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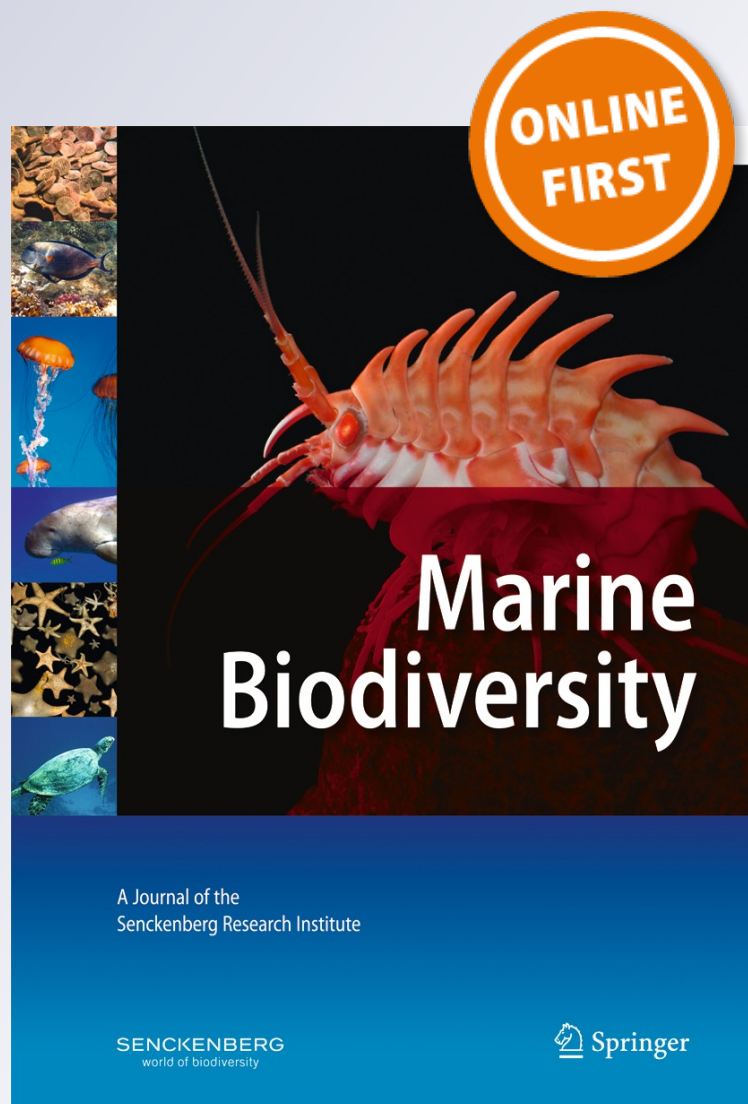
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# *Malacoceros longiseta*, a new species of Spionidae (Annelida: Polychaeta) from Venezuela

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**Abstract** Several specimens of polychaetes were collected on a sandy beach at depths of 0–1 m in the northeastern Venezuelan using a PVC corer (0.018 m<sup>2</sup>), taking sediment cores of 20 cm depth. Samples were sieved using a 0.5-mm open mesh. Specimens were fixed in 10 % formaldehyde and preserved and stored in 70 % ethanol. They were then examined using compound microscopes, and structures with taxonomic value were dissected. The characteristics of the specimens examined allowed to identify them as belonging to the genus *Malacoceros*. A new species of spionid polychaete is described from the Caribbean Sea, *Malacoceros longiseta* n. sp. This species clearly differs from all other species of *Malacoceros* Quatrafages (Mag Zool Paris 2:1–16, 1843), by the presence of lateral subterminal prostomial horns, extremely long notopodial capillary chaetae on the three first chaetigers (similar to the ones observed for *Dispio uncinata* Hartman), the length of the branchiae in relation to the notopodial lamellae, and the morphology of the pygidium.

**Keywords** Caribbean · *Malacoceros* · Spionidae · Taxonomy · Biodiversity

## Introduction

Spionidae Grube 1850 is one of the most species-rich and abundant polychaete families found in the Grand Caribbean

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Region (Delgado-Blas 2001). Previous studies have recorded 66 species in 25 genera of spionid polychaetes (Foster 1971; Perkins and Savage 1975; Johnson 1984; Salazar-Vallejo 1996; Delgado-Blas 2004, 2006, 2008, 2009; Delgado-Blas et al. 2009; Delgado-Blas and Díaz-Díaz 2010). Of the species recorded from this region, 33 were originally described there and are recognized as valid (Delgado-Blas and Salazar-Silva 2011). Some taxonomic problems in some species persist, mainly because they were poorly described, or because they are recorded in areas geographically very distant from the type locality; for these reasons, it is necessary to re-examine the type material to verify the actual identity of the species recorded.

