



The genus *Branchiosyllis* Ehlers, 1887 (Annelida, Syllidae, Syllinae) from off the American coasts, with the description of a new species from Venezuela

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Abstract. A revision of the genus *Branchiosyllis* from the American coasts is presented. A new species from Venezuelan coast is described, the new species, differing from all other species of the genus by having a laterally compressed body, striking colour pattern, and the presence of well-developed branchiae. Specimens of *B. oculata* Ehlers, 1887, from Cuba, *B. lamellifera* Verrill, 1900, from Venezuela and *B. pacifica* Rioja, 1941, from Panamá are characterized herein; *B. salazari* Ruiz-Ramírez & Harris, 2008, is reported for the first time for Venezuela. Finally, a key to all the known species of the genus is provided.

Key words: taxonomy, revision, branchiae, taxonomic key

Resumen. El género *Branchiosyllis* Ehlers, 1887 (Annelida, Syllidae, Syllinae) en las costas americanas, con la descripción de una nueva especie de Venezuela. Se presenta una revisión de las especies del género *Branchiosyllis* de las costas americanas. Se describe una nueva especie de las costas venezolanas para la ciencia, que difiere de cualquier otra especie del género por poseer un cuerpo comprimido lateralmente, una llamativa coloración y la presencia de unas branquias bien desarrolladas. Se describen también ejemplares de *B. oculata* Ehlers, 1887, de Cuba, *B. lamellifera* Verrill, 1900, de Venezuela, y *B. pacífica* Rioja, 1941, de Panamá; *B. salazari* Ruiz-Ramírez & Harris, 2008 se cita por primera vez para Venezuela; por último, se añade una clave de todas las especies de este género conocidas en todo el mundo.

Palabras clave: taxonomía, revisión, branquias, clave taxonómica

Introduction

Branchiosyllis Ehlers, 1887 (Annelida, Syllidae, Syllinae) is easy to recognize by the “clawshaped” falciger chaetae, namely the “ungulae” (“ungula” in singular) (Góngora-Garza *et al.* 2011). They are present in all the species of the genus (San Martín *et al.* 2008, Aguado *et al.* 2012, Álvarez-Campos *et al.* 2012) and are thus considered its most diagnostic characteristic (Aguado *et al.* 2009) and the synapomorphic character supporting the monophyly of the genus (Aguado *et al.* 2012). The ungulae may be accompanied in some species by non-modified falcigers which may be bidentate, unidentate, or both. Despite the generic name refers to the “branchiae” they are only present in a few species, most of them from the tropical American coasts.

These “branchiae” are bi- tri- or even tetra-lobed evaginations of the dorsal side of parapodial lobes, their actual nature and physiological function are unknown. The species of *Branchiosyllis* with known reproduction, produce acephalous stolons, regardless of body shape, type of chaetae, or the presence or absence of branchiae (see Table 1 in Álvarez-Campos *et al.* 2012), which has also been proposed as synapomorphic characteristic for the genus (Aguado *et al.* 2012), and may show one of three basic body shapes: cylindrical, dorsoventrally flattened, or laterally compressed.

However, due to the variability in body shape and presence of branchiae, and the unmodified falcigers, together with the wide distribution of the species, the genus will require a detailed revision and a phylogenetic analysis.

Branchiosyllis has a limited tropical and subtropical distribution, including the warm Mediterranean areas, with two biodiversity hotspots: the Central Indo-Pacific and the tropical American coasts. Previous studies of the genus, including descriptions of new species, are those by San Martín *et al.* (2008) from Australia, and Álvarez-Campos *et al.* (2012) from the Philippine Islands.

This study provides a revision of the *Branchiosyllis* species from the American coasts, with the description of a new species and a redescription of several others, including new reports from Venezuela and a taxonomic key of all the valid species.

Material and Methods

The material examined was collected by snorkelling and SCUBA diving during a short collection trip to Venezuela in July 2011. Specimens were sampled mainly from coral rubble, algae and sponges, removed from the substrate and sorted using a Nikon SMZ1 stereomicroscope. Most of the material was preserved in 96% ethanol; some specimens were fixed in 10% seawater formalin and preserved in 70% ethanol. Syllids were studied under a Nikon Optiphot microscope equipped with differential interference contrast system (Nomarsky), with an ocular micrometer and camera lucida. Specimens selected for scanning electron microscopy (SEM) were critical point dried with an Emitech K850 Critical Point Dryer and subsequently coated with gold using a Q150T-S Turbo-Pumper Sputter Coater. They were examined with a Hitachi S-3000N electron microscope at SIDI (Servicio Interdepartamental de Investigación), Universidad Autónoma de Madrid (UAM). Width of the specimens was measured at the proventricle level, excluding parapodia. Comparative material was loaned by the Museo Nacional de Ciencias Naturales de Madrid (MNCN) and the Peabody Museum of Natural History, Yale University (YPMNH). Types and specimens from Venezuela have been deposited at MNCN. Other previously reported, but not described, species from other collections from Cuba and Panamá (MNCN) are also redescribed.

Results

Genus *Branchiosyllis* Ehlers, 1887

Branchiosyllis Ehlers, 1887: 148; San Martín (2003): 332, San Martín *et al.* (2008): 121

Diagnosis according to San Martín *et al.* (2008).

