

Description of two new species of *Sphaerosyllis*
(Polychaeta : Syllidae : Exogoninae)
and first report of
Sphaerosyllis glandulata for the Mediterranean Sea

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Résumé : Trois espèces de *Sphaerosyllis* sont décrites : *S. gravinae* sp. nov., *S. glandulata*, espèce nouvelle pour la Méditerranée et *S. giandoi* sp. nov. Les trois espèces ont été récoltées dans le sable et les herbiers de *Posidonia oceanica* des Iles Pontines (Latium, Mer Tyrrhénienne).

Abstract : Three species of *Sphaerosyllis* are described : *S. gravinae* sp. nov., *S. glandulata*, reported for the first time from the Mediterranean Sea and *S. giandoi* sp. nov. These species were collected from interstitial habitats and *Posidonia oceanica* beds of Pontine Islands (Latium, Central Tyrrhenian Sea).

INTRODUCTION

A study on the distribution of benthic communities in the Pontine Islands (Ponza, Palmarola and Zannone) was recently carried out. The family Syllidae represents the most important polychaete family, both in abundance and species richness. Several specimens of two undescribed species of *Sphaerosyllis* Claparède, 1863, as well as some specimens of *Sphaerosyllis glandulata* Perkins, 1981, were found. The latter species previously was only known from North-American Atlantic areas and the Caribbean Sea. The taxonomic descriptions of these species are given here.

MATERIAL AND METHODS

The study area has previously been described by Somaschini (1992) and Somaschini *et al.* 1994. The specimens were fixed in 10 % formaldehyde, sieved with a 0.4 mm mesh, stained with Rose Bengal, and preserved in 70 % alcohol. Some permanent microscope mounts of specimens were made using the Faure Fluid.

Observations and measurements were made using interference contrast microscopy (Nomarsky). Drawings were made with a "camera lucida". Length was measured without anal cirri ; width at proventricular level without the cirri, parapodia, or setae.

Holotypes and paratypes are deposited in the polychaete collection of the Musée Océanographique de Monaco (MOM) ; additional specimens have been retained in the collections of the authors.

RESULTS AND DISCUSSION

Family Syllidae Grube, 1850
Subfamily Exogoninae Rioja, 1925
Genus *Sphaerosyllis* Claparède, 1863

The genus *Sphaerosyllis* was recently reviewed, mostly from the literature, by San Martín (1984 a). The division of the genus into two subgenera was proposed : *Sphaerosyllis* for *S. hystrix* Claparède, 1863, and related species, and *Prosphaerosyllis* San Martín, 1984 a for *Sphaerosyllis xarifae* Hartmann-Schröder, 1960, and related species. However, several authors consider these subgenera not valid from a phylogenetic point of view, because they are composed of artificial groups (Russell, 1989 ; Westheide, 1990). Riser (1991) evaluated the taxonomy of this genus and considered the concept of subgenera as not adequate for these groups of species. Thus, a redescription of the oldest species and a phylogenetic analysis of this genus would be very useful.

Although we do not use subgenera for the description of these three species, we refer to San Martín (1984 a) for the diagnosis of the genus *Sphaerosyllis*.

Sphaerosyllis gravinae, sp. nov.

Fig. 1-2

Material examined. Holotype from Zannone Island (Faro, 10 m depth), (MOM 186017) ; 2 paratypes from Ponza Island (Cala Feola, 10 m depth), (MOM 186018). Other paratypes (30 specimens) collected at Zannone and Palmarola (Sconcello, 20 m depth) are preserved in the collections of the authors. Specimens were extracted from coarse sand.

Etymology. This species is named in honor of Mrs Maria Flavia Gravina whose suggestions and help made possible the description of this and other species.