In Venezuela, the Spionidae are poorly known. To date, 9 species have been recorded; *Scolecopsis (Scolecopsis) lighti* Delgado-Blas 2006, *S. (Scolecopsis) andradei* Delgado-Blas et al. 2009, *Malacoceros caricoensis* Delgado-Blas and Díaz-Díaz 2010, *Spio pettiboneae* Foster 1971, *Paraprionospio pinnata* (Ehlers 1901), *Dipolydora socialis* (Schmarda 1861), *Prionospio (Minuspio) cirrifera* (Wirén 1883), *P. (Prionospio) fallax* Söderström 1920 and *P. (P.) steenstrupi* Malmgren 1867.

In fact, 11 *Malacoceros* species are recognized, and 3 of these have been described from the Grand Caribbean: *M. vanderhorsti* (Augener 1927) from Curaçao; *M. jennicus* Graff et al. 2008 from a submarine volcano, *M. caricoensis* Delgado-Blas and Díaz-Díaz 2010 from the Gulf of Cariaco, Venezuela. *M. indicus* (Fauvel 1928) from the Indian Ocean has been recorded in this region, however, there are morphological differences among Caribbean specimens and the syntype of *M. indicus* (Delgado-Blas and Salazar-Silva 2011).

A previously undescribed species of *Malacoceros* was found in material collected from the coast of northeast Venezuela. This species is described as a new species, *Malacoceros longiseta*.

## Materials and methods

The specimens examined in this study were collected from soft bottoms, employing a PVC corer (0.018 m<sup>2</sup>), at a sampling depth of 20 cm. Samples were sieved using a 0.5-mm open mesh. Specimens were fixed in 10 % formaldehyde and preserved and stored in 70 % ethanol. They were then examined using compound microscopes, and structures with taxonomic value were dissected. Drawings were made following the methodology described by Coleman (2006). The holotype is deposited in the Smithsonian Institution, U.S. National Museum; Washington D.C., USA (USNM 1187916), and paratypes are deposited in the Allan Hancock Foundation Polychaete Collection at the Los Angeles County Museum of Natural History (LACM-AHF POLY 5074), in the Laboratorio de Biología de Poliquetos, Universidad de Oriente, Venezuela (LBP-Sp0034, Sp0035), and in El Colegio de la Frontera Sur, unidad Chetumal, Mexico (ECOSUR 0149). In the text, the number of specimens in a sample is given in parentheses after the abbreviation for the museum.

## Results and discussion

### Systematics

*Genus Malacoceros* Quatrefages 1843, emended

*Type species Spio vulgaris* Johnston 1827, designated by Pettibone 1963.

**Diagnosis** Body widest anteriorly, gradually tapering posteriorly. Prostomium broad anteriorly, T-shaped, triangular-shaped, bell-shaped; broadly rounded along anterior margin; occipital antenna absent. With 0–4 pairs of round eyes irregularly arranged. Caruncle entire, trilobed or button-like; small lateral nuchal organs consisting of two small rounded patches of cilia, extending to anterior margin of chaetiger 2. Palps ventrally grooved, inserted dorsally at junction of prostomium and peristomium, extending to chaetigers 5–13. Peristomium reduced lacking lateral wings, or moderately developed forming lateral wings. Eversible, sac-like proboscis. Cirriform branchiae from first chaetiger to the end or nearly the end of the body; basally fused or free to notopodial lamellae or branchiae elongate, strap-like fused completely to notopodial lamellae, with two rows of cilia, on both edges; branchiae usually overlapping at dorsal midline in anterior segments, reduced in length and thickness in middle and posterior segments. From chaetiger 2, dorsal ciliated organs extend across dorsum between bases of branchiae. Parapodia 1–3 may be shifted dorsally to subsequent segments. Notopodial lamellae distally tapered, lanceolate, elliptical, triangular on anterior and middle body;

notopodial lamellae of posterior chaetigers digitiform, triangular, lanceolate, cirriform, or rectangular; anterior notopodial presetal lamellae small, in *M. vanderhorsti* continue ventrally between dorsal and ventral rami as a glandular structure. Anterior neuropodial lamellae triangular, pentagonal, subquadrate, foliaceous, elliptical or rounded throughout; neuropodial lamellae of middle and posterior chaetigers with distal nipple-like projection, rounded, or triangular. In *M. samurai*, an area was observed between both rami with marked interramal dimple, which may correspond to nephridial openings or precursors of genital pouches (Hourdez et al. 2006). Each segment with a median transverse row of cilia. Simple capillary notochoetae present throughout body, these can be very long in chaetigers 1–3. Neurochaetae include capillaries, anterior scalpel chaetae often bearing an arista. Uni-, bi-, tri- or quadridentate hooded hooks from chaetigers 20–90, with a primary hood with apical opening through which teeth are visible, or with a complete primary hood. Sabre chaetae from chaetigers 5–90. Pygidium with 2, 4, 6, 6–8, or 15–30 anal cirri or with two anal cirri and a rounded dorsal lobe or with a spatuliform dorsal lobe and two anal cirri. Egg with complex thick, egg membranes ornamented resembling honeycombs with numerous cortical alveoli (Blake and Arnofsky 1999). Male gametes are ect-aquasperm type (Guérin and Kerambrun 1984). There are no data on postlarval and juvenile morphology in the literature; thus, they are not include in the diagnosis.