Type species: *Branchiosyllis oculata* Ehlers 1887

Branchiosyllis bonei n. sp.

Figs 1A-B, 2A-D

Material examined. Parque Nacional de San Esteban (Venezuela), algae and hydrozoans on a sunken ship, 2 m deep, Holotype (MNCN 16.01/14690).

Description. Body distinctly compressed laterally, with cirri and parapodia dorsally directed (Fig. 1A), except more anterior ones (Figs. 1A-1B, 2A-2C). Dorsum flattened, ventrum distinctly convex (Fig. 1A other ventrally located); ventral and lateral surfaces of body pale, without pigment, except for a midventral black line (Fig. 2B); dorsal surface strongly pigmented of dark purple to black with some lighter areas irregularly distributed (Figs. 1A-1B, 2A, 2C), larger and lighter in median position, and some dark areas on cirrophores, some articles of dorsal cirri, branchiae and dorsal surface of parapodia (Figs. 1A-1B, 2A-2D). Holotype a complete specimen, 5 mm long, 0.48 mm wide, with 50 chaetigers plus some segments in regeneration. Prostomium small, oval, with some black areas; two reddish eyes in dorsal position and two other ventral (Figs. 2A-2B). Antennae inserted near anterior margin of prostomium, small, slender, ventrally directed; median antenna with about 10 articles; lateral antennae with about 10-13 articles. Nuchal organs not observed. Palps ventrally directed, small, as two rounded lobes (Fig. 2B). Peristomium dorsally reduced, covered by chaetiger 1 (Figs. 2A-2B); dorsal tentacular cirri longer than antennae, with about 20 articles; ventral tentacular cirri less than half of the length of dorsal ones, with about 7-9 articles (Fig. 2B). Parapodia of anterior chaetigers antero-laterally directed, progressively directed more dorsally, elongated, extending to dorsum (Figs 2A, 2C); in lateral view, dorsal cirri dorsally directed, with about 10-15 articles, irregular in length, some segments with unequal dorsal cirri (Figs. 1A, B, 2A, C). Parapodial lobes elongate, distally with two digitiform lobes, anterior one longer, posterior with solitary, straight acicula inside, and another smaller and blunt lobe, on anterior side of parapodium (Fig. 2D). Branchiae well developed, trapezoidal to anvil-shape, distinctly pigmented of black in some parts (Figs. 2A, 2C, 2D), directed to dorsum except for most anterior parapodia (Fig. 2A). Ventral cirri digitiform, shorter than parapodial lobes (Fig. 2B). Single acicula on each parapodium, distally pointed, slightly protruding out from posterior parapodial lobe (Fig. 2D). Parapodia with five unidentate ungulae, marginally smooth; most ventral one separated away from four others, with thicker shaft and larger blade (Fig 2D). Pharynx and proventricle not seen. Reproduction unknown.



Figure 1. *Branchiosyllis bonei*, n. sp. Holotype MNCN 16.01/14690. A, complete specimen. B, anterior end, dorsal view.

Remarks. *Branchiosyllis bonei* n. sp. is unique among all syllids, except the Australian congeneric species

Branchiosyllis orbiniiformis San Martín, Hutchings & Aguado, (2008), in having a distinctly laterally compressed body with parapodia, chaetae, and dorsal cirri dorsally directed. The compound chaetae are typical of the genus. This new species differs from *B. orbiniiformis* in having distinct, well-developed branchiae, strong dorsal black pigmentation, digitiform parapodial lobes, and a different arrangement of unguiae (all similar in *B. orbiniiformis*; while varying sizes in *B. bonei*, n. sp.). This species is also unique in the shape of branchiae and in the arrangement of unguiae. This **Etymology.** The species is named after Dr. David Bone, Universidad Simón Bolívar, Caracas, Venezuela, a prestigious colleague, who organized

the collection trip in Venezuela.

Habitat. Algae and hydrozoans.

Distribution. Only known from the type locality, in Venezuela

Branchiosyllis diazi Rioja, 1958

Branchiosyllis diazi Rioja, 1958: 242-246, figs. 13, 14. Rullier & Amoureux (1979): 161.

Remarks. This species has a mixture of characters of different groups of species, with a flattened body and branchiae on parapodia, and both unguiae and unmodified bidentate and unidentate falcigers. Unfortunately, types are lost.

Habitat. Among algae and in sand, intertidal to 32 m depth.

Distribution. Known only from the type locality (Verde Island, Veracruz, Gulf of México) and near Recife (Brazil).

