

## ***Parapionosyllis* (Polychaeta: Syllidae: Exogoninae) from Tenerife (Canary Islands, Spain) with description of a new species and new records**

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### **Abstract**

Three species of *Parapionosyllis*: *P. minuta* (Pierantoni, 1903), *P. macaronesiensis* Brito, Núñez & San Martín, 2000 and a new species *P. abriguensis*, were recorded from shallow subtidal sandy substrates of Tenerife. The new species is characterized by having bidentate ventral simple chaetae and a marked dorso-ventral gradation in the length of the compound chaetae. Data on the ecology of these species, as well as a key for all *Parapionosyllis* known from the Canary Islands are provided.

**Key words:** Polychaeta, Syllidae, Exogoninae, *Parapionosyllis*, soft-bottoms, Tenerife, Canary Islands

### **Introduction**

Species of the genus *Parapionosyllis* Fauvel, 1923 are all interstitial polychaetes, not exceeding 3 mm long; are typical species of shallow depths, from intertidal pools to subtidal sandy substrates. The first descriptions of *Parapionosyllis* were published at the end of the 19<sup>th</sup> century and at the beginning of the 20<sup>th</sup>, although they were placed in other genera like *Sphaerosyllis longicirrata* described by Webster & Benedict (1884), *Pionosyllis papillosa*, *P. elegans*, *P. gestans* and *P. minuta* by Pierantoni (1903). The genus *Parapionosyllis* was erected by Fauvel (1923). The genus is included in the subfamily Exogoninae Langerhans, 1879, characterized by having a homogeneous morphology in all genera, with slight chaetiger differences. The main morphological characteristics that define this genus are: a single pair of tentacular cirri, broad and anteriorly hollow acicula. The genera *Brania* Quatrefages, 1866 and *Erinaceosyllis* San Martín, 2005 resembles

*Parapionosyllis*, although *Brania* species can be differentiated by the presence of two pairs of tentacular cirri. *Erinaceusyllis* can be separated by the acicular structure, which has a subdistal expansion and pointed tip. The strong morphological similarities among these three genera led to taxonomic mistakes by several workers, e.g. Hartmann-Schröder (1960, 1974) described several species of *Parapionosyllis* (*P. subterranea* Hartmann-Schröder, 1960, *P. paucicirra* Hartmann-Schröder, 1974 and *P. serrata* Hartmann-Schröder, 1974) but they belong to *Erinaceusyllis* according to their figures and descriptions.

The most recent descriptions of *Parapionosyllis* species correspond to *P. cabezali* Parapar, San Martín & Moreira 2000, collected along the coasts of the Iberian Peninsula (Parapar *et al.* 2000) and *P. macaronesiensis* Brito, Núñez & San Martín, 2000, from the Central Macaronesian Region (Brito *et al.*, 2000). Currently, six species of this genus are known in the Atlantic-Mediterranean area, five of them are recorded from the Canary Islands including a new species *P. abriguensis* sp. nov.

As a result of an ecological study of the meiofaunal community of a beach of Tenerife, several specimens of *Parapionosyllis* were collected. A more detailed study revealed that they belong to three species, *P. macaronesiensis*, recorded for the first time since the original description, *P. minuta* (Pierantoni, 1903) a new record for the Canarian fauna and *P. abriguensis* sp. nov. The new species differs from other species of the genus by the presence of bidentate ventral simple chaetae, a character only shared with *P. floridana* San Martín, 1991, smooth dorsal cirri and a marked dorso-ventral gradation in the length of falcigerous blades. In addition to the description of the new species, data on the ecology of the three species and a key to all *Parapionosyllis* species found in the Canary Islands are provided.

### Material and methods

Samples were collected in the intertidal and shallow-subtidal (3 m depth) of Los Abrigos beach, on the eastern coast of Tenerife (Canary Islands, NE Atlantic Ocean). Quantitative samples (475 cm<sup>3</sup>) were obtained with PVC core tubes, sampled to a depth of 30 cm. Monthly, five replicates were collected for faunistic analysis and one for abiotic factors. Samples were fixed and preserved in 4% neutralized formalin-seawater solution. Subsequently, samples were sieved using a 63 µm mesh and then transferred to 70% ethanol. Several specimens were mounted in jelly glycerine and examined with interference contrast optics (Nomarski).

The material is deposited in the collection of the Departamento de Biología Animal de la Universidad de La Laguna (DBAULL) and in the Museo de Ciencias Naturales de Tenerife (TFMC).

