syllidia* Quatrefages 1866, p 13; Grube 1880, p 222; Czerniavsky 1882, p 174–175; Saint-Joseph 1888, p 317; Gravier 1900, p 172; Chamberlin 1919, p 185–186; Horst 1921, p 77; Hartman 1959, p 192–193; Day 1967, p 226; Hartmann-Schröder 1971, p 126; 1996, p 138; Averincev 1972, p 147; Fauchald 1977, p 77; Pleijel 1998, p 126.

*Magalia* Marion and Bobretzky in Marion 1874, p 399; Marion and Bobretzky 1875, p 54; Grube 1880, p 222; Czerniavsky 1882, p 174–175; Saint-Joseph 1888, p 317; Gravier 1900, p 172; McIntosh 1908, p 136; Ehlers 1912, p 15–17; Chamberlin 1919, p 186; Fauvel 1923, p 246; Hartman 1959, p 188; Pleijel 1998, p 126.

*Pseudosyllidia* Czerniavsky 1882, p 174–175; Saint-Joseph 1888, p 317; Hartman 1959, p 192; Fauchald 1977, p 77; Pleijel 1998, p 126.

*Type species*

*Syllidia armata* Quatrefages, 1866, by monotypy.

*Apomorphies*

Presence of well-developed, paired jaws with a median stylet.

*Description*

Psamathini with eyes and small facial tubercle. Ventral proboscis incision present, terminal ring of proboscis with 10 papillae, paired lateral jaws, and median stylet present, proboscis diaphragm absent. Lip glands absent or present (uncertainty). Enlarged dorsal cirri segments 1–5, enlarged ventral cirri segments 1–3. Emerging notopodial hooks absent, notochaetae absent. Neuropodial lobes and neurochaetae from segment 3 or 4. Some blades of compound neurochaetae with prolonged teeth; tips unidentate. Paired ventral segmental adhesive papillae absent. Median pygidial papillae present.

*Remarks*

Marion and Bobretzky (in Marion 1874) erected *Magalia* for the new species *M. perarmata* from Marseille in southern France. As generally agreed in more recent literature, the two type species are considered synonymous (see Remarks for *S. armata*), and *Magalia* consequently also becomes a junior synonym of *Syllidia*.

The generic name *Pseudosyllidia* was introduced by Czerniavsky (1882) for a species from Madeira that Langerhans (1880) had identified as *S. armata*. Czerniavsky believed Langerhans had misidentified his specimens, and that they should be referred to both a new species and a new genus. He therefore introduced the new generic name *Pseudosyllidia*, but, oddly enough, applied the same species epithet, *armata*. In contrast to Czerniavsky we believe that Langerhans' identification was correct, and therefore treat *Pseudosyllidia* as a junior synonym of *Syllidia*. *Syllidia armata* (Czerniavsky, 1882) thus becomes both a junior synonym and a junior homonym of *S. armata* Quatrefages, 1866. Note that Hartman (1959, p 192) misinterpreted the type locality of Czerniavsky's species to be the Black Sea, whereas actually it is Madeira. The identity of the specimens that Langerhans referred to *Magalia perarmata* is more doubtful, and unfortunately none of his specimens of either *S. armata* and *M. perarmata* were deposited or they have been lost.

*Syllidia*, according to Pleijel (1998), is a member of Psamathini and the sister group to *Nereimyra* Blainville, 1828 and *Bonuania* Pillai, 1965, an unnamed clade united by the presence of jaws and a unique pattern of alternation of the dorsal cirri (but unknown for *Bonuania*). See Pleijel (1998) and Ruta and Pleijel (in press) for further description of this character. The alternation pattern in *S. armata* and *S. hongkongensis* is described below; it is unknown for the other members of *Syllidia*.

***Syllidia armata* Quatrefages, 1866**  
(Figures 1–6)

*Syllidia armata* Quatrefages 1866, p 13–15, Plate 8, Figures 10–15; Grube 1880, p 222; Langerhans 1880, p 305, Plate 16, Figure 40; Czerniavsky 1882, p 174–175; Saint-Joseph 1888, p 317; Fage 1906, p 326; Ehlers 1913, p 467–468; Chamberlin 1919,

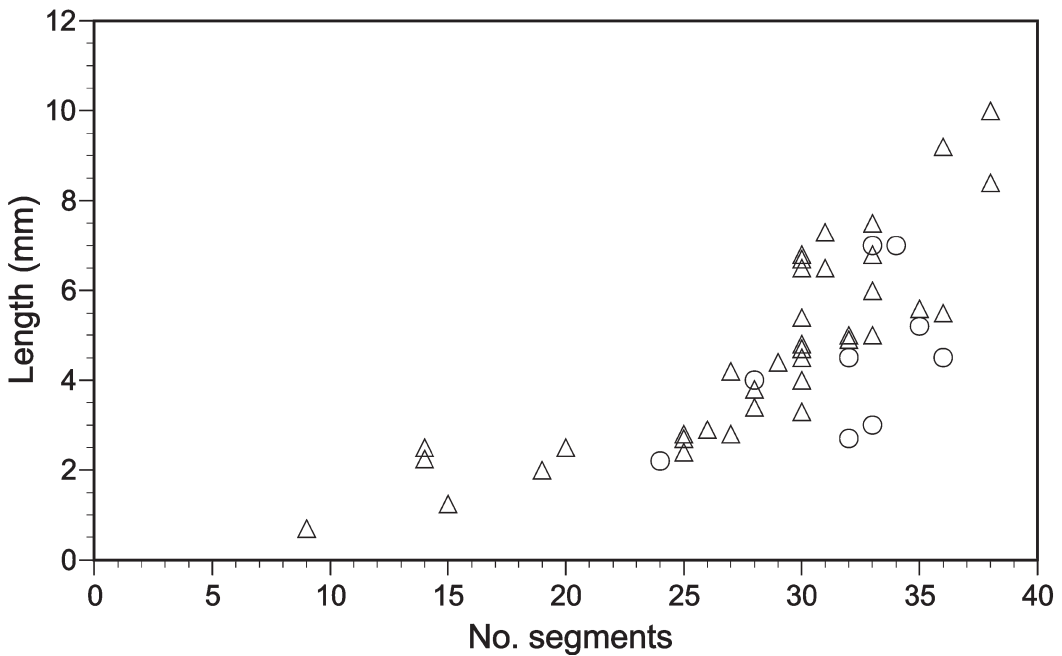


Figure 1. Relationships between number of segments and length in *Syllidia armata* (Δ) from Sweden and southern France and *S. hongkongensi*, new species (○) from the type locality.

p 186; Augener 1918, p 227–229; Day 1953, p 412; 1960, p 307; 1967, p 226–227, Figures 2.1M, 11.1H–L; Hartman 1959, p 193; Hartmann-Schröder 1971, p 126–128, Figure 40A–D; 1974, p 110; 1982, p 8; 1996, p 138–139, Figure 57; Cazaux 1970, p 112–116, Plate 34, Figures 1–5, Plate 35, Figures 1, 2; Ben-Eliahu 1972, p 202; Rasmussen 1973, p 69–70; Rullier 1974, p 25; San Martin et al. 1981, p 67; Campoy



Figure 2. Micrograph of mature female of *Syllidia armata* from the Koster area, Sweden, dorsal view. Exact scale unknown but whole animal, excluding cirri, is about 9 mm long.