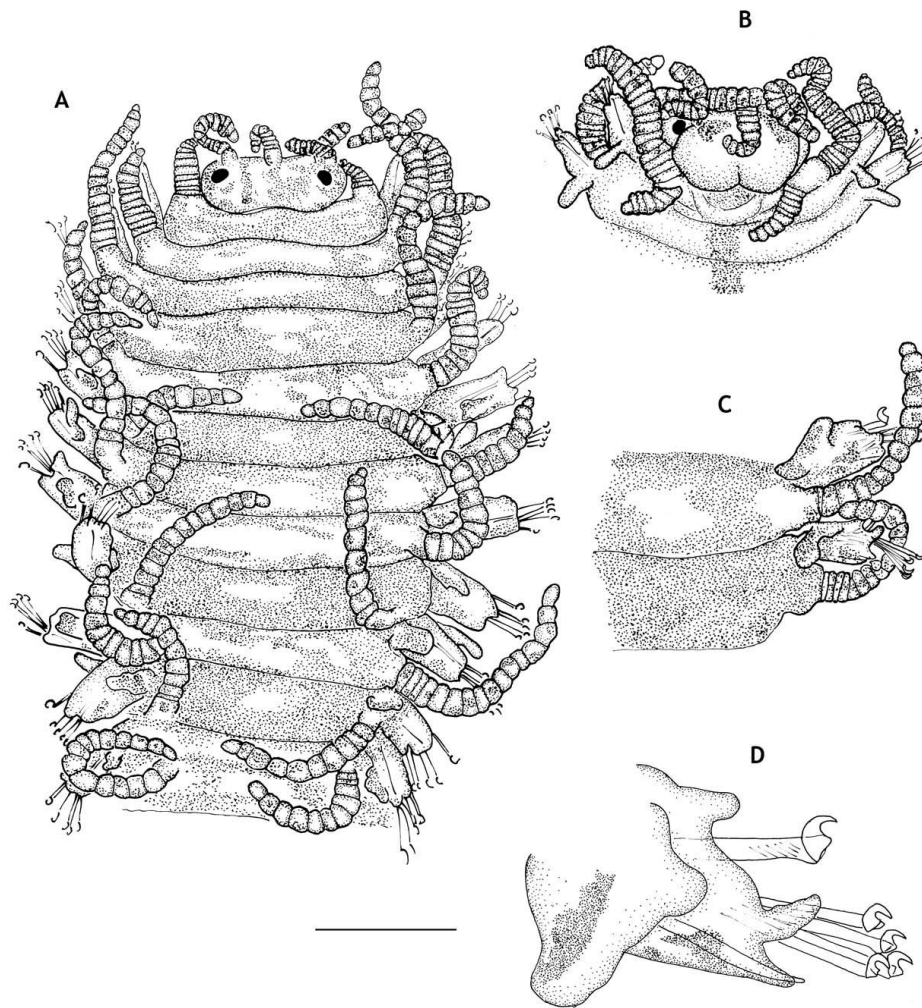


Figure 2. *Branchiosyllis bonei*, n. sp. Holotype MNCN 16.01/14690. A. anterior end, dorsal view. B. anterior end, ventral view. C. midbody segments (right), dorsal view. D. midbody parapodium, dorsal view. Scale.- A, 0.2 mm. B y C, 0.18 mm. D, 48 μ m.

***Branchiosyllis exilis* (Gravier, 1900)**

Syllis (Typosyllis) exilis Gravier, 1900: 160, figs 28–30.

Branchiosyllis abbranchiata Hartmann-Schröder (1965): 113–114, figs 39–42.

Syllis (Typosyllis) fuscotaturata Augener (1922): 43.

Syllis fuscotaturata Monro (1933): 32, fig. 14.

Branchiosyllis fuscotaturata (Augener, 1922) Westheide (1974): 60

Trypanosyllis uncinigera Hartmann-Schröder, 1960: 86, figs 54–58.

Branchiosyllis uncinigera Harlock & Laubier (1966): 18, figs 1–3.

Remarks. See the taxonomic account of this species in Álvarez-Campos *et al.* 2012.

Habitat. Shallow waters on sponges, algae, gorgonians, and coral rubble.

Distribution. Apparently circumtropical; also present

in the warmest areas of the Mediterranean Sea.

***Branchiosyllis lamellifera* Verrill, 1900**

Figures 3A–3E, 4A–4H

Branchiosyllis lamellifera Verrill, 1900: 624.

Branchiosyllis oculata Non Ehlers, 1887 Hartman (1942): 44, figs. 62, 63. Pawlik (1983): 65, figs. 3, 5–8. Uebelacker (1984): 30–107, fig. 30–102.

Material examined. Bermuda, YPMNH (56864), 1 specimen on slide (with two other species of Syllidae). NO side of Cayo Sombrero, Morrocoy National Park, Venezuela, on *Aplysina archeri* (tubular purple sponge), 5–8 m. 8/7/2011, 2 specimens. NO side of Cayo Sombrero, Morrocoy National Park, Venezuela, on massive purple and yellow unidentified sponge 5–8 m. MNCNM (16.01/14691), 1 specimen used for SEM and mounted on SEM stub.

