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Syllides caribica, a new species from Aruba, the Netherlands Antilles, with a brief discussion of its subfamilial assignment

(Polychaeta: Syllidae)

Frank Licher

With 2 figures

Abstract

A new species of Syllidae, *Syllides caribica* n. sp., from Aruba, the Netherlands Antilles, Caribbean Sea is described and discussed. The new species is conspicuous in possessing fleshy palps with ventral papillae-like appendages, in lacking pharyngeal teeth, in having smooth dorsal cirri on first and second chaetiger and articulated ones on following chaetigers, and in possessing a single prominent spine at the bases in each of the blades of the superior falcigerous chaetae. Its assignment to the Syllinae or Eusyllinae is discussed by resulting that the taxon *Syllides* Ørsted 1845 might not be positioned into any of the four classical syllid subfamilies thus a revision of the subfamilies is regarded to be claimed.

Key words: *Syllides*, Syllidae, Syllinae, Eusyllinae, taxonomy, systematics, Netherlands Antilles, Caribbean Sea.

Introduction

During my work on a revision of the polychaete genus *Typosyllis* Langerhans 1879 sensu Hartmann-Schröder 1965 (Syllidae), I had the chance to study a striking species that was collected on sandy beaches of Aruba island, Caribbean Sea. I found that this specimen possessed typical syllid palps with paired ventral papillae-like appendages. Biarticulate palps are completely uncommon in Syllidae, and it struck me how similar these palps were to the biarticulate ones known in pilargid species. An assignment to the Syllidae was obvious, not only on account of the possession of a proventricle, but also because the general habitus, as well as parapodia and chaetae, are completely syllid typical. At first sight I supposed a close relationship of the observed material to Langerhans' genus as separated palps and the conspicuously articulated dorsal cirri intercessioned for a Syllinae species, whereas the general habitus, the smooth anteriormost appendages, and the articulated dorsal cirri that were bent into posterior direction were so similar to *Syllides* Ørsted 1845 (Eusyllinae). However, such combination of features does not fit neither of the subfamilies Syllinae, Eusyllinae, Exogoninae, and Autolytinae.

In this paper, *Syllides caribica* n. sp., from the Caribbean Sea, is described and its position within the Syllidae discussed. The new species was collected on Aruba island sandy beaches in 1995 by Christoph Meyer, Universität Osnabrück, who kindly left me the material for description.

Author's address:
Frank Licher, Universität Osnabrück, Fachbereich Biologie/Chemie, AG Spezielle Zoologie, Barbarastraße 11, D-49069 Osnabrück.

Material and methods

There was only one complete animal found in the obtained sample of sand. The specimen was washed out with a solution of 8% $MgCl_2$ (see WESTHEIDE 1990) and fixed in a buffered mixture of sucrose, picric acid, formaldehyde, and glutaraldehyd (SPAFG; see WESTHEIDE & PURSCHKE 1988). Subsequently it was transferred to 70% ethanol. For light microscopical preparations, the fixed specimen was transferred from 70% ethanol to glycerine. Observations, measurements, photos and line drawings were made with aid of a Leitz Diaplan microscope with interference contrast optics and a camera lucida. Pencil drawings have been scanned, imported into a graphic program (Micrografx Designer 4.1a TE) and redrawn vector-orientated. The printout was done by a laserprinter (Hewlett Packard 4P) with a dissolution of 600 x 600 dpi.

The following abbreviations for collections are used: Muséum d'Histoire Naturelle, Genève [MHNG]; Senckenberg Museum, Frankfurt am Main [SMF]; Universität Osnabrück, Spezielle Zoologie, private collection of Prof. Dr. W. WESTHEIDE [SZUO]; Zoologisches Institut und Museum, Universität Hamburg [ZMH].

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Systematic account

Syllides caribica n. sp.

Figs. 1–2

Holotype (SMF 4971): Caribbean Sea, Netherlands Antilles, west coast of Aruba island, Eagle Beach, 12.3°N, 70.0°W, 50 cm depth, chalky coarse sand of coral riffs at high tide line, 20 Nov. 1995, C. MEYER leg., F. LICHER det. [only specimen].