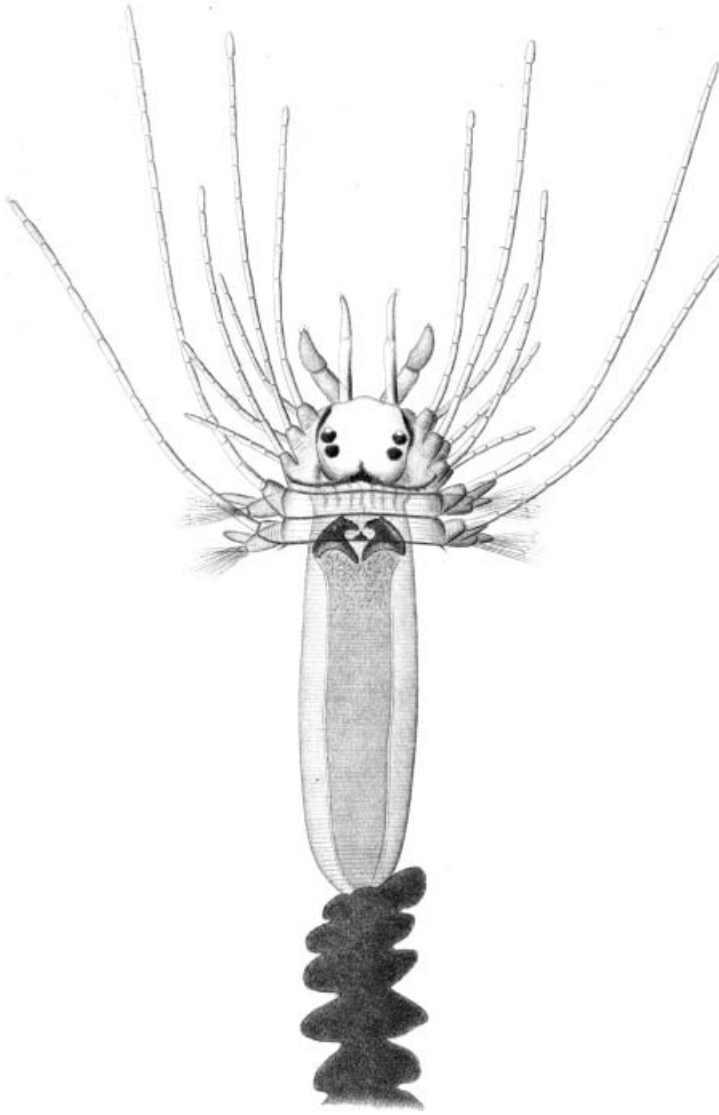


Figure 3. Anterior end of *Syllidia armata* (after Marion and Bobretzky 1875).

1982, p 212–213; Sordino 1990, p 41–44; Kirkegaard 1992, p 217–218, Figure 106; Mackie et al. 1995, p 185; Pleijel 1998, p 126; Pleijel and Rouse 2004, Figure 4.

*Magalia perarmata* Marion and Bobretzky in Marion 1874, p 399; Marion and Bobretzky 1875, p 54–56, Plates 6, 7, Figure 16A–H; Langerhans 1880, p 305 (uncertain identity; see below); Saint-Joseph 1888, p 318–320, Plate 13, Figures 197, 198; McIntosh 1908, p 136–137, Plate 59, Figures 1, 2, Plate 65, Figure 10, Plate 69, Figure 18, Plate 78, Figure 8; 1924, p 16; 1925, p 41–42; Ehlers 1912, p 17; Rioja 1918, p 36–37; 1925, p 18; Chamberlin 1919, p 186; Fauvel 1923, p 246–247, Figure 92; Abeloos 1950a, p 477–478; 1950b, p 1009–1110; Casanova 1954, p 155–162, Plates 1, 2, Plate 3, Figures 1–7; Rasmussen 1956, p 48; Marine Biological Association 1957, p 117; Banse 1959, p 427;