Description. Holotype 1.7 mm long, 0.17 mm wide, and 21 setigers (Fig. 1 B). Body small, slender, without color marking, partially covered of debris. Dorsum presenting small, conical papillae which are more abundant on palps and the posterior end. Prostomium rectangular, partially covered by tentacular segment, as an artifact of fixation (cfr. Riser, 1991) ; four eyes in rectangular arrangement ; three proportionally long antennae, which are onion-shaped, with bulbous basis and long, filiform tips ; the lateral antennae originate in front of the anterior eyes and the median antenna between the posterior eyes. Palps long, broad, fused over entire length ; they have a median cleft, and bear several papillae. Peristomium long ; the tentacular cirri are similar in shape to the lateral antennae, they originate ventrally (preserved specimens) at the level of the posterior pair of eyes (Fig. 1 A).

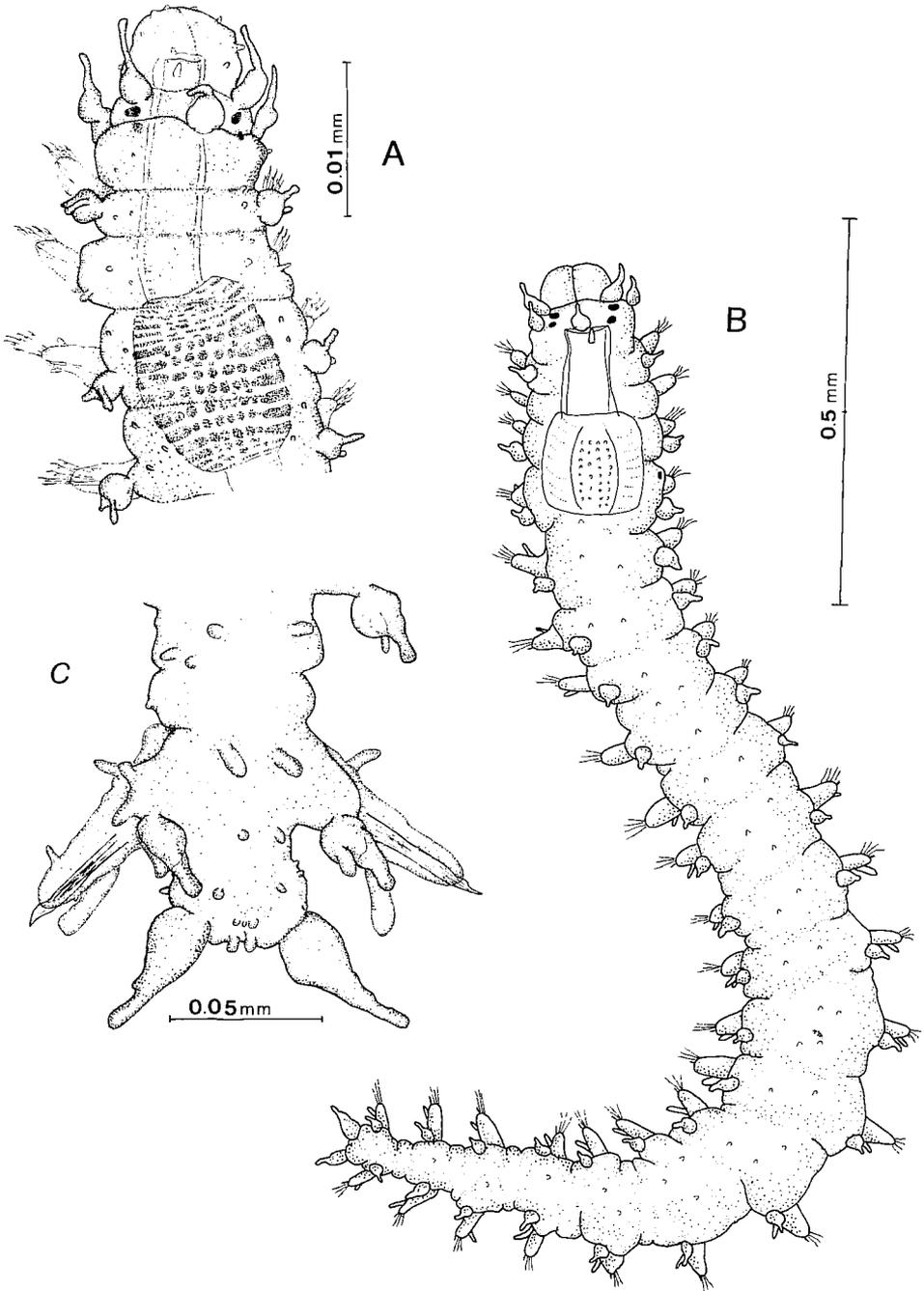


Fig. 1 : *Sphaerosyllis gravinae*, sp. nov. : A. Anterior end, dorsal view. B. Whole specimen. C. Posterior end, dorsal view (setae not drawn). (From paratypes).

The dorsal cirri, absent on setiger 2 (Fig. 1 A ; 1 B), are proportionally short, with bulbous bases, and short, filiform tips; they have a long, digitiform papilla shorter than the tip, giving a bifid appearance (Fig. 1 A ; 2 C). Parapodial lobes are long, conical, and usually provided with a basal and a distal papilla. Ventral cirri are long, digitiform, being as long as, or shorter than parapodia ; they are longer posteriorly (Fig. 2 C). Parapodial glands are lacking. Each parapodium has 3-4 compound, strongly heterogomph setae ; the blades are short, somewhat hooked, unidentate, with long, fine spines on margin ; they get progressively larger towards anterior and dorsal parts of parapodia. The blades of the ventralmost posterior setae are nearly smooth ; the long hinge of shafts of dorsal compound setae have long spines, which are longer anteriorly ; the ventral compound setae lack spines or have short, inconspicuous spines (Fig. 2 A ; 2 F). There is a slight gradation in length of blades, both antero-posteriorly and dorso-ventrally ; in midbody, blades of the dorsalmost com-