Etymology: The species is named for its occurrence in the Caribbean Sea.

Additional material examined: *Syllides hansei* PERKINS 1981. Atlantic Ocean: Florida, Hutchinson Island Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand [ZMH P-16403, 1 ind. (paratype)]. – *Syllides japonica edentata* WESTHEIDE 1974. Pacific Ocean: Galapagos, Sta. Cruz, eulittoral, 31 July 1972, W. WESTHEIDE leg. et det. [SZUO, 1 ind. (paratype)]. – *Syllides longocirrata* (ØRSTED 1845). Mediterranean Sea: Villefranche [MHNG 21123 INVE, 1 ind.]. – *Streptosyllis hainanensis* DING & WESTHEIDE 1994. South China Sea: Hainan island, near Meixia, 19°54'N, 109°33'E, sublittoral sand patch in a dead coral reef, 11 Oct. 1991 [ZMH P-22024, 1 ind. (holotype)].

Description: Only specimen complete with 29 chaetigers, 2.2 mm long (not including palps and anal cirri), 120 μm wide without parapodia, 220 μm wide with parapodia without chaetae and without dorsal cirri. Body subcylindrical, approximately uniform in width, segments distinctly demarcated dorsolaterally, surface epithelium smooth (Fig. 1A). Integument without pigment. Colour whitish to yellowish in living material and after fixation, pharynx brown.

Prostomium suboval, wider than long, posterior margin straightened (Fig. 2A). Palps fleshy, in dorsal view not appearing fused with each other; each subtriangular, slightly shorter than length of prostomium, with tiny papillae-like appendage being about two times longer than wide (Figs. 1B, 2B). Three antennae; the lateral ones positioned at the anterior prostomial margin, the median one at the middle of prostomium. Right lateral antenna slender and smooth, reaching up to the posterior margin of the first chaetiger, left lateral one and median antenna much shorter, oval, less than two times longer than wide, supposedly being regenerated. Four irregular chubby eyes situated in posterior half of the prostomium forming a slight curve opened frontally, left and right pair each partly fused together, outer eyes about one and a half to two times larger than inner ones. Frontal pigmented spots not present. Lateral sides of prostomium covered with long cilia.

Peristomium separated from prostomium by shallow groove dorsally. Two pairs of oval to beanlike peristomial cirri in anterior half; dorsal ones resembling median antennae in form and size, about one and a half time longer than ventral cirri. Distinct long paired nuchal organ dorsally from the anterior peristomial margin extending laterally to the posterior peristomial margin (Fig. 2A).

Parapodia uniramous; notopodia reduced, each only with dorsal cirrus. Dorsal cirri on the first and second chaetiger smooth to wrinkled; first pair reaching up to the posterior margin of the fourth chaetiger, second pair of nearly same length. Dorsal cirri of the third and following chaetigers articulated; third to fifth dorsal cirri each with seven articles, in median and posterior segments with five (seven in 14th chaetiger), last four segments with only one article (others broken?), each about two times longer than wide.

Neuropodia well developed; neuropodial lobes subcylindrical, about half as wide as the body width, each with a praechaetal parapodial lobe, a ventral cirrus, one internal acicula, up to eight subacicular falcigerous chaetae and one simple dorsal chaeta. Falcigerous chaetae with blades of different lengths in each parapodium, almost constantly over the whole length of the specimen (Figs. 1E–H): dorsalmost longest blades up to 50 μm long with ratio of 3.5 in comparison to the ventralmost shortest blades, each blade bidentate with a minutely serrated edge. Long falcigers with a thorn at base of the blade and teeth lacking subdistally. Shafts of superior falcigers with two notches, inferior ones with one notch. Simple dorsal chaeta distally rounded, conspicuously serrated on the distal two-thirds of length, present in first (!) chaetiger up to the