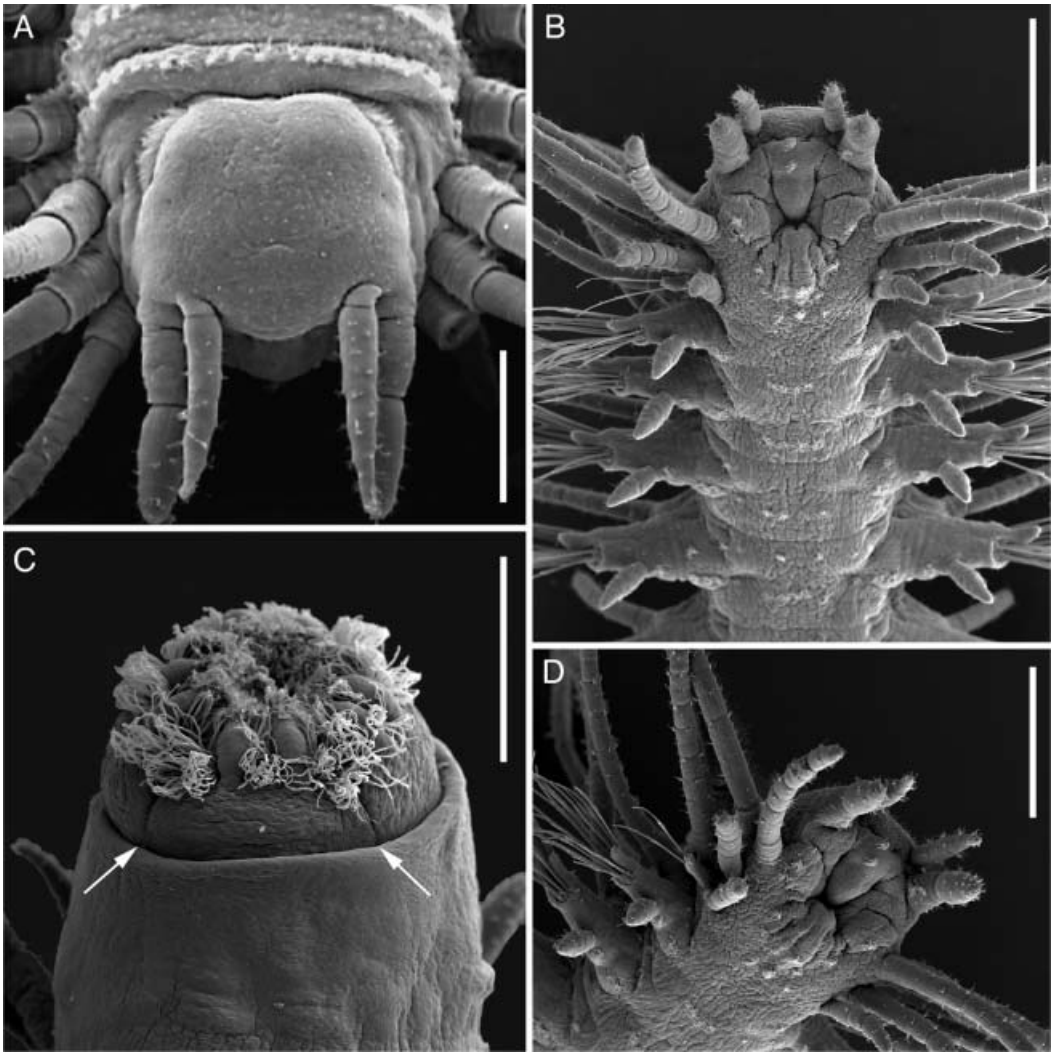


Figure 4. SEM micrographs of *Syllidia armata* from Sweden. (A) Anterior end, dorsal view; (B) anterior end, ventral view of subadult specimen (22 segments) with neuropodial lobes and chaetae on segment 3; (C) distal part of everted proboscis, ventral view, with papillae embedded in cilia. The two visible folds (arrows) will extend to form the ventral incision in the fully everted proboscis; (D) anterior end, ventro-lateral view of same specimen as in (B). Scale bars: 100  $\mu\text{m}$  (A); 150  $\mu\text{m}$  (B, C); 120  $\mu\text{m}$  (D).

Hartman 1959, p 188; Amoureux 1976, p 11; Amoureux and Gantès 1976, p 193; Pleijel 1998, p 126.

*Pseudosyllidia armata* Czerniavsky, 1882, p 174–175; Pleijel 1998, p 126.

*Castalia arctica sensu* McIntosh 1908 [*non Castalia arctica* Malmgren, 1867], p 125–126, Plate 58, Figure 14, Plate 69, Figure 15, Plate 78, Figure 3, 3a.

*Psammate [sic] britannica* Chamberlin, 1919, p. 13, new synonymy.

*Megalia [sic] assimilis* Pryde, 1914, p 273–275, Plate 11, Figures 1–3.

*Magalia assimilis* McIntosh 1924, p 16; 1925, p 42; Hartman 1959, p 188; Pleijel 1998, p 126.

*Syllidia assimilis* Hartman 1959, p 193; Pleijel 1998, p 126.

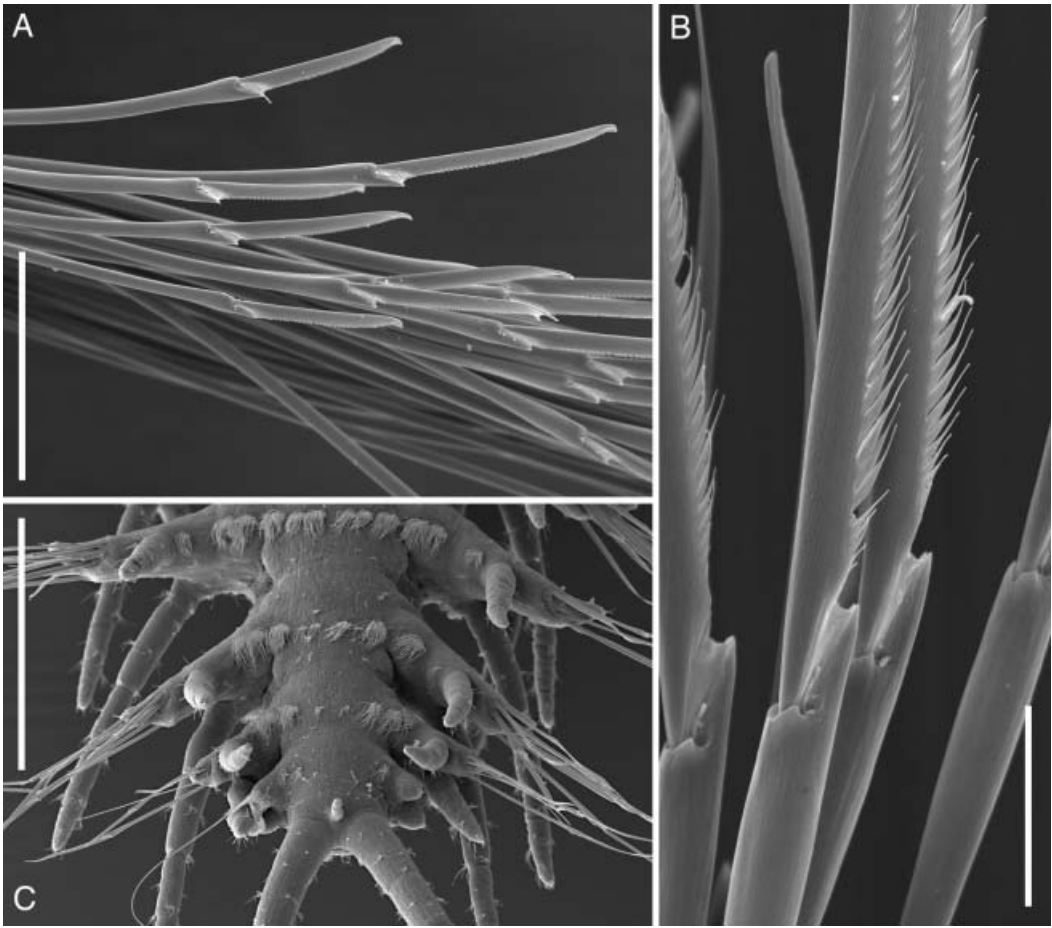


Figure 5. SEM micrographs of *Syllidia armata* from Sweden. (A) Chaetae from median parapodium; (B) close-up of chaetae with prolonged teeth; (C) posterior end, ventral view. Scale bars: 60  $\mu\text{m}$  (A); 15  $\mu\text{m}$  (B); 120  $\mu\text{m}$  (C).