**Taxonomy****Syllidae Grube, 1850: 308.****EXOGENINAE Langerhans, 1879: 561.*****Parapionosyllis* Fauvel, 1923: 289.*****Parapionosyllis minuta* (Pierantoni, 1903)***Pionosyllis minuta* Pierantoni, 1903: 239, fig. 5.*Parapionosyllis minuta*.—Fauvel, 1923: 292, fig. 111 f; San Martín, Viéitez & Campoy, 1981: 68, fig. 8; Campoy, 1982: 263, fig. 17; San Martín, 1984: 198, fig. 44; San Martín, 2003: 288, figs. 158–159.*Material examined*.—Los Abrigos beach (Tenerife), Lat. N. 28°08'58'' Long. W. 16°42'54'', 3 m depth, 1 specimen, June 2000, coll. R. Riera.*Ecology*.—This species was recorded in medium grained sands with an organic matter of 1.54% and 6.84% of carbonates. The species has been recorded from a variety of habitats and reaches its highest abundances in sandy substrates, green algae (*Caulerpa* spp.) and seagrass meadows (*Zostera* and *Posidonia*) (Viéitez, 1976).*Distribution*.—East Atlantic and Mediterranean (San Martín, 2003). This is the first record of this species from the Canary Islands.***Parapionosyllis macaronesiensis* Brito, Núñez & San Martín, 2000***Parapionosyllis macaronesiensis* Brito, Núñez & San Martín 2000: 1147, fig. 1.*Parapionosyllis* sp.—Núñez, Pascual, Delgado & San Martín 1995: 6.*Material examined*.—Los Abrigos beach (Tenerife), 3 m depth, 1 specimen, March 2001, coll. R. Riera.*Ecology*.—This species was recorded in medium grained sands with an organic content of 0.91% and 6.32% of carbonates. It is a strictly interstitial species of sandy subtidal bottoms (Brito, 2002). In Madeira it was collected in coarse grained sands with shell remains, rich in carbonates (Núñez *et al.*, 1995).*Distribution*.—East Atlantic: Central Macaronesian Region (Madeira, Selvagens Islands and Canary Islands).

*Parapionosyllis abriguensis* sp. nov.

(Figure 1, Table 1)

*Type locality*.—Los Abrigos beach (Tenerife, Canary Islands)

*Type material*.—Holotype (microscopic slide) (TFMCBM AN/000222) Los Abrigos beach (Tenerife), Lat. 28°08'30N Long. 16°26'10'W, 3 m depth, July 2000, coll. R. Riera. Paratypes, three specimens (microscopic slide): (DBAULL PO/TA12S11; /TA4S55; /TA3S55), Los Abrigos beach (Tenerife), same coordinates; 3 m depth, August 2000, coll. R. Riera.

*Description*.—Body long, tapering towards both ends, without any pigmentation. Body 0.8–1.6 mm long, and 61–100 µm wide at proventricle level. Prostomium semicircular to ovate, slightly wider than long, apparently without eyes. Antennae skittle-shaped, median antenna slightly longer (77 µm) than lateral ones (72–75 µm). Lateral antennae inserted near of half margin of the prostomium, median antenna inserted behind on the posterior margin (Fig. 1A). Palps broad, similar in length to prostomium, fused along basal half, leaving a mid-dorsal seam and frontal scar. Single pair of tentacular cirri, originating laterally, more or less similar in length (71 µm) and width to lateral antennae (Fig. 1A). Peristomium dorsally reduced. Dorsal cirri on all chaetigers, slightly shorter (43–68 µm) than lateral antennae and with granular material distally. Parapodial lobe triangular-shaped, with a ventral cirri digitiform (23–32 µm) similar in length to parapodial lobe (Fig. 1C). Apparently lacking subdermal dorsal glands. Anterior parapodia each with one long-bladed compound chaeta and up to five falcigers with shorter blades; progressively, number of falcigers decreasing in median and posterior parapodia (Fig. 1E). Long blades unidentate, with tips rounded and uniform fine serration along one margin. Dorsalmost falcigers blades about 31 µm on most anterior parapodia, 39 µm in midbody and 40 µm posteriorly. Remaining shorter falcigers with dorso-ventral gradation in length of blades, in midbody 14 µm above, 9 µm below. Solitary dorsal simple chaeta from anterior parapodia, unidentate, provided with spinulated serrations distally, without thick spines (Fig. 1D). Posterior parapodia also with a solitary ventral simple chaeta, sigmoid and bidentate (Fig. 1F). Solitary thick acicula in each parapodium, distally rounded hollow at the tip (Fig. 1G). Pharynx wide, extending through about three segments, provided with a conspicuous, conical middorsal tooth on the anterior rim. Proventricle shorter than pharynx, extending through about three segments, and with about 16–18 rows of muscle cells. Pygidium with one pair of long, slender anal cirri (125 µm) and one caudal appendix (18 µm) (Fig. 1B).