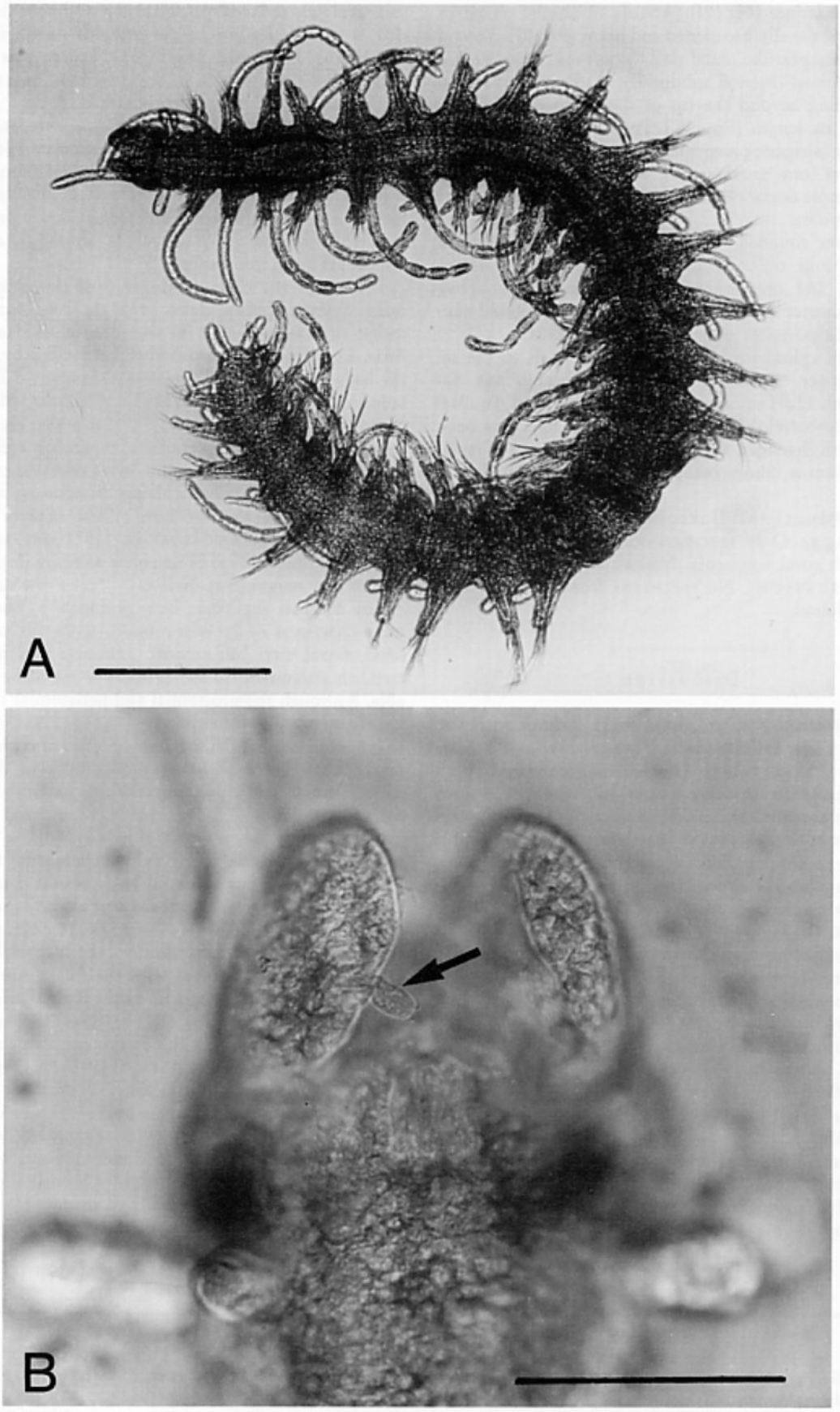

Fig. 1. *Syllides caribica* n. sp. (holotype). – A) Complete specimen, dorsal view; B) prostomium, ventral view (arrow showing papillae-like appendages). – Scales: A = 500 μm; B = 100 μm.

third-last chaetiger (Fig. 2I). Acicula of similar shape in all segments, distally broadened and blunt (Fig. 2J). Ventral cirri slender, pearlike, subdistally confined, each with a short cirrophor, inserted subdistally of the neuropodium and extending beyond the tip of the parapodial lobe by about half its length (Fig. 2C). Posterior chaetigers with three to six falcigers; praepygidial segment with dorsal and ventral cirri (one article each), three falcigerous chaetae and one simple dorsal chaeta. Simple ventral chaetae absent in all parapodia.