**Remarks** Critically reviewing diagnostic characters previously used within the genus, the authors can present an enhanced generic diagnosis for *Malacoceros*. The present diagnosis is based on examinations of type and non-type specimens and original descriptions of the species in the genus. The most important result of this study was found to be the presence of a prostomium with a truncate anterior margin, from which two lateral horns arise subterminally resembling the prostomial horns seen in some *Scolecoplepides* Ehlers 1907 species (*S. uncinatus* Blake 1983) in having short, lateral subterminally prostomial horns instead of nearly T-shaped frontal horns; much longer notochoetae on the first chaetigers (similar to *Dispio uncinata* Hartman 1951); branchiae basally free from notopodial lamellae; with spatula-like dorsal lobes; and two anal cirri.

*Malacoceros* most closely resembles *Scolecoplepides* with the inclusion of *M. longiseta* new species, by having lateral and subterminal prostomial appendages (horns), and because all species of both genus present branchiae from chaetiger 1. However, they differ because *Scolecoplepides* have stout acicular spines in the neuropodia of anterior chaetigers; hooded hooks present on notopodia, and *Malacoceros* not having acicular spines on neuropodia and nor hooks on notopodia; also, another difference is that *Scolecoplepides* has branchiae basally fused to lamellae present from chaetiger I to the mid-



body region instead of to the end or nearly the end of the body as in *Malacoceros*.

*Malacoceros* and *Rhynchospio* Hartman, 1936 are very closely related, as both have frontal horns, but are distinguished primarily by the appearance of the first pair of branchiae on chaetiger 1 in *Malacoceros* and chaetiger 2 in *Rhynchospio* (Blake and Kudenov 1978). The following species of *Malacoceros* are recognized here:

1. *M. vulgaris* (Johnston 1827) from England.
2. *M. tetracerus* (Schmarda 1861) from France.
3. *M. fuliginosus* (Claparède, 1870) from Italy.
4. *M. vanderhorsti* (Augener 1927) from Curaçao.
5. *M. indicus* (Fauvel 1928) from the Gulf of Mannar, Indian Ocean.
6. *M. tripartitus* Blake and Kudenov 1978 from Victoria, Australia.
7. *M. reductus* Blake and Kudenov 1978 from New South Wales, Australia.
8. *M. jirkovi* Sikorski 1992 from Norwegian Sea.
9. *M. samurai* Hourdez et al. 2006 from the chimney walls of hydrothermal vents along the South East Pacific Rise.
10. *M. jennicus* Graff et al. 2008 from a submarine volcano in the Caribbean.
11. *M. cariacensis* Delgado-Blas and Díaz-Díaz 2010 from Turpialito, Venezuela.
12. *M. longiseta* new species from the Gulf of Cariaco, Venezuela.

***Malacoceros longiseta* n. sp.**

Fig. 1a–y

**Type material** All specimens were collected from El Peñón, Gulf of Cariaco, Venezuela, from sandy substrates (10°27' 01"N, 64°105'22"W), 0–1 m deep. Coll. José María Moreno, holotype (USNM 1187916), 16 June 2011; 3 paratypes (LACM-AHF POLY 5074); 6 paratypes (ECOSUR 0149) 16 June 2011; 4 paratypes (LBP-Sp0034), 16 June 2011; 10 specimens (LBP-Sp0035), 12 March 2012, coll. Oscar Díaz-Díaz.

**Description** Holotype complete, 40 mm long, 1.9 mm wide, excluding chaetae, with 186 chaetigers. Ten paratypes: one complete paratype, 25 mm long, 1.5 mm wide, with 207 chaetigers; nine incomplete paratypes, 13–51 mm long, 1.5–2 mm wide, with 76–241 chaetigers.

Body long and slender. Color in alcohol: pale. One paratype with a tenuous light brown pigment on prostomium. Prostomium with truncate anterior margin, from which two lateral horns arise subterminally (Fig. 1a, b); prostomium extending anteriorly beyond peristomium, caruncle broad, extending to anterior margin of chaetiger 2 and ending in a

large protuberance (Fig. 1b); posterior portion of prostomium laterally surrounded by two nuchal organs. Usually without eyes, or with one or two pairs of black eyes (Fig. 1b, c). Palps lost in almost all specimens, only one paratype with right palp, relatively short, coiled, possibly reaches to chaetiger 5 (Fig. 1c). Peristomium separated from chaetiger 1, without lateral wings; eversible, sac-like proboscis.