*Magalia capensis* McIntosh, 1924, p 16; 1925, p 41–42, Plate 5, Figure 2, Hartman 1959, p 188; new synonymy.

*Syllidia capensis* Hartman 1959, p 193; Day 1967, p 226–227, Figure 11.1M; Pleijel 1998, p 126.

#### *Material examined*

Denmark: two specimens (ZMUC), Isefjord, soft bottom, 4–8 m, collector E. Rasmussen, July 1943. England: one specimen (BMNH 1921.5.1.1104), Plymouth, 1 May 1921. France: one specimen (BMNH 1928.4.26.589), Iles Glénans, 26 April 1928; seven specimens (FP), Dinard, La Rance, collector FP, 17 May 1989; one specimen (FP), Ile Grosse, Banyuls-sur-Mer, 42°29.0'N, 03°08.2'E, 10 m, coarse sand and shells, scuba, collector FP, 13 October 1991; four specimens (FP), same locality data, scuba, collector FP, 18 October 1991; two specimens (FP), Cap d'Osne, Banyuls-sur-Mer, 42°29.80'N, 03°08.48'E, 24 m, collector FP, 18 October 1991; two specimens (FP), Cap Oullestrell, Banyuls-sur-Mer, 42°29.78'N, 03°08.43'E, 24 m, coarse sand and shells, dredge, collector



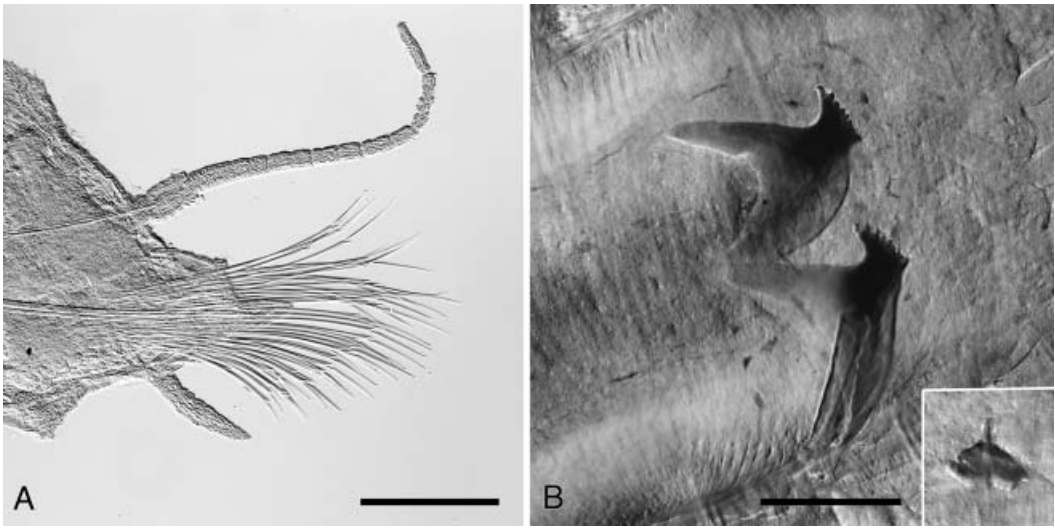


Figure 6. LM micrographs of *Syllidia armata* from Sweden. (A) Median parapodium; (B) jaws. The inset shows the median stylet (not to scale). Scale bars: 250  $\mu\text{m}$ .

FP, 8 October 1993; one specimen (FP), Banyuls-sur-Mer, 42°29.75'N, 03°09.00'E, 30 m, sandy mud with detritus, dredge, collector FP, 12 May 1997. Ireland: two specimens (BMNH 1921.5.1.1098, lectotype and paralectotypes of *Psamathe britannica*; see Remarks), 50 miles west of Valencia, 160–230 m, collector G. Jeffreys; six specimens (BMNH 1914.12.12.18), Galway Bay, dredge, 4 November 1928. Italy: one specimen (FP), Brucoli, Sicily, 37°16.8'N, 15°11.7'E, 0–5 m, among *Posidonia* seagrass, scuba, collector FP, 21 May 1990; one specimen (FP), Capo Mulini, Accitrezza, Sicily, 37°34.4'N, 15°11.7'E, 30 m, scuba, collector FP, 12 June 1990; one specimen (FP), Pantano Piccolo, Messina, Sicily, 0–5 m, lagoon, snorkelling, collector FP, 25 May 1992; one specimen (FP), Castello, Ischia off Naples, 48°42.8'N, 13°57.85'E, 1–2 m, snorkelling, collector FP, 8 September 1993. NE Atlantic, Seamounts off Portugal: one specimen (FP), SEAMOUNT 1 DW04, Gorringe Bank, 36°32.5'N, 11°34.4'E, 93–96 m, coralligenous substratum, dredge, collector FP, 22 September 1987. South Africa: eight specimens (BMNH 1961.9.846–854), 401 m, September 1961; 58 specimens (BMNH 1961.9.8–61), 68 m, September 1961. Spain: ca 10 specimens (FP), Blanes harbour, dredge, collector FP, May 1997. Sweden: one specimen (FP), Klinken, Koster area, 58°51.7'N, 11°11.19'E, 6–8 m, among *Pomatoceros* tubes, sand and gravel, scuba, collector FP, 23 September 1989; seven specimens (FP), same locality data, scuba, collector FP, 4 October 1989; two specimens mounted for SEM (FP), same locality data, scuba, collector FP, 14 April 1990; two specimens (FP), same locality data, scuba, collector FP, 14 April 1990; 30 specimens (FP), same locality data, scuba, collector FP, 26 June 1990; one specimen (FP), Gåsö Ränna, Gullmarsfjorden, west coast of Sweden, 30–40 m, dredge, collector FP, 24 July 1990; 26 specimens, Klinken, Koster area, 58°51.7'N, 11°11.19'E, 6–8 m, among *Pomatoceros* tubes, sand and gravel, scuba, collector FP, 17 August 1990; 30 specimens (FP), same locality data, scuba, collector FP, 20 August 1990; 20 specimens (FP), same locality data, scuba, collector FP, 21 August 1990; seven specimens (FP), same locality data, scuba, collector FP, 1 March 1991; 30 specimens (FP); same locality data, scuba, collector FP, 15 June 1991; 36 specimens (FP), same locality data, scuba, collector

FP, 22 June 1991; four specimens (FP), same locality data, scuba, collector FP, 25 May 1992; 10 specimens preserved for DNA analyses (FP), five specimens preserved for TEM (FP), same locality data, scuba, collector FP, 3 August 2004; six specimens preserved for DNA analyses (FP), same locality data, scuba, collector FP, 4 April 2005.