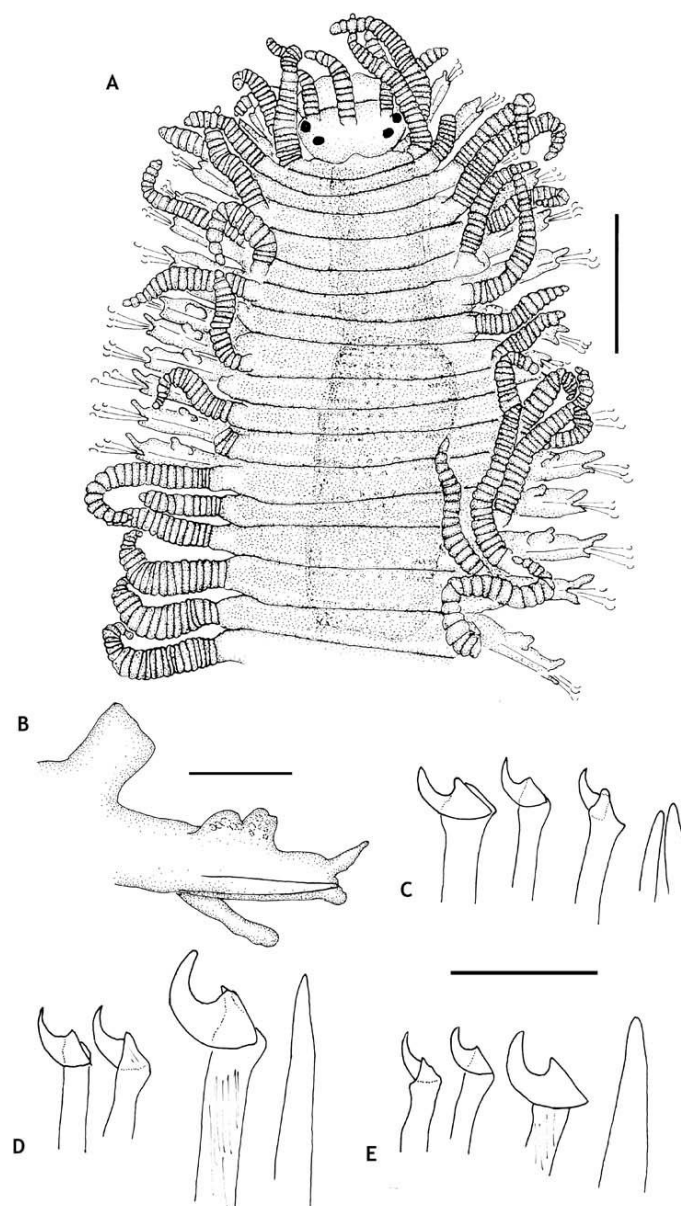


Figure 3. *Branchiosyllis lamellifera* Verrill, 1900. MNCNM (16.01/14691). A, anterior end, dorsal view. B, midbody parapodium, lateral view. C, unguiae, anterior parapodium. D, unguiae, midbody parapodium. E, unguiae, posterior parapodium. F, aciculae, anterior parapodium. G, acicula, midbody parapodium. H, acicula, posterior parapodium. Scale.- A, 0.4 mm. B, 0.1 mm, C-E, 48 μ m.

Description. Body relatively small in comparison to other similar species. Strongly dorsoventrally flattened, ribbon-like (Figs. 3A, 4A), segments distinctly wide and short; longest complete specimen examined about 6 mm long, 1 mm wide, with 63 chaetigers plus developing sexual acephalous stolon with 11 chaetigers; fragmented specimen longer (the fragments may belong to more than one specimen), 20 mm long, 2 mm wide, 140 chaetigers, plus a developing acephalous stolon, with nine chaetigers, pigmented purple. Body yellowish to light purple in alcohol, with light pink to purple dorsal cirri, some articles more pigmented than others, and transversal,

slender stripes of same colour in some anterior segments. Prostomium oval (Figs. 3A, 4A, 4B); 4 small eyes in open trapezoidal arrangement. Antennae inserted near anterior margin of prostomium (Figs. 3A, 4A, 4B), proportionally short; median antenna originating slightly posterior to lateral antennae, between anterior eyes, with about 13-16 articles; lateral antennae inserted in front of anterior eyes, slightly longer than median antenna, with about 17 articles (Figs. 3A, 4B). Palps similar in length to prostomium. Nuchal organs as two small ciliated pits lateral to prostomium (Fig. 4B, arrow).