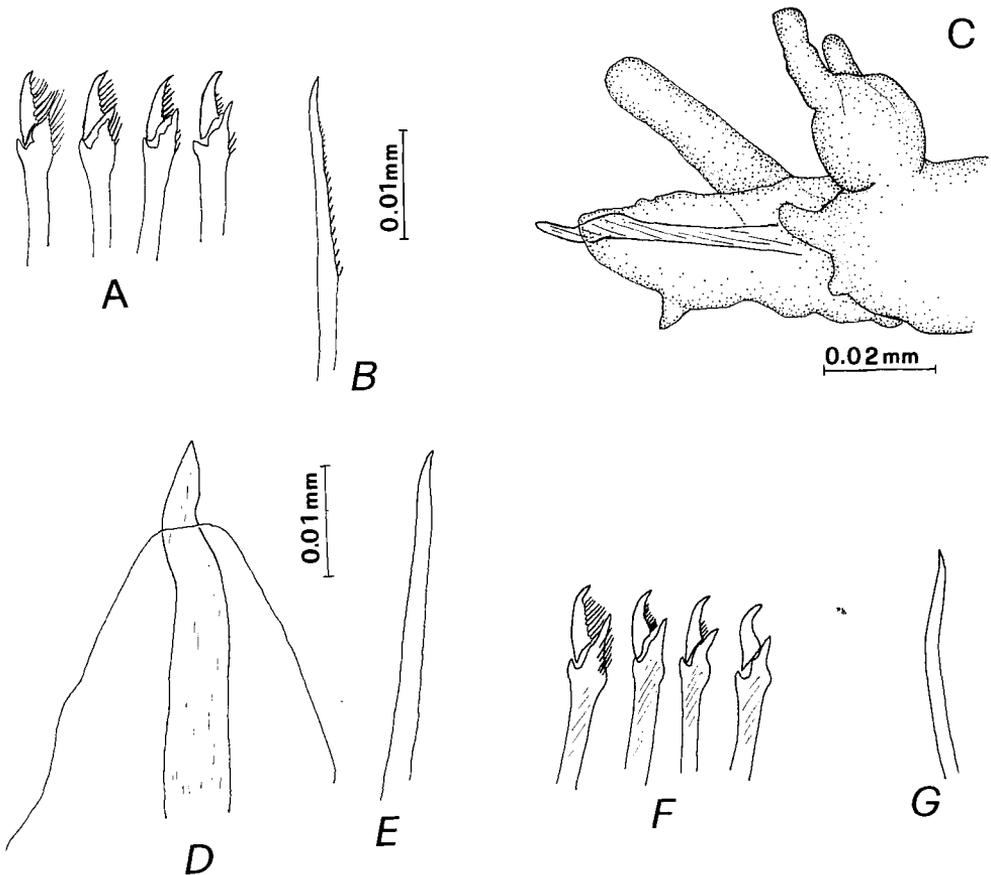


Fig. 2 *Sphaerosyllis gravinae*, sp. nov. : A. Compound setae, anterior parapodium. B. Dorsal simple seta, anterior parapodium. C. Parapodium, from midbody, dorsal view (setae not drawn). D. Acicula, from midbody. E. Dorsal simple seta, from posterior parapodium. F. Compound setae, from posterior parapodium. G. Ventral simple seta, from posterior parapodium (from paratypes).

pound setae are about 10 μm long, blades of ventralmost ones about 8 μm . Solitary simple setae from setiger 1-3 are slender, unidentate, smooth posteriorly (Fig. 2 E), but having short spines anteriorly (Fig. 2 B). The solitary ventral simple setae are similar to the dorsal setae, but slender and curved, being present only on posterior setigers (Fig. 2 G). The aciculae are solitary, similar in shape throughout the body, subdistally curved, ending in an acute tip ; they protrude from the parapodial lobes (Fig. 2 C ; 2 D), and are thicker posteriorly (Fig. 1 A ; 1 C). The pygidium is small and papillate, with two anal cirri similar to dorsal cirri but devoid of long papilla and are about twice as long as the dorsal cirri (Fig. 1 C). The pharynx is narrow, somewhat longer than the proventriculus and is usually partially everted. It bears a pharyngeal tooth on anterior margin. The proventriculus is barrel-shaped, wider than the pharynx, located in two setigers, with about 15 muscle cell rows (Fig. 1 A).

Remarks. *Sphaerosyllis gravinae*, sp. nov. is the only species of the genus bearing dorsal cirri with a long, distinct papilla, which gives a bifid appearance, and having very thick aciculae protruding from parapodial lobes. This kind of acicula is probably a modification of that of the *Sphaerosyllis hystrix* group, as described by San Martín (1984 b) for *S. hystrix* and *S. pirifera* Claparède, 1868, *S. austriaca* Banse, 1959, *S. thomasi* San Martín, 1984 b, and by Perkins (1981) for the five following species described by this author : *S. aciculata*, *S. glandulata*, *S. magnidentata*, *S. piriferopsis* and *S. taylori*. The compound setae of *S. gravinae* are similar to those of *S. thomasi* ; however, the latter species has parapodial glands, typical aciculae and lacks long papilla on the dorsal cirri.

Sphaerosyllis glandulata Perkins, 1981

Fig. 3

Sphaerosyllis glandulata Perkins, 1981 : 1123, fig. 18,19. Uebelacker (1984) : 33-34, fig. 25, 26.

Sphaerosyllis (*Sphaerosyllis*) *glandulata* San Martín (1991) : 232.

Material examined. 26 specimens collected at Ponza (Cala Feola) in an "intermatte" channel of coarse sand (10 m depth) ; 6 specimens collected at Palmarola in a mixed sand at 30 m depth.

Additional specimens were recently collected during an investigation, on a coarse sandy bottom in the Ligurian Sea (Genova, September, 1991).