Pygidium rounded, with paired oval to bean-shaped anal cirri, four times longer than wide, inserted dorsoterminally, and one much slender median anal cirrus, minutely shorter than the paired anal cirri, inserted ventrally at the posterior pygidial margin (Fig. 2D).

Pharynx cylindrical, short, extending back to the second chaetiger, apparently unarmed (although not dissected), with 12 (?) equal-sized, spherical marginal papillae. Proventricle barrel-shaped, extending from pharynx back to the fourth chaetiger, with about 24 to 27 groups of radial muscle columns. Short oesophagus reaching into the intestine.

Reproduction: Unknown.

Ecology: Only specimen occurring in chalky sand mixed with coral fragments. Interstitial?

Distribution: No specimens from further localities were found.

Discussion

Syllides caribica n. sp., shares more features with two Atlantic species, *Syllides bansei* PERKINS 1981 and *Syllides floridanus* PERKINS 1981 (Eusyllinae), described from Florida, than with any other species. All three species show (a) smooth antennae and peristomial cirri, (b) clearly articulated dorsal cirri except for chaetigers 1 and 2, (c) simple superiormost chaetae that are present in all (!) parapodia, and (d) papillae-like appendages on their palps.

The new species is most similar to *S. bansei*, in size and in that the falcigerous chaetae of both species have a single conspicuous spine at the blades base. While in *S. bansei* spines are present only in middle falcigers, *S. caribica* n. sp. shows spines in middle and dorsal falcigers, dorsal cirri have less articles (in *S. bansei* up to 20), and the median antenna is positioned in front of the anterior eyes (in *S. bansei* between the posterior ones). The new species differs from *S. floridanus* regarding the shape of the simple dorsal chaetae that are distally rounded, not pointed. Also, its falcigerous blades each have a single spine at their bases instead of several graduateds, and its dorsal cirri are much more clearly articulated. Apart from *S. floridanus* and *S. bansei*, *S. caribica* n. sp. differs from all other Syllidae by having palps with papillae-like appendages (biarticulate?, reduced palpostyles?). Other syllid species that show this feature are *Streptosyllis baolingi* DING & WESTHEIDE 1994, and *Streptosyllis hainanensis* DING & WESTHEIDE 1994 (noticed in the latter after re-examination of the holotype; DING, pers. comm.).

"Biarticulate" palps of *Petitia amphophthalma* SIEWING 1956 (Eusyllinae) are not really biarticulate (BURCHARDT 1994, unpubl.). The shape is rather slender bean-like with a slight ring-like constriction at half of the length than biarticulate and completely different as in the present species. The termination "biarticulate" should be avoided as arousing a false impression.

Although the close relationship of the new taxon to other *Syllides* species seems obvious, it is impossible to assign the taxon to one of the classical subfamilies Syllinae, Eusyllinae, Exogoninae or Autolytinae by following the keys and subfamilial diagnoses. However, that problem seems to be a general problem in *Syllides*. Most of its characters are shared with the Syllinae which are described to possess "palpos completamente separados, con sus bases alejadas, o bien próximos en las base y dorsalemente unidos en ésta ...; apéndices articulados, aunque en algún caso pueden aparecer algunos lisos" (SAN MARTÍN 1984:57). However, HARTMANN-SCHRÖDER (1971:146) supplementarily regards the shape of antennae as being important for subfamilial assignments (Syllinae: "Antennen und Dorsalcirren deutlich gegliedert bzw. geringelt"). Therefore, as most chaetigers of *Syllides caribica* n. sp. do have articulated dorsal cirri but smooth antennae and peristomial cirri, an assignment to the Syllinae seems to be unreasonable. Although the prostomial and peristomial appendages are regenerated ones (compare with Fig. 2A) the observed shape of the right lateral (=long and smooth) antenna might be regarded as being very similar to the natural shape, and is corresponding well to antennae in other *Syllides* species.