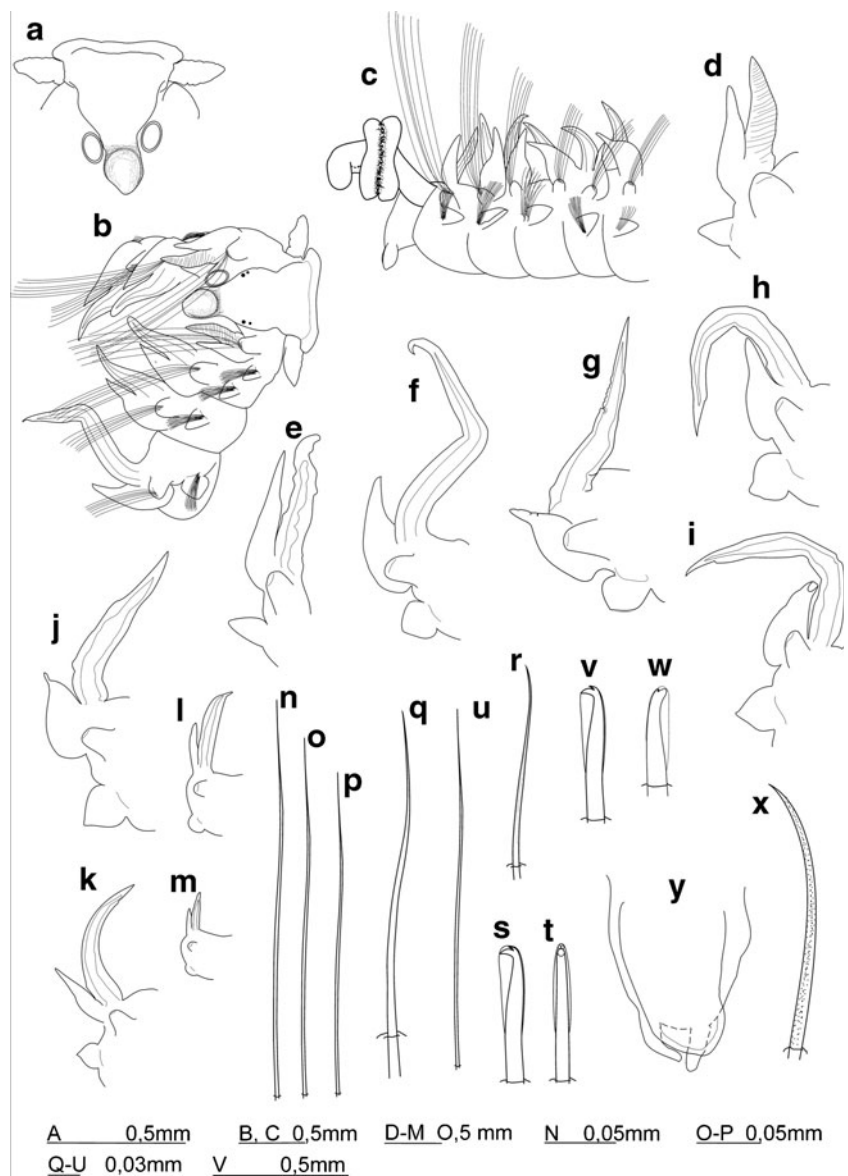
Branchiae present from chaetiger 1, basally fused with notopodial lamellae; all branchiae cirriform with pointed apex and longer than notopodial lamellae throughout body; branchiae on chaetigers 1–3 slightly longer than notopodial lamellae (Fig. 1d, e) (the longest specimen with the second pair of branchiae more developed than the rest of the examined material); branchiae on chaetigers 4–35 about three times longer than notopodial lamellae (Fig. 1f–k), decreasing in size in posterior chaetigers until 3/4 of the length of those from the anterior and middle regions (Fig. 1l, m), finally disappearing in the last 40 chaetigers.

First three parapodia shifted dorsally, with well developed dorsal and ventral postchaetal lamellae (Fig. 1b, c). Notopodial postchaetal lamellae triangular, long and thin on chaetigers 1–5 (Fig. 1d, e), becoming basally wider and rounded on chaetigers 6–47 (Fig. 1f–j), lamellae on chaetigers 48–82 with nipple-like apex and basally widest and rounded (Fig. 1j), decreasing in size on chaetigers 80–86 and becoming cirriform to almost the end of the body (Fig. 1k–m).

Neuropodial postchaetal lamellae triangular, thin on chaetigers 1–5 (Fig. 1d, e), cordate on chaetigers 6–17 (Fig. 1f–h), triangular and wider on chaetigers 29–84 (Fig. 1i–k), becoming rounded and decreasing in size in posterior chaetigers (Fig. 1l, m).