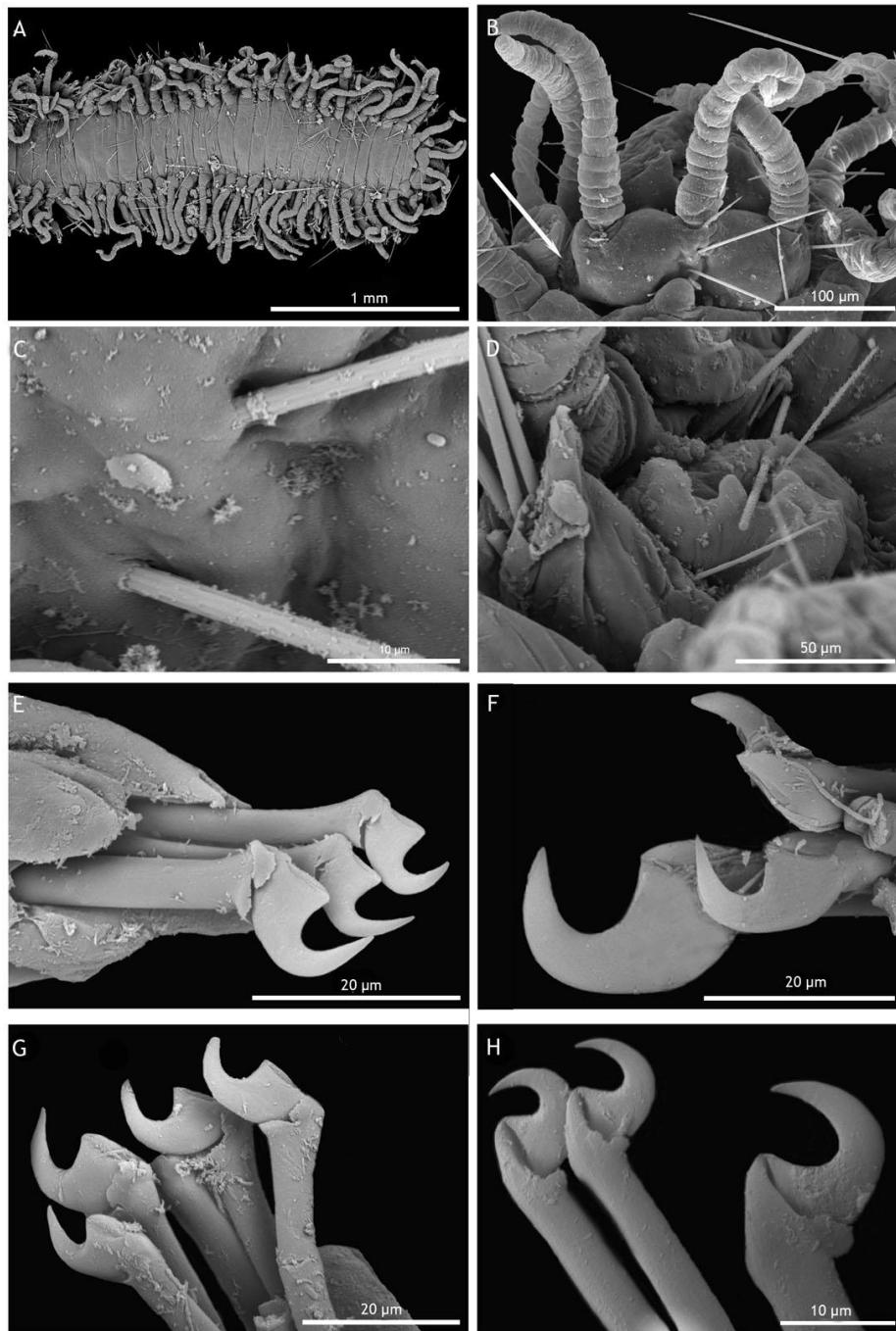


Figure 4. *Branchiosyllis lamellifera* Verrill, 1900 MNCNM (16.01/14691). SEM photographs. A. midbody and anterior end, dorsal view. B. prostomium. C. details of spicules on tegument. D, branchia, dorsal view. E-H, unguales.

Peristomium reduced dorsally, covered by a fold of chaetiger 1 (Figs. 3A, 4A, 4B); dorsal tentacular cirri similar in length to antennae, with about 17 articles; ventral tentacular cirri about 2/3 length of dorsal ones, with about 8-10 articles (Figs. 3A, 4A, 4B). Parapodia elongate, distally bilobed, with prechaetal lobe digitiform, distinctly longer than postchaetal lobe (Figs. 3A, 3B). Single branchia on each

parapodium, dorsally located, with granular appearance internally, distinctly bilobed; sometimes one lobe also secondarily bilobed (Figs. 3A, 3B, 4D). Dorsal cirri thick, with distinct, usually dark, cirrophores (Figs. 3A, 3B, 4A), and 25-30 articles on midbody, alternating in length, but shorter or similar in length to body width; anterior dorsal cirri somewhat longer (Figs. 3A, 4A), with about 36

articles. Ventral cirri digitiform, elongated, inserted near half-length of parapodial lobe (Fig. 3B), pigmented on purple; ventral cirri of anterior parapodia shorter, ovate. Ungulae with smooth, strongly curved, unidentate blades of different sizes on each parapodium; usually three chaetae per parapodium, two relatively small, similar in size, dorsally located, and one thicker with larger shafts and blades, ventrally located; differences in size more evident posteriorly (Figs. 3C-3E, 4E-4H). Anterior parapodia with two aciculae (Fig. 3F); from proventricular segments onwards, acicula solitary, straight, distally pointed (Figs. 3G, 3H). Pharynx through about nine segments; pharyngeal tooth on anterior margin. Proventricle rectangular, through nine segments, with 30 muscle cell rows (Fig. 3A).

Remarks. Hartman (1942) synonymized, with some doubts, *B. lamellifera* with *B. oculata*, the type species. The two species are found in the same area and habitat, although the former seems to be more strongly associated to sponges. However, *B. oculata* clearly differs in body size and shape of cirri, branchiae, and chaetae (Álvarez-Campos *et al.* 2012). *Branchiosyllis lamellifera* resembles *B. pacifica* Rioja, 1941, but the latter has tri- or tetralobed branchiae and more chaetae per parapodium, usually four (Álvarez-Campos *et al.* 2012). The specimen described by Verrill (1900) (YPMNH 56864) is apparently a juvenile in very poor condition, broken in two pieces, but agrees well with the examined specimens. The specimens from Bermuda (as *B. oculata* in Pawlik 1983) were quite similar to those from Venezuela, especially in branchial shape, although they were figured as having 4-5 chaetae per parapodium, instead of the 3 in the two specimens studied herein and Verrill (1900)'s one.