### *Apomorphies*

None currently known (see Remarks for *S. hongkongensis*).

### *Description*

Longest, complete observed specimen 10 mm long for 38 segments; for further measurements, see Figure 1. Body short, cylindrical, excluding parapodia, anteriorly truncate, posteriorly tapered (Figure 2); venter flattened without distinct median longitudinal furrow. Prostomium rounded quadrangular, anteriorly straight, posterior incision weakly developed, sometimes not visible (Figures 3, 4A). Small facial tubercle present (Figure 4B, D). Palpophores cylindrical, as long as palpostyles; palpostyles tapered (Figure 4A). Paired antennae as long as palps but thinner, tapered. Anterior pair of eyes reniform, slightly larger than posterior pair and situated farther apart, posterior pair rounded, both pairs with lenses. Nuchal organs lateral, mid-dorsally well separated (Figure 4A). Presence or absence of lip glands uncertain; weakly developed or absent. Non-everted proboscis reaching segment 8 or 9, with 10 terminal papillae (Figure 4C), ventral incision present (Figure 4C). Jaws large, dark, visible through body wall (Figure 3), especially from ventral side, with two basal pointed shafts and serrated edges with about seven or eight teeth (Figure 6B); small unpaired stylet (Figure 6B) situated between jaws (often difficult to detect). Segment 1 not dorsally visible, segment 2 narrower than following segments. Dorsal cirri and cirrophores segments 1–5 enlarged and prolonged compared to following segments. Ventral cirri segments 1–3 much longer than on following segments, with well-developed cirrophores. Cirrophores of all cirri segments 1–3 with single acicula. Neuropodial lobes and neurochaetae absent on segments 1–3. Dorsal cirri on segments 5, 8, 10, 12, 15, 17, 20, 22, 25, and every third segment thereafter dorsally orientated and elongated, dorsal cirri of other segments shorter and more laterally orientated. All dorsal cirri distinctly annulated with basal rings as long as wide, distal rings usually shorter. Neuropodia with one or two aciculae and 20–30 compound chaetae (Figures 5A, 6A). Median neurochaetae with longer blades than dorsal and ventral ones; ventralmost ones shortest, length less than half of longest median ones. Chaetal shafts internally camerated. Several median chaetal blades with prolonged teeth (Figure 5B). Blades with unidentate tips. Ventral cirri subdistally inserted on neuropodium, tapered, indistinctly annulated, cirrophores absent (Figure 6A). Pygidium with pair of cirri, similar to dorsal cirri. Small medio-ventral pygidial papilla present (Figure 5C).

### *Colour*

Live specimens opaque to transparent, unpigmented except for dark brown ventral longitudinal midline, usually on posterior part of body (Figure 2). Gut yellowish, gut wall of last six or seven segments with white pigment speckles. Eyes red. Jaws dark brown, median stylet yellowish. Preserved specimens white to yellowish, eyes dark red, ventral longitudinal pigmentation usually retained.

*Reproduction and development*

*Syllidia armata* has an extended reproductive period, Cazaux (1970) recorded mature specimens from early summer to November in Arcachon near Bordeaux in France, and Rasmussen (1956) from May to October in Denmark. The eggs are 50–60 µm and colourless and the larvae are planktotrophic; the different stages were described in detail by Casanova (1954) and Cazaux (1970). They settle at a stage when they have about eight segments, and jaws start to develop at 10–14 segments. In contrast to the closely related *Nereimyra punctata* (O. F. Müller, 1776) (see Schram and Haaland 1984; Pleijel 1998), there are no traces of a median antenna in any early stages. The development described by Cazaux is in full agreement with observations from early stages from Sweden, with the exception that Cazaux reported the presence of a few capillary notochaetae in the late planktonic and newly settled stages; this requires further examination.

*Habitat*

*Syllidia armata* occurs in sand, gravel, and rocky substrata, 0–230 m depth; it is also recorded from mud bottoms in the literature (McIntosh 1924; Hartmann-Schröder 1962).

*Distribution*

As seen from examined specimens, *S. armata* occurs in South Africa, Italy, Spain, Mediterranean and Atlantic coasts of France, and up to Sweden and Denmark in the north. Additional records from the literature include Amoureux (1976) and Amoureux and Gantès (1976) from Morocco, Langerhans (1880) from Madeira, Augener (1918) from Senegal, Hartmann-Schröder (1982) from Guinea-Bissau, Day (1967) from South Africa, Ben Eliahu (1972) from Suez, and Rullier (1974) from Florida. See also Figure 9.

*Remarks*

Quatrefages, in his original description of *S. armata*, reported the presence of capillary notochaetae. As his description in all other respects agrees well with the description above, and as no notochaetae have been observed in any European specimens, we believe this was an error.

Marion and Bobretzky (in Marion 1874) introduced the new species *Magalia perarmata* from Marseille in southern France. They did not compare it to or mention Quatrefages' description of *S. armata*, possibly due to Quatrefages' statement of the presence of capillary notochaetae. There is no extant type or other original material accompanying either of the two species names, but at present we see no need to designate neotypes. We agree with previous studies that the two are synonymous (e.g. Day 1967; Kirkegaard 1992; Pleijel 1998) as only one species is known from European waters. For the same reason we consider Pryde's (1914) species *M. assimilis* from the North Sea, also without extant types, as a junior synonym of *S. armata*. Pryde (1914), in his original description of *Magalia assimilis*, noted the presence of prolonged teeth on the blades, but then incorrectly assumed them to be absent from *M. perarmata* since they had not been described by Marion and Bobretzky (1875). All examined specimens, from the Mediterranean and elsewhere, have some chaetal blades with prolonged teeth. Pryde, similarly to Marion and Bobretzky, did not make any reference to Quatrefages' species.

Chamberlin (1919) introduced *Psamathe britannica*. Although he had examined no specimens and did not provide any description of the species, he named it for the specimen from Ireland that McIntosh (1908) had referred to *Castalia arctica* Malmgren, 1867 (junior synonym of *Nereimyra aphroditoides* Fabricius, 1780 cf. F. Pleijel and A. Nygren, in preparation). According to McIntosh's (1908) original description, there was only one specimen, but re-examination of his material shows at least two specimens to be present (two anterior ends, one median part, and one posterior end). Although not previously recognized as such, these specimens (or minimally one of them) are actually the types for Chamberlin's species *P. britannica*. Of these specimens at least one anterior end clearly belongs to *Syllidia*, as seen from the everted proboscis with paired jaws and a median, ventral stylet. This is also the same specimen that was used for McIntosh's illustration Figure 14 on Plate LVIII, and we here designate it as lectotype. We therefore agree with Chamberlin that McIntosh's specimen was misidentified, but disagree with him on both the generic assignment and on the erection of a new species; instead we regard *P. britannica* as a junior synonym of *S. armata*. This is a new synonymy.