Notopodial chaetae capillaries throughout body. Chaetiger 1 with bundle of thin and extremely long capillaries (Fig. 1c, n); capillaries on chaetiger 2 and 3 similar to those of chaetiger 1 but shorter (Fig. 1o, p). Succeeding chaetigers with chaetae capillaries slightly thicker than those on chaetiger 1, without granules and alimbate capillary chaetae arranged in two rows (Fig. 1q), chaetae in anterior row shortest. Posterior chaetigers with thin, smooth capillaries. Capillary neurochaetae on anterior and middle chaetigers granulated and alimbate (Fig. 1r), arranged in two rows up to chaetiger 52, with chaetae in the anterior row shorter than those in the posterior row. Neuropodial hooded hooks with two small apical teeth above main tooth (Fig. 1s, t), from chaetiger 52–60, numbering up to 13 per fascicle; hooks accompanied by capillaries (Fig. 1u), capillaries arranged in fascicles at both ends (superior and inferior) of the line of hooks; each fascicle with up to eight short, thin capillaries. Anterior and middle chaetigers with long hooks and a well-developed main hood, covering 3/4 of the length of the axis; main tooth long and pointed (Fig. 1s, t). Posterior chaetigers with hooks of two types: (1) one type similar to those of the anterior and middle regions, some hooks with small hoods (Fig. 1v), and (2) shorter hooks, with

**Fig. 1** *Malacoceros longiseta* **a** Prostomium, dorsal view. **b** Anterior end, dorso-lateral view. **c** Anterior end, lateral view. **d** Chaetiger 1. **e** Chaetiger 3. **f** Chaetiger 6. **g** Chaetiger 8. **h** Chaetiger 17. **i** Chaetiger 29. **j** Chaetiger 48. **k** Chaetiger 84. **l** Chaetiger 127. **m** Chaetiger 165. **n** Capillary notochaetae on the first chaetiger. **o** Capillary notochaetae on the second chaetiger. **p** Capillary notochaetae on the third chaetiger. **q** Capillary notochaetae on subsequent chaetigers. **r** Capillary neurochaetae from chaetigers in the anterior and middle regions. **s** Neuropodial hooded hook. **t** Neuropodial hooded hook, in frontal view. **u** Companion capillary neurochaetae. **v** Long hooded hook from posterior chaetigers. **w** Short hooded hook from posterior chaetigers. **x** Sabre chaetae. **y** Pygidium, dorsal view. *Scale bars* (a–m, v) 0.5 mm, (n–p) 0.05 mm, (q–x) 0.03 mm



blunt and slightly oblique main fang and a pair of inconspicuous accessory teeth (Fig. 1w). Hooded hooks absent from the last five chaetigers. Sabre chaetae (Fig. 1x) from chaetiger 5, up to three per fascicle; absent from the last 19 chaetigers.

Pygidium with two ventral cirri and a spatula-shaped dorsal lobe, with a smooth, thick edge (Fig. 1y).

**Remarks** This species is assigned to *Malacoceros* based in branchiae from setiger 1 up to almost end of the body; by the absence of ventral acicular spines in anterior neuropodia. The new species differs significantly from all other *Malacoceros* spp. by having short, lateral subterminal prostomial horns instead of nearly T-shaped frontal or lateral horns. The species is also unusual in that it has extremely long notopodial capillary chaetae on the three first chaetigers (similar to the ones observed for *Dispia uncinata* Hartman 1951: pl. 22, figs. 1–5, pl. 23, figs. 1–4), branchiae

longer than notopodial lamellae, hooded hooks with a distinct shape and structure, and distinct pygidial morphology. *Malacoceros longiseta* n. sp. most closely resembles *Malacoceros cariacensis* by the beginning of sabre chaetae in chaetiger 5 and hooded hooks in chaetigers 52–60, but differs in that the former has tridentate hooks with primary hooded open, whereas *M. cariacensis* has bidentate hooks with entire hooded, in addition to features already mentioned above and in Table 1.

**Geographical distribution** The species occurs from sandy substrates, 0–1 m deep at El Peñón, Gulf of Cariaco, Venezuela.

**Etymology** The specific name *longiseta*, derived from the Latin, refers to the extremely long and very thin capillary chaetae present in anterior chaetigers.