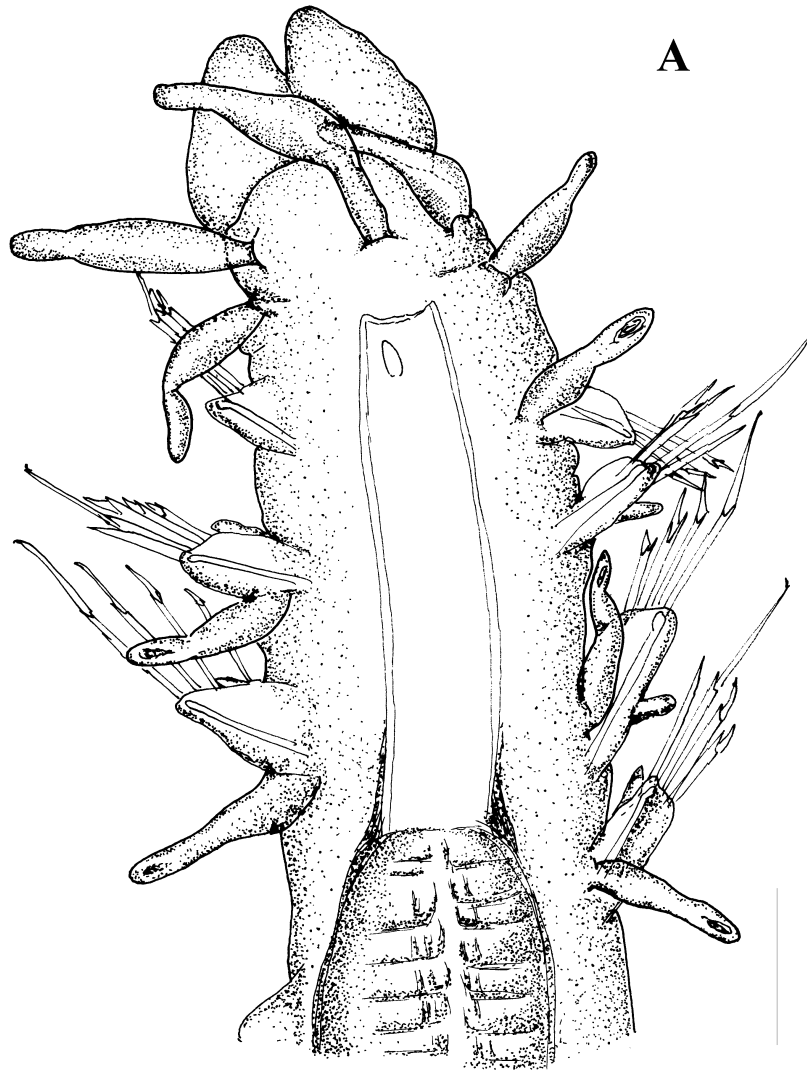
*Remarks*.—*Parapionosyllis abriguensis* sp. nov. is characterized by having a unidentate dorsal simple chaeta with spinulated serrations without any thick spines, bidentate ventral simple chaeta, marked dorso-ventral gradation and by the length of the falcigerous blades and smooth dorsal cirri. *Parapionosyllis floridana* San Martín, 1991 is the species most similar to *P. abriguensis*, both are the two only species of this genus

having bidentate simple ventral chaetae and lacking eyes, but it differs in having pseudoarticulated dorsal cirri and a less marked dorso-ventral gradation in the length of the falcigerous blades (10–33  $\mu\text{m}$  in *P. floridana* and 9–39  $\mu\text{m}$  in *P. abriguensis*).