Habitat. On and inside sponges; examined specimens had numerous spicules adhered and inserted in integument (Figs. 4A-4D).

Distribution. Up to now, only reported from Bermuda Islands and Gulf of México; first report from Venezuela. Probably also Curaçao (Hartmann-Schröder, 1980, as *B. pacifica*).

Branchiosyllis lorenae San Martín & Bone, 1999

Branchiosyllis lorenae San Martín & Bone, 1999: 322-325, figs 2-4.

Habitat. In *Thalassa testudinum* beds.

Distribution. Venezuela, Cuba.

Branchiosyllis oculata Ehlers, 1887

Figs 5A-D, 6 A-H

Branchiosyllis oculata Ehlers, 1887: 148, pl. 39, figs 1-7.- Rioja (1958): 240, fig. 7. - San Martín (1991):

233. San Martín & Bone (2001): 614.

Non Branchiosyllis oculata San Martín *et al.* (2008): 134, figs. 12 A-E, 13C-F, 15A. Uebelacker (1984): 30-107, fig. 30-102.

Material examined. 1 Syntype, YPMNH 6745, Key West, Florida, USA. Caribbean Sea, Cuba: 12 specimens (1 mounted on SEM stub), MNCNM 16.01/752, Canal de los Vapores, Cayo Bocas de Alonso, Archipiélago de los Canarreos, 21°43'02"N - 82°28'50"W, sponges on *Rhizophora mangle* roots, 0.5 m depth, coll. G. San Martín, April 1984.

Description. Body long, strongly dorso-ventrally flattened, ribbon-like (Figs. 5A, 6A), tapered posteriorly; longest examined specimen about 20 mm long, 1 mm wide, with 101 chaetigers, almost complete; some fragments distinctly wider, but with less chaetigers. Colourless in alcohol, with some dark, brownish spots on some dorsal cirri. Prostomium oval; four small eyes in open trapezoidal arrangement. Antennae inserted near anterior margin of prostomium (Figs. 5A, 6A, 6B), proportionally short, with about 16 articles, all similar in length (Fig. 5A). Palps slightly shorter than prostomium, fused basally. Nuchal organs as 2 ciliated pits lateral to prostomium (Figs. 6B, 6C). Peristomium dorsally reduced, covered by a fold of chaetiger 1 (Figs. 5A, 6A, 6B); dorsal tentacular cirri distinctly longer than antennae, with about 33 articles; ventral tentacular cirri about half length of dorsal ones, with about 13-19 articles (Fig. 5A). Parapodia elongate, distally bilobed, with digitiform prechaetal lobe longer than postchaetal lobe (Figs. 5A, 5D, 6D, 6G) and another shorter, triangular, postchaetal lobe, ventrally located, rounded (Figs. 5D, 6G). Egg to dome-shaped branchiae, dorsally located on parapodial lobe (Figs. 5D, 6D), some branchiae slightly flattened dorsally (Fig. 5E) (see also details in Fig. 5A); branchiae conspicuous, well defined, with slight obliquely striated and thin tegument. Cirrophores long, distinct; dorsal cirri long, whip-shaped, strongly tapered distally, with numerous, short articles; about 26, 30, 37, and 46 articles in chaetigers 1-4, respectively, then alternating short (30) and long (36) cirri; about 40 articles on long dorsal cirri, 30 in short ones, on midbody, alternating in length. Ventral cirri digitiform, elongated, inserted half-length of parapodial lobe (Fig. 5D). Ungulae with smooth, unidentate blades; all parapodia with three ungulae, two dorsal with similar size and one most ventral with shorter and thicker shafts and larger blades (Figs. 5B, 5C, 6E-6H). Solitary acicula, sometimes two, straight, distally pointed (Fig. 5D). Pharynx through about six segments; pharyngeal tooth on anterior margin. Proventricle rectangular, through 5-

7 segments, with about 25 muscle cell rows. Pygidium and stolons not seen.