**Table 1** Comparison of *Malacoceros longiseta* with other species of the genus

<i>Malacoceros</i>	Prostomium	Prostomium	Peristomium	Branchiae	Notopodial lamellae	Neuropodial lamellae	Neuropodial scalpel chaetae	Sabre chaetae start	Hooded hooks	Anal cirri
	a. Shaped	a. Slightly incision	Lacking lateral wings	a. Shaped	a. Anterior	a. Anterior	Absent	30–50	a. Start chaetiger	
	b. Prostomial horns	b. Eyes	Lacking lateral wings	b. Branchial fusion	b. Posterior	b. Posterior	Absent	70–90	b. No. teeth	
		c. Caruncle	Lacking lateral wings						c. Primary hood	
<i>indicus</i> <sup>a</sup>	a. T-shaped	a. Absent	Lacking lateral wings	a. Cirriform	a. Triangular	a. Rounded	Absent	30–50	a. 30–50	4
	b. Latero-frontal	b. 0–6	Lacking lateral wings	b. Fused basally	b. Digitiform	b. Nipple-like		b. 3–4	b. 3–4	
		c. Rounded	Lacking lateral wings						c. Apical opening	
<i>vanderhorstii</i> <sup>b, a</sup>	a. Triangular-shaped	a. Present	Lacking lateral wings	a. Cirriform	a. Triangular	a. Nipple-like	Absent	70–90	a. 70–90	2
	b. Frontal	b. 4–8	Lacking lateral wings	b. Fused basally in anterior and middle chaetigers, and free in posterior chaetigers	b. Digitiform	b. Triangular			b. 3–4	
		c. Triangular	Lacking lateral wings						c. Complete	6
<i>tripartitus</i> <sup>c</sup>	a. T-shaped	a. Absent	Lacking lateral wings	a. Elongate strap-like	a. Elliptical	a. Subquadrante	Absent	25	a. 31	
	b. Lateral	b. 6	Lacking lateral wings	b. Fused completely in anterior and middle chaetigers and basally in posterior chaetigers	b. Elongate and narrow	b. Subtriangular			b. 3	
		c. Tri-lobed	Lacking lateral wings						c. Apical opening	
<i>reductus</i> <sup>d</sup>	a. T-shaped	a. Present	Moderately developed	a. Elongate strap-like	a. Elliptical	a. Oval	Absent	20	a. 20	6
	b. Lateral	b. 4	Moderately developed	b. Fused almost completely in anterior chaetigers and basally in middle chaetigers and free in posterior chaetigers	b. Subtriangular	b. Rounded			b. 3	
		c. Rounded	Lacking lateral wings						c. Apical opening	
<i>samurai</i> <sup>e</sup>	a. T-shaped	a. Absent	Lacking lateral wings	a. Cirriform	a. Lanceolate	a. Pentagonal	Present	35	a. 35	4
	b. Lateral	b. 0	Lacking lateral wings	b. Fused basally	b. Lanceolate	b. Nipple-like			b. 1, rounded	
		c. Triangular	Lacking lateral wings						c. ?	
<i>jennicus</i> <sup>f</sup>	a. T-shaped	a. Present	Lacking lateral wings	a. Cirriform	a. Triangular	a. Rounded to cordiform	Absent	25	a. 40	4
	b. Latero-frontal	b. 4	Lacking lateral wings	b. Fused basally	b. Triangular	b. Nipple-like			b. 2	
		c. Bottom-like	Lacking lateral wings						c. Apical opening	
<i>vulgariis</i> <sup>f, i, j, Sg</sup>	a. Triangular-shaped	a. Absent	Lacking lateral wings	a. Cirriform	a. Elliptical	a. Rounded	Absent	?	a. 30–40	15–30
	b. Lateral	b. 4	Lacking lateral wings	b. Fused completely in anterior and middle chaetigers and basally in posterior chaetigers	b. Subtriangular	b. Rounded			b. 3	
		c. Triangular	Lacking lateral wings						c. Complete	
<i>tetracerus</i> <sup>g, i, Sg</sup>	a. T-shaped	a. Absent	Lacking lateral wings	a. Cirriform	a. Elliptical	a. Elliptical	Absent	15–20	a. 20–28	6–8
	b. Lateral	b. 4	Lacking lateral wings	b. Fused completely in anterior chaetigers and	b. Rectangular	b. Rounded			b. 2	