Description. The body is small, slender, without color markings, about 2.6 mm long, 0.2 mm wide, for 30 setigers. The dorsum is partially covered by debris, and is provided with numerous, conical papillae. The prostomium is rectangular, partially covered by the peristomium (preserved specimens), with four eyes in an open trapezoidal arrangement. The antennae are piriform, relatively short, and with long, filiform tips ; the median antenna originates between the posterior eyes, and the lateral antennae in front of the anterior eyes. Palps are long, broad, and triangular. They are fused along all their length bearing a median cleft and a distal notch. The tentacular cirri are similar to the antennae but are smaller and located ventrally at the level of the anterior eyes. The dorsal cirri are also similar to anten-

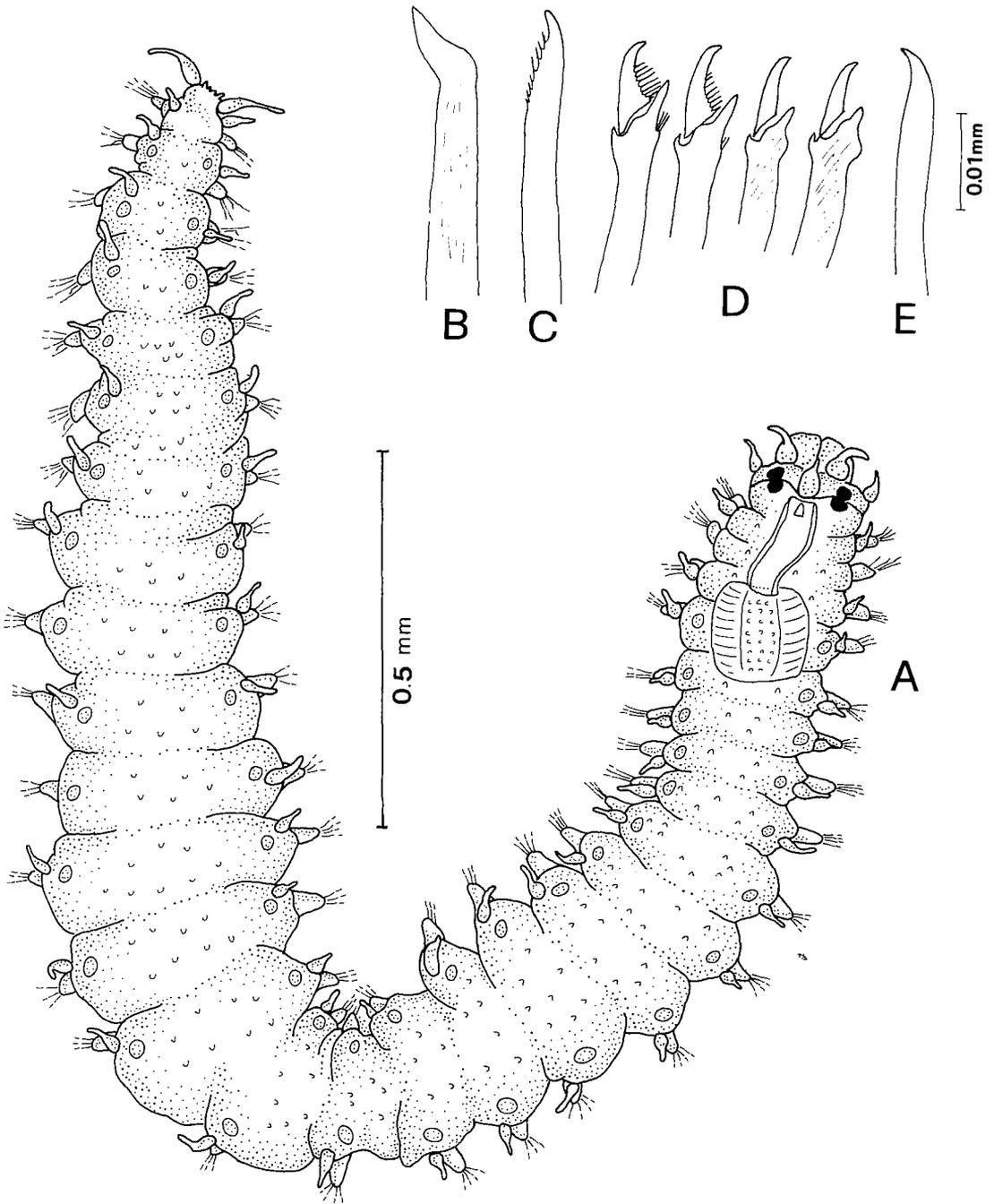


Fig. 3 : *Sphaerosyllis glandulata* Perkins, 1981 : A. Whole specimen, dorsal view. B. Acicula from midbody. C. Dorsal simple seta. D. Compound seta, midbody. E. Ventral simple seta.

nae, but are smaller and provided with shorter tips. Dorsal cirri are lacking on setiger 2 (Fig. 3 A). The parapodial lobes are conical, and provided with small papillae. Parapodial glands are inconspicuous, they contain spherical, yellow secretory products and are present posteriorly from setiger 4. Each parapodium has four compound heterogomph setae anteriorly and three posteriorly, with short, somewhat hooked, unidentate blades which are uniformly similar throughout; the blades of the two most dorsal setae are provided with moderately long spines on their margin. The blades of the two ventral setae are smooth (Fig. 3 D). In midbody, the dorsal most compound setae have blades about 10 μm and the ventral most ones blades of 8.5 μm . The solitary dorsal simple setae from the proventricular setigers are moderately thick, unidentate, and have short spines subdistally (Fig. 3 C). The solitary ventral simple setae on the posterior setigers are sigmoid smooth and unidentate (Fig. 3 E). Aciculae are solitary, thick, and end in flared mucronate tips (Fig. 3 B). The pygidium has relatively