To position the new species into Eusyllinae which are described as Syllidae with "palpos claramente fusionados en la base, sin cicatriz central en la fusión o muy ténue; apéndices lisos o irregularmente articulados" (SAN MARTÍN 1984:57) is questionable, as the palps are clearly separated from one another, and, in addition, the shape of dorsal and anal cirri do not work out with the Eusyllinae diagnosis. Assignment of the new species to the Exogoninae has to be disregarded because palps are not fused and antennae as well as cirri are not short and do not consist of one article, even its assignment to the Autolytinae because ventral cirri of the new taxon are not lacking.

The problem to fit the new taxon into one of the four subfamilies is caused by the merging diagnoses of the Syllinae and Eusyllinae. It decides about assignments mainly by looking at whether palps are fused or not and whether appendages are articulated or not. Here, it seems to be unclear whether the definition for "appendages"

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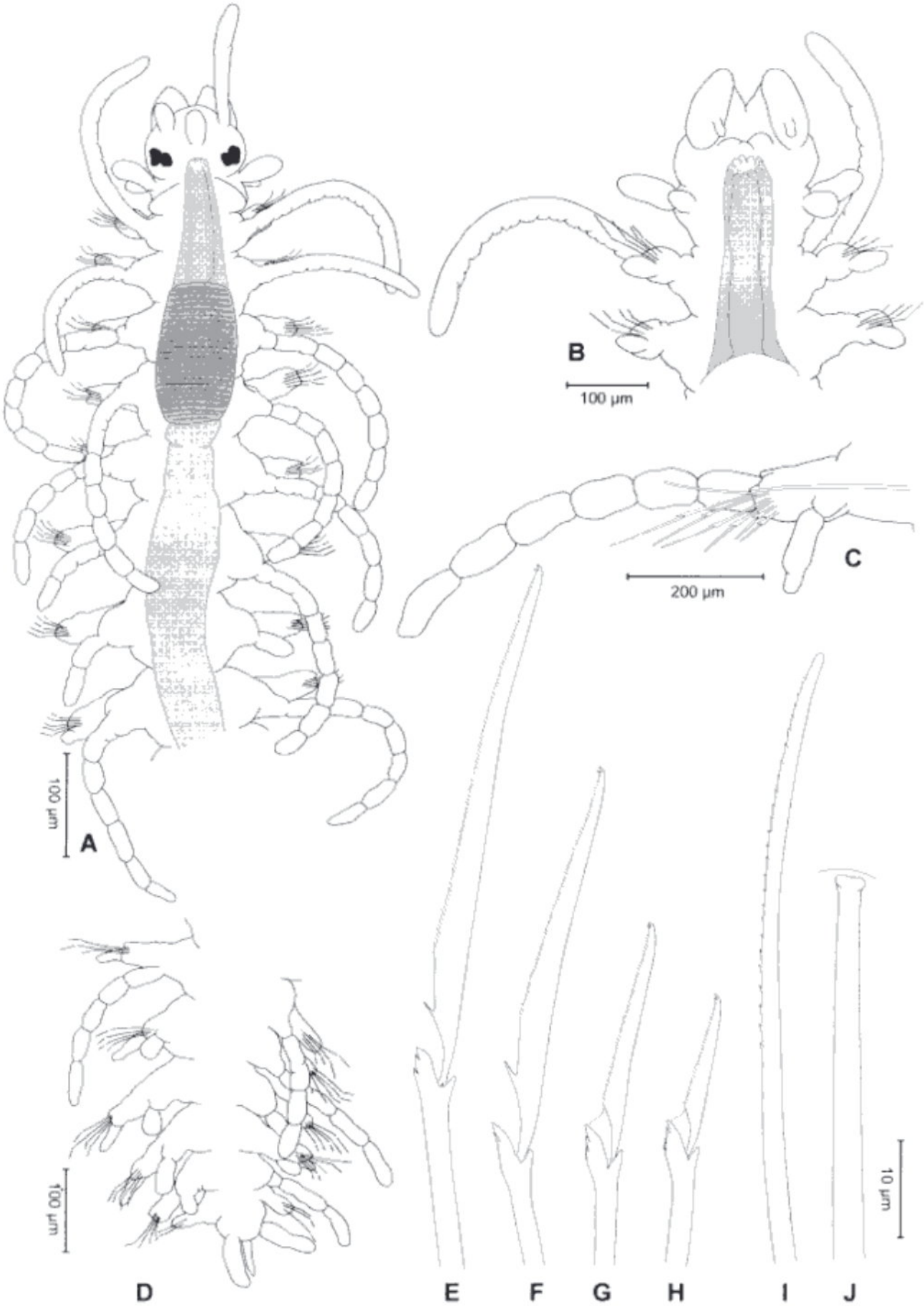
Fig. 2. *Syllides caribica* n. sp. (holotype). – A) Anterior and median part of the body, dorsal view; B) anterior end, ventral view; C) parapodium 14, ventral view, part of neuropodial fascicle omitted; D) posterior part of the body, dorsal view; E–H) neuropodial, compound chaetae; E) dorsalmost falciger; F) dorsal falciger below dorsalmost one; G) ventral falciger above ventralmost one; H) ventralmost falciger; I) neuropodial simple dorsal chaeta; J) neuropodial acicula. – Scales: A, B, D = 100 μm; C = 200 μm; E–J = 10 μm.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stands for prostomial, peristomial and parapodial appendages, or dorsal cirri only. In addition, these characters seem to be of little use for subfamilial assignment (see also DING & WESTHEIDE, in press), since the degree of palps fusion is not fixed but can be influenced by the temperature (PILTZ 1980, unpubl., fide KUDENOV & HARRIS 1995). The present separation of the Syllinae from the Eusyllinae according to these morphological characters must be described as "unsatisfactory" and a revision of the subfamilies seems necessary. Perhaps *Syllides* ØRSTED 1845 should be positioned in a fifth subfamily, as well as *Streptosyllis* WEBSTER & BENEDICT 1884, *Astreptosyllis* KUDENOV & DORSEY 1982, and *Streptospinigera* KUDENOV 1983 (SAN MARTÍN and PERKINS, pers. comm.).