**Table 1** (continued)

<i>Malacoceros</i>	Prostomium	Prostomium	Peristomium	Branchiae	Notopodial lamellae	Neuropodial lamellae	Neuropodial scalpel chaetae	Sabre chaetae start	Hooded hooks	Anal cirri
	a. Shaped	a. Slightly incision	Lacking lateral wings	a. Shaped	a. Anterior	a. Anterior	Absent		a. Start chaetiger	
	b. Prostomial horns	b. Eyes	Lacking lateral wings	b. Branchial fusion	b. Posterior	b. Posterior	Absent	?	b. No. teeth	
	c. Caruncle	c. Triangular	Lacking lateral wings	basally in posterior chaetigers					c. Primary hood	
<i>fuliginosus</i> <sup>l</sup>	a. T-shaped	a. Absent	Lacking lateral wings	a. Cirriform	a. Subtriangular	a. Subtriangular	Absent	30–45	c. Complete	6–8
	b. Lateral	b. 4	Lacking lateral wings	b. Fused basally	b. Rectangular	b. Rounded		b. 2	b. 2	
	c. Triangular	c. Triangular	Lacking lateral wings	a. Cirriform	a. Triangular	a. Subtriangular	Absent	?	c. Complete	?
<i>jirkov</i> <sup>h, k</sup>	a. T-shaped	a. Absent	Lacking lateral wings	b. Free in anterior chaetigers and fused basally in posterior chaetigers	b. Digitiform	b. Rounded			a. 26–32	
	b. Lateral	b. Present or absent	Lacking lateral wings						b. 3	
	c. Triangular	c. Triangular	Lacking lateral wings						c. Apical opening	?
<i>carriacoensis</i> <sup>l</sup>	a. Bell-shaped	a. Absent	Lacking lateral wings	a. Cirriform	a. Triangular	a. Foliateous	Absent	5	a. 52–60	
	b. Lateral	b. 0–8	Lacking lateral wings	b. Free	b. Triangular	b. Rounded			b. 2	
	c. Triangular	c. Triangular	Lacking lateral wings	a. Cirriform	a. Triangular	a. Triangular	Absent	5	c. Complete	2
<i>longiseta</i> n. sp.	a. Triangular-shaped	a. Absent	Lacking lateral wings	b. Fused basally	b. Cirriform	b. Rounded			a. 52–60	
	b. Lateral-subterminal	b. 0–4	Lacking lateral wings						b. 3	
	c. Protuberance	c. Protuberance	Lacking lateral wings						c. Apical opening	

*Sc* as *Scolecopsis ciliata* in Fauvel (1928), *Sg* as *Scolecopsis girardi* in Fauvel (1928)

<sup>a</sup>Foster (1971)

<sup>b</sup>Augener (1927)

<sup>c</sup>Blake and Kudenov (1978)

<sup>d</sup>Hourdez et al. 2006

<sup>e</sup>Graff et al. 2008

<sup>f</sup>Johnston (1827)

<sup>g</sup>Schmarda (1861)

<sup>h</sup>Sikorski (1992)

<sup>i</sup>Hartmann-Schröder (1996)

<sup>j</sup>Fauvel (1928)

<sup>k</sup>Jirkov (2001)

<sup>l</sup>Delgado-Blas and Diaz-Diaz (2010)