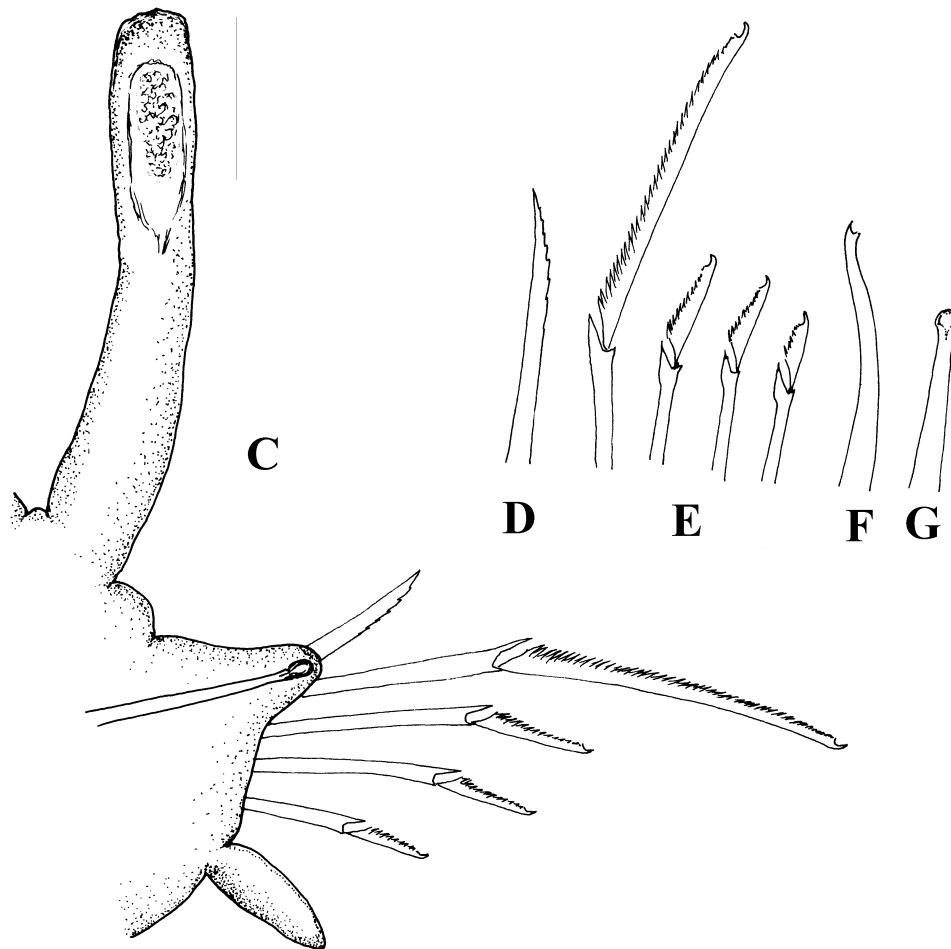
*Ecology*.—This species was recorded in fine and medium sands. The organic matter content ranged from 0.77% to 0.85% and carbonates from 5.13% to 9.57%.

*Etymology*.—The *derivatio nominis* refers to the type locality, Los Abrigos beach.

*Distribution*.—Tenerife, Canary Islands.