Zusammenfassung

Eine neue Art aus der Familie Syllidae, *Syllides caribica* n. sp., von Aruba, Niederländische Antillen, Karibik, wird beschrieben und diskutiert. Die neue Art ist auffällig durch den Besitz kräftiger Palpen mit papillenförmigen Anhängen, durch das Fehlen pharyngealer Zähne, den Besitz ungegliederter Dorsalcirren am ersten und zweiten Borstensegment und gegliederten in den folgenden Segmenten sowie den Besitz eines vorragenden einzigen Stachels an der Basis eines jeden Endgliedes der oberen falcigeren Borsten. Ihre Zuordnung zu den Syllinae oder den Eusyllinae wird diskutiert mit dem Ergebnis, daß das Taxon *Syllides* ØRSTED 1845 in keine der vier klassischen Unterfamilien gestellt werden dürfte, weshalb eine Revision dieser Unterfamilien dringend geboten ist.

References

BURCHARDT, C. (1994): Licht- und elektronenmikroskopische Untersuchungen an *Petitia amphophthalma* (Polychaeta, Syllidae). – Unveröffentlichte Diplomarbeit, 112 p.; Universität Osnabrück, Fachbereich Biologie/Chemie, Spezielle Zoologie.

DING, Z. & WESTHEIDE, W. (1994): Two new interstitial *Streptosyllis* species from South China (Polychaeta: Syllidae). – Microfauna Marina, 9: 303–312.