*Syllidia capensis* was described by McIntosh (1924; as *Magalia capensis*) from South Africa based on a single, incomplete specimen. McIntosh did not mention any depository and his type is not present at BMNH, at the National Museum of Scotland, or at the South African Museum, and it is therefore here considered lost. The new species was justified by the presence of chaetae with tips possessing long, delicate, and hair-like terminal pieces. However, examination of other South African specimens revealed no chaetal, parapodial, or other consistent morphological differences from *S. armata*, and we therefore here treat the name *S. capensis* as a junior synonym of *S. armata*. This is a new synonymy as well.

Several authors (Day 1967; Kirkegaard 1992; Hartmann-Schröder 1996) have reported more than 10 papillae on the terminal proboscis ring. Nevertheless, all examined specimens where the proboscis was examined (ca 50) were provided with 10 papillae, as is the case also in closely related taxa, including *Nereimyra* Blainville, 1828 and *Sirsoe* Pleijel, 1998.

### *Syllidia hongkongensis*, new species

(Figures 7, 8)

#### *Material examined*

Hong Kong: holotype (MNHN POLY TYPE 1457), Lobster Bay, Cape d'Aquilar, 22°12.4'N, 114°15.5'E, 1 m, shell sand, gravel and stones with calcareous red algae (*Corallina* sp.), snorkelling, collector FP, 10–23 July 1995; 18 paratypes (MNHN POLY TYPE 1458–1472), including three whole-mounted on slides (MNHN POLY TYPE 1473–1475), same locality, data, and collector; five specimens mounted for SEM (FP), same locality, data, and collector. USA, Hawaii, Pearl Harbor: two specimens (BPBM-R 2213), West Loch, Walker Bay along shoreline, 0.5–1.5 m, 6 February 1996; four specimens (BPBM-R 2231), north side of entrance channel, 0.5–3 m, 13 February 1996; seven specimens (BPBM-R 2427), West Loch, mangrove area, 1 m, 16 April 1996.

#### *Apomorphies*

Possibly the presence of neurochaetae on segment 3 (see Remarks).

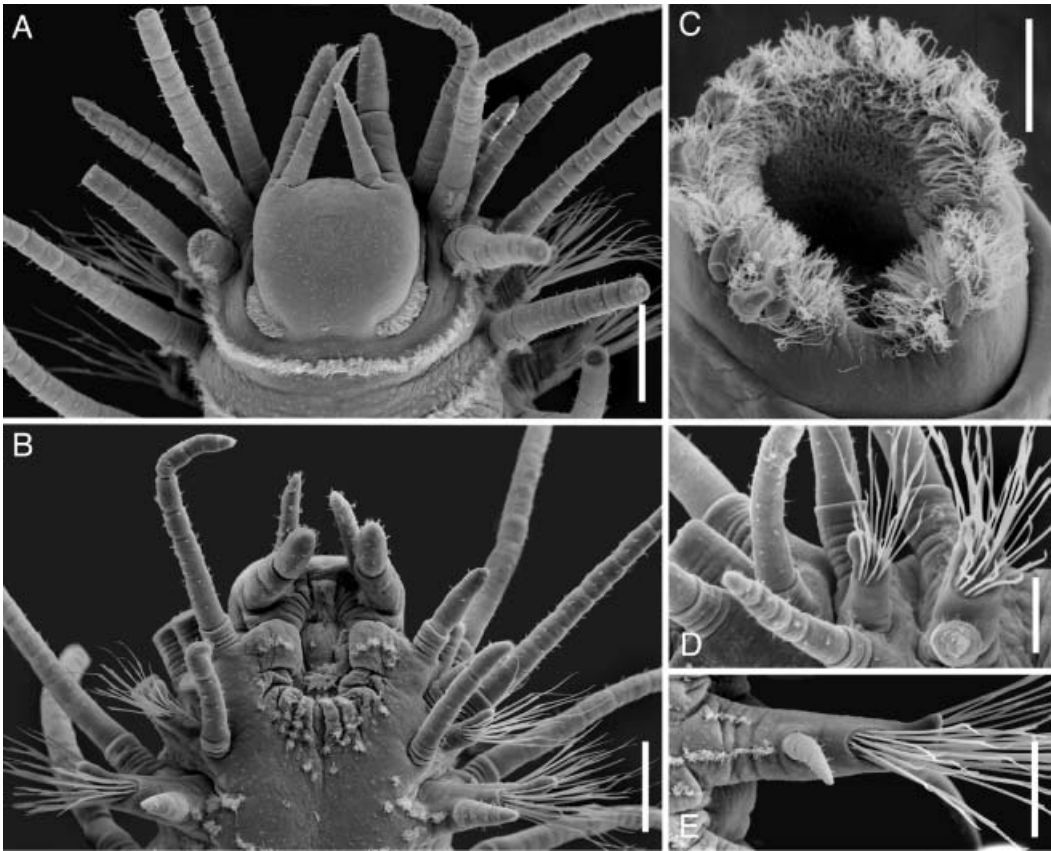


Figure 7. SEM micrographs of *Syllidia hongkongensis*, new species. (A) Anterior end, dorsal view; (B) anterior end, ventral view; (C) distal proboscis ring with papillae embedded in cilia; (D) anteriormost segments, left side, lateral view; (E) median neuropodium, ventral view. Scale bars: 100  $\mu$ m.

### Description

Holotype complete specimen, 5 mm long for 35 segments; see Figure 1 for further measurements. Body short, cylindrical, excluding parapodia, anteriorly truncate, posteriorly tapered; venter flattened without distinct median longitudinal furrow.