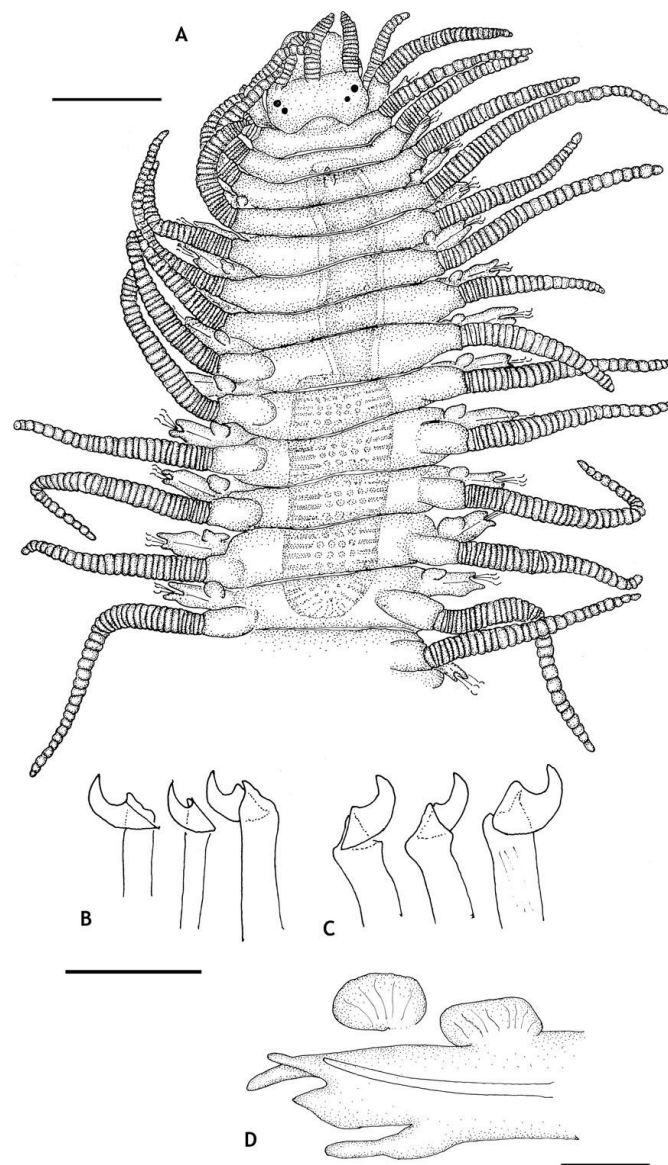


Figure 5. *Branchiosyllis oculata* Ehlers, 1887. MNCNM (16.01/752). A. anterior end, dorsal view. B. unguiae, anterior parapodium. C. unguiae, posterior parapodium. D. midbody parapodium lobe. E. branchiae. Scale.- A, 0.4 mm. B, C, 48 µm. D, E, 0.1 mm.

Remarks. *Branchiosyllis oculata* is the type species of the genus and was originally described from Florida. Later, it has been widely reported in the Gulf of México and Caribbean region, from Cuba to Venezuela. It was reported from Australia (San Martín *et al.* 2008), but these and the Philippine specimens (as *Branchiosyllis pacifica australis* in Hartmann-Schröder 1981) were included in *B. australis* by Álvarez-Campos *et al.* 2012. *Branchiosyllis pacifica* has multi-lobed branchiae, and is very different from *B. australis* and *B. oculata*. In turn, compared with *B. oculata*, *B. australis* has shorter dorsal cirri (with a similar body

size), more unguiae on anterior parapodia, unguiae increasing in size progressively from dorsal to ventral position on parapodia, aciculae protruding from parapodial lobes, similarly-sized branchiae, but much smaller and less developed (overlooked in the original description), and parapodia with only two digitiform, relatively short lobes, less different in length, and lacking posterior ventral one, present in *B. oculata*.

Habitat. Sponges, dead corals, algae, hydrozoans, sand; intertidal to about 50 m depth (San Martín & Bone 2001).

Distribution. Gulf of México and Caribbean Sea,

from Florida to Venezuela.