**FIGURE 1A.** *Parapionosyllis abriguensis* sp. nov. Anterior segments, dorsal view.  
Scale = 75  $\mu\text{m}$ .

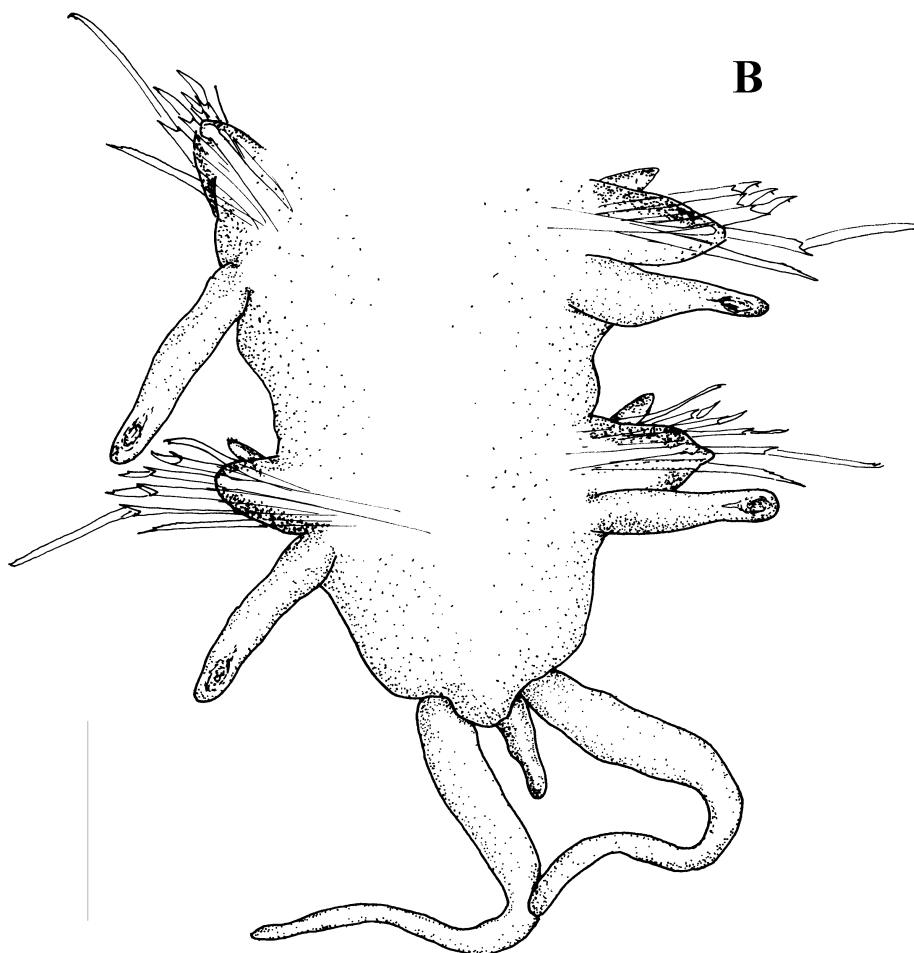


**FIGURE 1C–G.** *Parapionosyllis abriguensis* sp. nov. Posterior segments, dorsal view.  
Scale = 75  $\mu$ m.

## Discussion

Until now, the genus *Parapionosyllis* has been reported as having 15 species, of which, seven have been recorded in the Atlantic-Mediterranean area, six of them are known to occur in the Iberian Peninsula. In the Canary Islands, Brito (2002) and Riera (2004) have reported the first records of the genus in the archipelago. Currently, five *Parapionosyllis* species are recorded from the Canary Islands.

A taxonomic key to the *Parapionosyllis* species recorded in the Canarian archipelago is given to facilitate the identification of the five species, useful characters being the shape of the chaetae and dorso-ventral gradation in the length of the falcigerous compound blades.



**FIGURE 1B.** *Parapionosyllis abriguensis* sp. nov. C. Midbody parapodium. D. Dorsal simple chaeta. E. Falcigerous chaetae. F. Ventral simple chaeta. G. Acicula.

#### Key to *Parapionosyllis* species from the Canary Islands

1. Unidentate ventral simple chaetae..... 2
  - Bidentate ventral simple chaetae..... *Parapionosyllis abriguensis* sp. nov.
2. Dorso-ventral gradation in length of blades of compound chaetae..... 3
  - Short-bladed compound chaetae, without a dorso-ventral gradation in length of falcigerous blades ..... *P. labronica*
3. Dorsal simple chaeta with 1 thick subdistal spine..... 4
  - Dorsal simple chaetae with 2–3 thick subdistal spines ..... *P. macaronesiensis*

4. Blades of the dorsal-most compound chaetae twice as long as the ventralmost blades..  
 ..... *P. elegans*  
 - Blades of the dorsal-most compound chaetae more than three times longer than the  
 ventralmost blades..... *P. minuta*

**TABLE 1.** Measurements of *Parapionosyllis abriguensis* sp. nov. in  $\mu\text{m}$ . nd, not discernible.

	Holotype	Paratype 1	Paratype 2	Paratype 3
Total body length	1142.8	785.7	1585.7	857.1
Maximum width	125	164.3	185.7	150.2
N° of chaetigers	15	14	17	10
Antennae				
median	77.2	nd	nd	nd
lateral	67.8	50	75	nd
Tentacular cirri	71.4	nd	nd	71.4
Anterior cirri				
dorsal	42.8	22.8	67.8	50
ventral	22.6	11.4	32.1	28.6
Midbody cirri				
dorsal	67.8	71.4	64.3	67.8
ventral	29.7	18.5	28.6	28.6
Posterior cirri				
dorsal	64.3	22.8	67.8	-
ventral	31.7	8.6	32.1	-
Pygidial cirri				
length	125	60	153.6	-
Caudal appendix	17.8	15.7	28.6	-
Pharynx				
length	150	175	170	150
width	39.3	15.7	40.2	39.3
Pharyngeal tooth				
length	10	11.4	11.4	11.4
width	8.6	10	10	8.6
Proventricle				
length	128.6	103.6	185.7	160.7
width	78.6	71.4	100	60.7
N° of longitudinal muscular cells	16	18	16	18