Prostomium rounded quadrangular, anteriorly straight, posterior incision weakly developed (Figure 7A). Small facial tubercle present (Figure 7B). Palpophores cylindrical, about as long as palpostyles; palpostyles tapered. Paired antennae elongated, tapering, as long as palps or slightly longer (Figure 7A). Anterior pair of eyes rounded to reniform, slightly larger than posterior pair and situated further apart, posterior pair rounded, both pairs with lenses. Nuchal organs lateral, mid-dorsally separated (Figure 7A). Distinct lip glands absent (Figure 7B). Non-everted proboscis reaching segments 7–10, with 10 terminal papillae, ventral incision present (Figure 7C). Proboscis with pair of ventro-lateral large, denticulate jaws with one dark pointed and one wing-like shaft and serrated edges with about 10 teeth (Figure 8B); small unpaired stylet (Figure 8B) situated between jaws (may be difficult to detect). Segment 1 dorsally reduced, segment 2 fully developed. Dorsal cirri and cirrophores segments 1–5 enlarged and prolonged compared to following segments. Ventral cirri segments 1–3 enlarged and prolonged compared to following

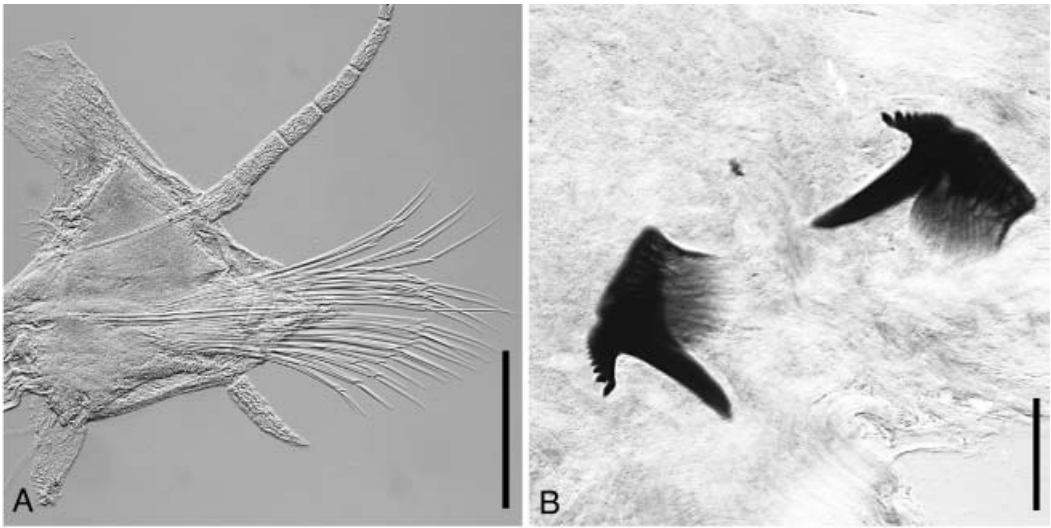


Figure 8. LM micrographs of *Syllidia hongkongensis*, new species. (A) Median parapodium; (B) jaws and median stylet. Scale bars: 200  $\mu\text{m}$  (A); 100  $\mu\text{m}$  (B).

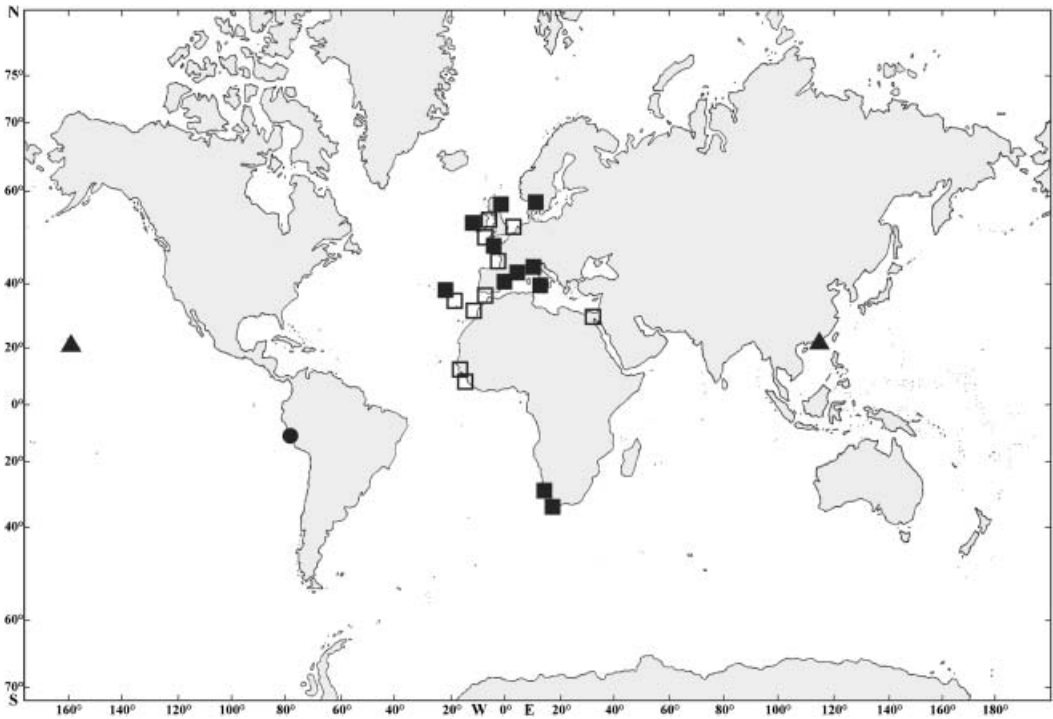


Figure 9. Geographical distribution of *Syllidia armata* (■, based on examined specimens; □, records from the literature), *S. hongkongensis*, new species (▲, based on examined specimens), and *S. liniata*, *nomen dubium* (●, based on examined holotype).

segments, with well-developed cirrophores. Neuropodial lobes and neurochaetae absent on segments 1 and 2. All dorsal cirri distinctly annulated with basal rings as long as wide or longer, distal rings usually shorter. Elevated and prolonged dorsal cirri on segments 5, 8, 10, 12, 15, 17, 20, 22, 25, and every third segment thereafter, dorsal cirri of other segments shorter and more laterally orientated. Neuropodia of median segments with one or two aciculae and 20–30 compound chaetae (Figure 8A). Median neurochaetae with longer blades than dorsal and ventral ones; ventralmost ones shortest, length less than half of longest median ones. Chaetal shafts internally camerated. Several median chaetal blades with prolonged teeth. Blades with unidentate tips. Ventral cirri subdistally inserted on neuropodium, tapered, indistinctly annulated, cirrophores absent (Figure 7D). Pygidium with pair of cirri, similar to dorsal cirri. Small medio-ventral pygidial papilla present.

### Colour

Live specimens opaque to transparent, unpigmented except for brown ventral longitudinal midline, usually on posterior part of body. Eyes red. Jaws dark brown, median stylet opaque. Preserved specimens yellowish with weak transverse darker pigmented bands.

### Reproduction

Several sexually mature specimens observed, both from Hong Kong and Hawaii. Mature female from Hong Kong with egg diameter about 45 µm.