long papillae and bears two long anal cirri which have bulbous bases and long tips; they are about four times as long as the dorsal cirri. The pharynx is narrow, through about four segments and the pharyngeal tooth is on its anterior margin. The proventriculus is short, barrel-shaped, extending through two setigers, with about 13-14 muscle cell rows (Fig. 3 A).

Distribution. Florida, Cuba. New record for the Mediterranean Sea.

Sphaerosyllis giandoi, sp. nov.

Fig. 4-5

Material examined. Holotype and 6 paratypes from Palmarola Island (Sconcello, 30 m depth), (MOM 186015 and 186016); other paratype from Ponza Island (Cala Feola 10-30 m depth) preserved in the collections of the authors. In fine and coarse sand.

Etymology. This species is named in honor of Dr. Giandomenico Ardizzone whose help made possible the collection and the description of this material.

Description. The body is minute, slender, threadlike, without color markings, 1.8 mm long, 0.12 mm wide, for 23 setigers (Fig. 4 C). The dorsum apparently lacking papillae is covered by debris. The prostomium is small, oval, fused with palps and has four large eyes in an open trapezoidal arrangement. The eyes of each side of the prostomium are partially fused; sometimes the posterior eyes are bilobed. The antennae are minute, inconspicuous, oval to papilliform in shape; the median antenna is somewhat longer than the lateral ones, and originates in the middle of the prostomium; the lateral antennae are in front of the anterior pair of eyes. The palps are short, broad, folded and fused all along their length, drawing a dorsal median cleft, and bearing small conical papillae, dorsally and ventrally, which are somewhat longer on the edge of the palps; two ventral eyespots (Fig. 4 B). The peristomium is shorter than remaining segments, and is not fused to the prostomium (preserved specimens); the tentacular cirri are papilliform, similar to lateral antennae. There are dorsal cirri on all setigers. They are minute, inconspicuous, and papilliform; the base is occasionally very slightly inflated. The ventral cirri are papilliform and similar to dorsal cirri but