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## References

- Brito, M.C., Núñez, J. & San Martín, G. (2000) *Parapionosyllis macaronesiensis*, a new species of Exogoninae (Polychaeta: Syllidae) from the Macaronesian Region. *Proceedings of the Biological Society of Washington*, 113(4), 1147–1150.
- Brito, M. (2002) *Estudio de las comunidades intersticiales del sebadal (Cymodocea nodosa) en Canarias, con especial referencia a los anélidos poliquetos*. PhD Thesis, 618 pp.
- Campoy, A. (1982) *Fauna de España. Fauna de Anélidos Poliquetos de la Península Ibérica*. EUNSA, (Ediciones de la Universidad de Navarra), Publicaciones de Biología de la Universidad de Navarra, Serie Zoológica, vol. 7, 781 pp.
- Fauvel, P. (1923) *Polychètes Errantes*. In: Faune de France, vol 5, Le Chevalier (ed.), París, 488 pp.
- Hartmann-Schröder, G. (1960) Polychaeten aus dem Roten Meer. *Kieler Meeresforschungen*, 16: 69–125.
- Hartmann-Schröder, G. (1974) Zur Kennnuz des Eulitorals der afrikanischen Westküste zwischen Angola und der Kap der Guten Hoffnung und der afrikanischen Ostküste von Südafrika und Mocambique unter besonderer Berücksichtigung der Polychaeten und Ostracoden. *Mitteilungen aus dem Hamburgischen Zoologischen Museum and Institut*, 69, 95–228.
- Langerhans, P. (1879) Die Wurmfauna von Madeira. *Zeits. Wissenschaft Zoologie*, 32, 513–592.
- Núñez, J., Pascual, M., Delgado, J.D. & San Martín, G. (1995) Interstitial polychaetes from Madeira with a description of *Syllides bansei* Perkins, 1981. *Bocagiana*, 179, 1–7.
- Parapar, J., San Martín, G. & Moreira, J. (2000) *Parapionosyllis cabezali*, a new species of Exogoninae (Polychaeta: Syllidae) from Spain. *Proceedings of the Biological Society of Washington*, 113(2), 526–531.
- Pierantoni, U. (1903) La gestazione esterna (Contributo alla biologia de alla embriologia dei Silidi). *Archivo Zoologico Italiano de Torino*, 1, 231–252.
- Riera, R. (2004) *Biodiversidad meiofaunal de las playas de Los Abrigos del Porís y de Los Cristianos. Estructura y dinámica de sus comunidades*. PhD Thesis, 486 pp.
- San Martín, G. (1984) *Estudio biogeográfico, faunístico y sistemático de los Poliquetos de la familia Silidos (Syllidae: Polychaeta) en Baleares*. PhD Thesis, 581 pp.
- San Martín, G. (1991) *Sphaerosyllis* and *Parapionosyllis* (Polychaeta: Syllidae) from Cuba and Florida. *Ophelia suppl.*, 5, 321–328.
- San Martín, G. (2003) *Annelida, Polychaeta II: Syllidae*. In Fauna Ibérica, vol. 21. Ramos, M.A et al. (eds.), Museo Nacional de Ciencias Naturales, CSIC, Madrid, 554 pp.
- San Martín, G. (2005) Exogoninae (Polychaeta: Syllidae) from Australia with the description of a new genus and twenty-two species. *Records of the Australian Museum*, 57, 39–152.
- San Martín, G., Viéitez, J.M. & Campoy, A. (1981) Contribución al estudio de la fauna de Anélidos Poliquetos de las costas españolas: Poliquetos Errantes recoletados en la bahía de Palma de Mallorca. *Boletín del Instituto Español de Oceanografía*, 6, 63–87.
- Viéitez, J.M. (1976) Ecología de Poliquetos y Moluscos de la playa de Meira (Ría de Vigo). *Investigaciones Pesqueras*, 40(1), 223–238.
- Webster, H.E. & Benedict, J.E. (1884) The Annelida Chaetopoda from Provincetown and Wellfleet, Massachusetts. *Reports of the United States Commissioner of Fish and Fisheries for 1881*, 699–747.