### Habitat

At the type locality with shell sand, gravel, and stones with calcareous red algae (*Corallina* sp.), low tide; down to 5 m depth in Hawaii.

### Distribution

Presently known only from Hong Kong and Honolulu, Hawaii.

### Remarks

*Syllidia hongkongensis* is clearly a member of *Syllidia*, as seen from the presence of paired, ventro-lateral jaws and a median stylet. *Syllidia hongkongensis* differs from all other *Syllidia* in the absence of neurochaetae on segments 1 and 2, rather than on segments 1–3. Hesionids go through a number of ontogenetic stages that involves reduction of chaetae and parapodial lobes on the anteriormost segments, such that most taxa have an adult condition with chaetae appearing first from segment 4 or 5 (see Pleijel 1998 and references within). It is therefore important to compare fully grown stages, and the adult status of our specimens of *S. hongkongensis* is evidenced by the presence of eggs and sperm in several of the animals. However, the unique presence of chaetae on segment 3 does not necessarily constitute an apomorphy for *S. hongkongensis*; for example, it is instead a plesiomorphy if *S. hongkongensis* is the sister to remaining *Syllidia*. The most closely related taxa to *Syllidia*, according to Pleijel (1998), are the sister group *Nereimyra* and *Bonuania*, and then *Sirsoe*, and these taxa have members where the chaetae start on segment 4 (*Nereimyra*), but also on segment 2 or 3 (*Bonuania* and *Sirsoe*). Furthermore, if the presence of chaetae from

segment 3 indeed is an apomorphy for *S. hongkongensis*, then we may instead lack diagnostic features for *S. armata* (and possibly also for the lesser well-known members of *Syllidia*). Further characters are required to resolve these issues.

The specimens from Honolulu are in less good condition than those from Hong Kong. Nevertheless, they clearly are members of *Syllidia* as seen from, for example, the presence of similar jaws. Furthermore, all specimens from Honolulu, including mature ones, have chaetae present from segment 3, and based on this we refer them to *S. hongkongensis*.

#### *Etymology*

Named for the type locality, Hong Kong.

#### *Syllidia inermis* (Ehlers, 1912), *incertae sedis*

*Magalia inermis* Ehlers 1912, p 15–17, Plate 2, Figures 1–5; McIntosh 1924, p 16; McIntosh 1925, p 42; Hartman 1959, p 188.

*Syllidia inermis* Horst 1921, p 77; Hartman 1959, p 193; 1964, p 75, Plate 23, Figures 5, 6; Averincev 1972, p 147, Plate 20, Figure 5; Knox and Cameron 1998, p 46; Pleijel 1998, p 126, 163.

*Syllidia* cf *inermis* Hartmann-Schröder and Rosenfeldt 1988, p 37.

#### *Material examined*

Antarctic: Three (or more?) syntypes (BMNH 1911.11.1.128), McMurdo Sound, Ross Island, Hut Point, Winter Quarter, 18 m, dredge net, 2 October 1903.

#### *Remarks*

Ehler's types have not previously been recognized as such, but comparison of his description with specimens and labels leaves no doubt that they constitute his original ones. They were collected during the British National Antarctic Expedition 1901–1904 (when the R/V *Discovery* was blocked for several years in the ice in McMurdo Sound at Ross Island), probably by the marine biologist Thomas Vere Hodgson, specialist of hydroids and jellyfishes. They include one entire specimen, one specimen with the posteriormost part missing, and four median pieces, all in excellent condition. However, examination of these specimens indicates that they do belong within *Psamathini* but are not members of *Syllidia*; among other features, they lack the jaws of *Syllidia*, and the neuropodia and neurochaetae start on segment 5, not on segment 3 or 4. Instead they likely belong to *Psamathe* Johnston, 1836; the issue will be further detailed in a forthcoming revision of *Psamathe* (F. Pleijel, in preparation).

As for the other records of *S. inermis*. Averincev (1972) reported it from Ross Sea and Davis Sea in the Antarctic, but we have not had the possibility to examine his specimens. The descriptions in Hartman (1964) and Knox and Cameron (1998) are based on Ehler's original description and include no new specimens or observations, whereas Hartmann-Schröder and Rosenfeldt (1988) reported one specimen of this species (as *S. cf inermis*) from the Antarctic Peninsula. This specimen is unfortunately in very poor condition, and the only statements we can make is that it is likely a member of *Psamathini* but not of *Syllidia*.



*Syllidia liniata* Hartmann-Schröder, 1962, *nomen dubium*

*Syllidia liniata* Hartmann-Schröder 1962, p 115–116, Plate 5, Figures 23–26; Hartman 1965, p 26; Pleijel 1998, p 126, 163.

*Material examined*

Peru: holotype (HZM P-14193), Isla Santa, Bahía Coisco, north of Chimbote, 9 m, mud and large shells, collector Noodt, 24 April 1956.

*Apomorphies*

None currently known.

*Description*

Holotype in poor condition, consisting of anterior part of 18 segments and posterior part of eight or nine segments (posteriormost segments and pygidium missing), 3 and 1.5 mm long, respectively. Prostomium rounded rectangular, slightly longer than wide (but see Remarks). Nuchal organs lateral, mid-dorsally well separated. Proboscis everted, anterior part dissected and damaged, jaws and terminal ring of papillae no longer present. Neuropodial lobes and neurochaetae absent segments 1–3. All cirri missing. Median neurochaetae with longer blades than dorsal and ventral ones; ventralmost ones shortest. Chaetal shafts internally camerated. Several median chaetal blades with prolonged teeth.

*Colour*

Uniformly yellowish brown; no traces of pigmentation present.

*Distribution*

Only known from the type locality.

*Remarks*

Hartmann-Schröder, 1962 described *S. liniata* from a single specimen from Peru, and no other specimens have been reported to date. *Syllidia liniata* is similar to *S. armata* in having neurochaetae from segment 4, and at present there are no actual characters to support keeping the two separate. Hartmann-Schröder (1962) distinguished *S. liniata* from *S. armata* based on the shape of the jaws, the shape of the prostomium and the first two segments, and the dorsal pigmentation with transverse stripes on the anteriormost segments. However, her illustration of the jaws agrees with *S. armata*, and the difference in shape of prostomium could not be substantiated from examination of the specimen; it is slightly wider than long but this is the case also in specimens of *S. armata* with everted proboscis. The reported pigmentation is not shown on the original illustration and is no longer present on the specimen. In view of the poor condition of the single known specimen, we here treat it as a *nomen dubium* within *Syllidia*. A redescription based on newly collected specimens is required.

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