— — — & — — — (in press): New records and descriptions of tidal and subtidal syllid species (Polychaeta) from the Chinese coast. – Bulletin of Marine Science, 60.

HARTMANN-SCHRÖDER, G. (1965): Zur Kenntnis des Sublitorals der chilenischen Küste, unter besonderer Berücksichtigung der Polychaeten und Ostracoden. Die Polychaeten des Sublitorals. – Mitteilungen aus dem hamburgischen zoologischen Museum und Institut, Suppl. **62**: 1–384.

— — — (1971): Annelida, Borstenwürmer, Polychaeta, :1–594. – In: DAHL (Hrsg.): Die Tierwelt Deutschlands, **58**; Jena (Gustav Fischer).

KUDENOV, J. D. (1983): *Streptospinigera heteroseta*, a new genus and species of Eusyllinae (Polychaeta: Syllidae) from the western shelf of Florida. – Proceedings of the biological Society of Washington, **96**(1): 84–88.

KUDENOV, J. D. & DORSEY, J. H. (1982): *Astreptosyllis acrassiseta*, a new genus and species of the subfamily Eusyllinae (Polychaeta: Syllidae) from Australia. – Proceedings of the biological Society of Washington, **95**(3): 575–578.

KUDENOV, J. D. & HARRIS, L. H. (1995): Family Syllidae GRUBE, 1850, : 1–97. – In: BLAKE, J. A., HILIG, B. & SCOTT, P. H. (eds.): Taxonomic atlas of the benthic fauna of the Santa Maria Basin and Western Santa Barbara Channel. Vol. 5. The Annelida. Pt. 2. Phyllodocida (Syllidae and scale-bearing families), Amphinomida, and Eunicida. – Santa Barbara, California (Santa Barbara Museum of Natural History).

LANGERHANS, P. (1879): Die Wurmfauna von Madeira. Pt. 1. – Zeitschrift für wissenschaftliche Zoologie, **32**(4): 513–592.

ØRSTED, A. S. (1845): Fortegnelse over Dyr, samlede i Christianiafjord ved Drøbak fra 21–24 Juli 1844. – Naturhistorisk Tidsskrift, **2**(1): 400–427, pl. 5. [Annulata, : 403–415.]

PERKINS, T. H. (1981): Syllidae (Polychaeta), principally from Florida, with descriptions of a new genus and twenty-one new species. – Proceedings of the biological Society of Washington, **93**(4): 1080–1172.

PILTZ, F. M. (1980): Morphological consequences of sympatry in two species of *Typosyllis* (Annelida: Polychaeta: Syllidae). – Unpublished dissertation, University of Southern California. 176 pp., 19 tabs., 32 figs., 4 apps.

SAN MARTÍN, G. (1984). Estudio biogeográfico, faunístico y systemático de los poliquetos de la familia sílidos (Syllidae: Polychaeta) en Baleares. – Tesis Doctoral 187/84. 529 p.; Publicaciones de la Universidad Complutense de Madrid.

SIEWING, R. (1956): *Petitia amphophthalma*, n. gen., n. sp., ein neuer Polychaet aus dem Sandlückensystem. – Vie et Milieu, **6**: 413–425.

WEBSTER, H. E. & BENEDICT, J. E. (1884): The Annelida Chaetopoda from Provincetown and Wellfleet, Massachusetts. – Annual Report of the Commissioner of Fish and Fisheries, 1881: 699–747.

WESTHEIDE, W. (1974): Interstitielle Fauna von Galapagos. XI. Pisionidae, Hesionidae, Pilargidae, Syllidae (Polychaeta). – Mikrofauna des Meeresbodens, **44**: 1–146.

— — — (1990): Polychaetes: Interstitial families. – In: BACKHUYS, W. (ed.): Synopsis of the British fauna (new Series), **44**: 1–152; Universal Book Services.

WESTHEIDE, W. & PURSCHKE, G. (1988): Chapter 8. Organism processing, : 146–160. – In: THIEL, H. & HIGGINS, R. (eds.): Introduction to the study of meiofauna. Smithsonian Press.