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## References

- Augener H (1927) Polychaeten von Curaçao. Bijdr Dierkd Amst 25:39–82
- Blake JA (1983) Polychaetes of the family Spionidae from South America, Antarctica and adjacent seas and islands. Biology of Antarctic Seas XIV. Antarct Res Ser 39:205–288
- Blake JA, Arnofsky PL (1999) Reproduction and larval development of the spioniform Polychaeta with application to systematics and phylogeny. Hydrobiologia 402:57–106
- Blake JA, Kudenov JD (1978) The Spionidae (Polychaeta) from south-eastern Australia and adjacent areas, with a revision of the genera. Mem Natm Mus Vict 39:171–280
- Claparède E (1870) Les Annélides chétopodes du golfe de naples. Seconde partie. Annélides sédentaires. Mém Soc Phys Hist Nat Genève 20(1):1–225
- Coleman CO (2006) Substituting time-consuming pencil drawings in arthropod taxonomy using stacks of digital photographs. Zootaxa 1360:61–68
- de Quatrefages A (1843) Description de quelques especes nouvelles d'Annélides errantes recueillies sur les cotes de la Manche. Mag Zool Paris 2:1–16
- Delgado-Blas VH (2001) Distribución espacial y temporal de poliquetos (Polychaeta) béticos de la plataforma continental de Tamaulipas, Golfo de México. Rev Biol Trop 49(1):141–147
- Delgado-Blas VH (2004) Two new species of *Paraprionospio* (Polychaeta: Spionidae) from the Grand Caribbean region and comments of the genus status. Hydrobiologia 520:189–198
- Delgado-Blas VH (2006) Partial revision of *Scoelelepis* (Polychaeta: Spionidae) from the Grand Caribbean Region, with the description of two new species and a key to species recorded in the area. Contrib Zool 75:75–97
- Delgado-Blas VH (2008) *Polydora* and related genera (Polychaeta: Spionidae) from the Grand Caribbean region. J Nat Hist 42:1–19
- Delgado-Blas VH (2009) Spionidae grube, 1850. In: de León-González JA, Bastida-Zavala JR, Carrera-Parra LF, García-Garza ME, Peña-Rivera A, Salazar-Vallejo SI, y Solís-Weiss V (eds) Poliquetos (Annelida: Polychaeta) de México y América tropical. Universidad Autónoma de Nuevo León, Monterrey, pp 589–614
- Delgado-Blas VH, Díaz-Díaz OF (2010) Description of two new species of *Malacoceros* and *Rhynchospio* spionids (Polychaeta: Spionidae) from the Grand Caribbean region. Rev Chil Hist Nat 83:249–257
- Delgado-Blas VH, Salazar-Silva P (2011) Taxonomic catalogue of the Spionidae (Annelida: Polychaeta) of the Grand Caribbean. Zootaxa 2782:39–66
- Delgado-Blas VH, Díaz-Díaz OF, Liñero-Arana I (2009) New record and new species of *Scoelelepis* (Polychaeta: Spionidae) from the Venezuelan Caribbean. J Mar Biol Ass UK 90(4):783–787
- Ehlers E (1901) Die Polychaeten des magellanischen und chilenischen Strandes. Ein faunistischer Versuch. Festschrift zur Feier des hundertfünfzigjährigen Bestehens der Königlichen Gesellschaft der Wissenschaften zu Göttingen. Weidmansche Buchhandlung, Berlin
- Ehlers E (1907) Neuseeländischen anneliden II. Abh K Ges Wiss Göttingen 5(4):1–31
- Fauvel P (1928) Annelides polychetes nouvelles de l'Indie. Bull Mus Hist Nat (Paris) 34:90–96
- Foster N (1971) Spionidae (Polychaeta) of the Gulf of Mexico and the Caribbean Sea. Stud Fauna Curaçao Caribb Islands 37:1–138
- Graff JR, Blake JA, Wishner KF (2008) A new species of *Malacoceros* (Polychaeta: Spionidae) from Kick'em Jenny, a hydrothermally active submarine volcano in the Lesser Antilles Arc. J Mar Biol Ass UK 88:925–930
- Grube AE (1850) Die familien der anneliden. Archiv Nat (Berl) 16:249–364
- Guérin JP, Kerambrun P (1984) Role of reproductive characters in the taxonomy of spionids and elements of speciation in the '*Malacoceros fuliginosus* complex'. In: Fischer A and Pfannenstiel HD (eds), Polychaete Reproduction: Progress in Comparative Reproductive Biology. Fortschr Zool 29:317–333
- Hartman O (1936) New species of Spionidae (Annelida: Polychaeta) from the coast of California. Univ California Pub Zool 41:45–52
- Hartman O (1951) The littoral marine annelids of the Gulf of Mexico. Pub Texas Univ Inst Mar Sci 2:7–124
- Hartman-Schröder G (1996) Annelida, Borstenwürmer, Polychaeta (Annelida, bristleworms, Polychaeta). The fauna of Germany and adjacent seas with their characteristics and ecology, 58 Gustav Fischer: Jena, Germany
- Hourdez S, Desbruyères D, Laubier L (2006) *Malacoceros samurai*, a new species of Spionidae (Annelida: Polychaeta) from hydrothermal vent chimney walls on the South East Pacific Rise. Proc Biol Soc Wash 119:592–599
- Jirkov IA (2001) Polychaeta of the arctic ocean. Yanus-K, Moscow (in Russian)
- Johnson PG (1984) Family Spionidae Grube 1850. In: Uebelacker JM, Johnson PG (eds) Taxonomic guide to the polychaetes of the Northern Gulf of México, vol 6. Vittor, Mobile pp 1–69
- Johnston G (1827) Contributions to the British fauna. Zool J Lond 3:321–336
- Malmgren AJ (1867) Annulata Polychaeta: Spetsbergiae, Groenlandiae, Islandiae et Scandinaviae hactenus cognita. Öfv Svenska Vetensk Akad Förh 24:127–235
- Perkins TH, Savage T (1975) A bibliography and checklist of polychaetous annelids of Florida, the Gulf of Mexico, and the Caribbean Region. Florida Mar Res Pub 14:1–62
- Pettibone MH (1963) Revision of some genera of polychaete worms of the family Spionidae, including the description of a new species of *Scoelelepis*. Proc Biol Soc Wash 76:89–104
- Salazar-Vallejo SI (1996) Bibliografía y lista de especies de poliquetos (Polychaeta) del Gran Caribe. An Inst Biol UNAM Zool (Méx) 43:11–52
- Schmarda LK (1861) Neue wirbellose Thiere beobachtet und gesammelt auf einer Reise um die Erde 1853–1857. Leipzig, 1. Turbellarien, Rotatorien und Anneliden Pt 2 1–164
- Sikorski AV (1992) A new species of *Malacoceros* (Polychaeta: Spionidae) from the Norwegian Sea. Explor Fauna Seas 43 (51):105–108
- Söderström A (1920) Studien über die polychaetenfamilie spionidae. Inaugural-dissertation. Uppsala: almquist and wicksells
- Wirén A (1883) Chaetopoder fran sibiriska ishafvet och berings haf insamlade under vega-expeditionen 1878–1879. In: Nordenskiöld NAE (ed) Vega- expeditionens vetenskapliga iakttagelser. Beijers, Stockholm, pp 383–426