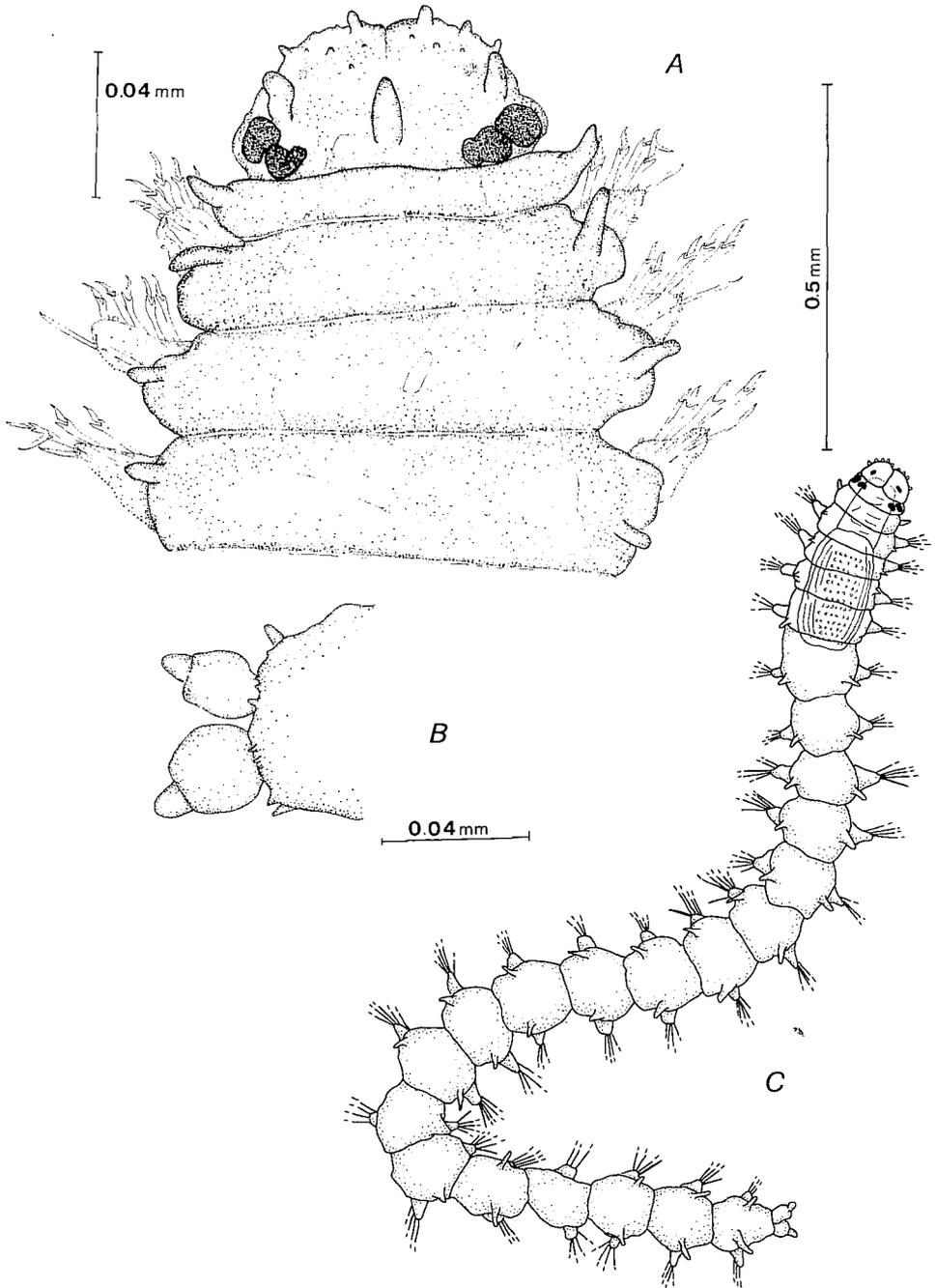


Fig. 4 : *Sphaerosyllis giandoi*, sp. nov. : A. Anterior end, dorsal view (holotype). B. Posterior end, dorsal view (holotype). C. Whole specimen, dorsal view (paratype).

shorter. The parapodia are conical, with 1-2 small papillae (Fig. 5 A). The parapodia each have 3-4 compound setae (Fig. 5 D), sometimes five on the most anterior parapodia, which have hemigomph articulation, the long hinge is somewhat longer than the bifid, short hinge (Fig. 5 D, E). The blades are short, slightly hooked, unidentate, smooth or bearing very short spines on dorsal blades, which are similar throughout ; the blades are about 9-10 μm in midbody, and are somewhat longer anteriorly. The solitary dorsal simple setae begin in setiger 1, are slightly hooked distally, and are provided with very short, subdistal spines (Fig. 5 C). The solitary ventral simple setae only occur on the posterior setigers ; they are similar to dorsal simple setae but smooth (Fig. 5 F). The pygidium is small, with two anal cirri, each with a long, bulbous base and a short retractile tip. They are twice as long or greater than the dorsal cirri (Fig. 4 C). The pharynx is wide and long, covered by glandular tissue, yellowish and opaque ; the pharyngeal tooth is minute, indistinct and located in the middle of the pharynx ; the tooth was only seen on the holotype (Fig. 4 B). The proventriculus is long and wide, through about 3-4 segments and has 22 muscle cell rows (Fig. 4 C).

Remarks. *Sphaerosyllis giandoi* sp. nov. is a very peculiar species. The shape of the antennae and dorsal cirri are those of the genus *Exogone* Örsted, 1845 ; however, the presence of papillae on the palps and parapodia is typical of the genus *Sphaerosyllis*. The anal cirri have the typical shape of the *Sphaerosyllis xarifae* group (defined by San Martín,

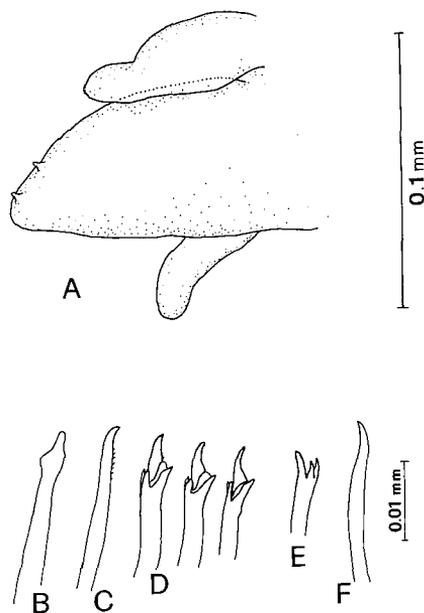


Fig. 5 : *Sphaerosyllis giandoi*, sp. nov. : A. Parapodium from midbody (holotype). B. Acicula. C. Dorsal simple seta. D. Compound setae, from midbody. E. End of a shaft. F. Ventral simple seta (setae and acicula from one paratype).

1984 a, as the subgenus *Prosphaerosyllis*). Furthermore, the shape of the pharynx and the proventriculus, the location of the pharyngeal tooth, and the number of eyes are also typical of this group of *Sphaerosyllis*. These were the reasons for assigning the species to this genus. A structure attributed to a pharyngeal tooth has only been seen in one specimen ; the difficult observation of this character, together with the peculiar shape of the dorsal cirri and the articulation of setae made us doubt assigning these specimens to a previously described genus. In fact, we at first considered these specimens as belonging to a new genus or to the genus *Pseudoexogone* Augener, 1922. *Pseudoexogone backstromi* (Augener 1922, p. 192, fig. 7, pl. fig. 4-4b) is also a very peculiar Syllid, that differs in both body shape and setae, and is described as lacking a mid dorsal pharyngeal tooth. The placement of the species in *Sphaerosyllis* is then only tentative.

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