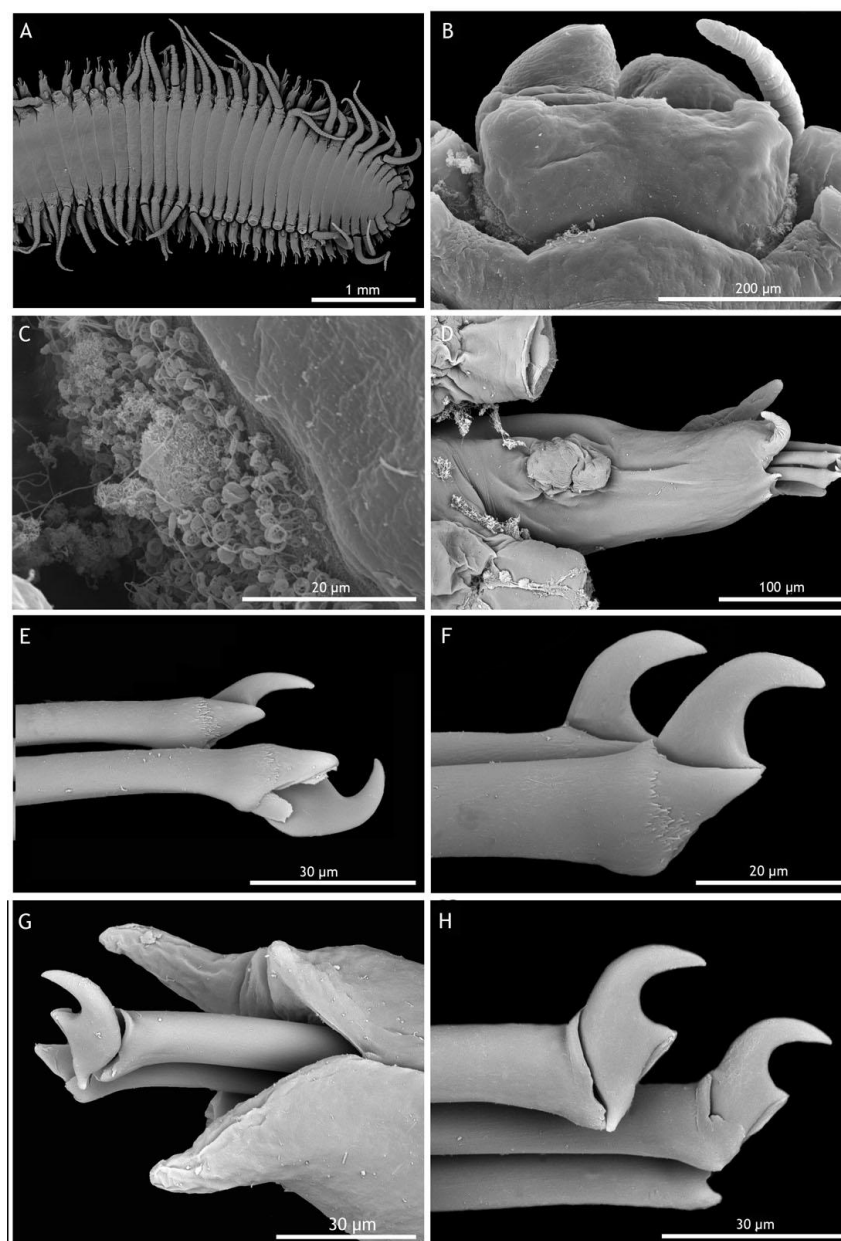


Figure 6. *Branchiosyllis oculata* Ehlers, 1887. MNCNM (16.01/752). SEM photographs. A, midbody and anterior end, dorsal view. B, prostomium. C, nuchal organ. D, anterior parapodium, showing branchiae, dorsal view. E-H, unguiae, from anterior to posterior parapodia.

***Branchiosyllis pacifica* Rioja, 1941.** MNCNM (16.01/11585)

Figs. 7A-7D, 8A-8D

Branchiosyllis pacifica Rioja, 1941: 698-700, lám.

IV fig. 1-5; Capa *et al.* (2001): 106.

Material examined. Panamá, Coiba National Park: 18 specimens, MNCNM 16.01/11585, Isla de Uvas, 7°49'00" N - 81°46'00" W, coral rubble, 3 m depth, 6 February 1997 MNCNM 16.01/117257°37'50" N - 81°44'30" O, 12 m, MNCNM 16.01/11586, MNCNM 16.01/11742, , MNCNM 16.01/1706, MNCNM 16.01/11588, MNCNM 16.01/11710, Isla

de Uvas, G, coral rubble, 16 m, coll. M. Capa, 7

February 1997.

Description. Body small, largest examined specimen 8.5 mm long, 1.5 mm wide, 71 chaetigers strongly dorsoventrally flattened (Fig. 8A), without colour. Prostomium oval, 4 small eyes in open trapezoidal arrangement. Antennae inserted on anterior margin of prostomium, proportionally short; median antenna with about 8-9 articles; lateral ones slightly longer, with about 10 articles (Fig. 8A). Palps similar in length to prostomium. Peristomium reduced dorsally, covered by a fold of chaetiger 1; dorsal

tentacular cirri similar in length to antennae, with about 16 articles; ventral tentacular cirri about 2/3 length of dorsal ones, with about 10-12 articles. Parapodia elongate, distally bilobed, with prechaetal lobe digitiform, slightly longer than postchaetal lobe; single branchia on each parapodium from chaetigers 1-3, dorsally located, with granular inclusions, distinctly bilobed or trilobed (Fig. 7A), sometimes even tetralobed. Dorsal cirri basally thick, distally tapering; cirrophores long, well defined, with internal glands (Figs. 7A, 8A, 8B), articles subquadrate, with spiralized glands within, short; 17-14 articles on anterior segments, 17-13 in midbody segments, and 26-10 in posterior, shorter or similar in length to body width. Ventral cirri digitiform, elongated, inserted half-length of parapodial lobe (Fig. 8C). All compound chaetae claw-shaped (ungulae), with smooth, unidentate blades of varying sizes on each parapodium; usually three chaetae per parapodium, two of which

(sometimes three) relatively small (Fig. 7D), similar in size, dorsally located, and one thicker, with larger shafts and blades (Fig. 7B), ventrally located; size differences more marked posteriorly (Figure 8D). Anterior parapodia with two aciculae (Fig. 7C), from proventricular segments onwards solitary acicula, straight, distally pointed. Pharynx through about four segments; pharyngeal tooth on anterior margin. Proventricle rectangular, through 3-4 segments, with 22 muscle cell rows.

Remarks. As suggested by Rioja (1941), *Branchiosyllis pacifica* closely resembles *B. lamellifera*, but differs in being smaller in size, with shorter antennae, tentacular and dorsal cirri, and different colour pattern, habitat, and distribution.

Distribution. Eastern tropical Pacific Ocean (Mexico, Panamá). The report from Curaçao probably refers to *B. lamellifera*.

Habitat. Algae and coral rubble, low depths.

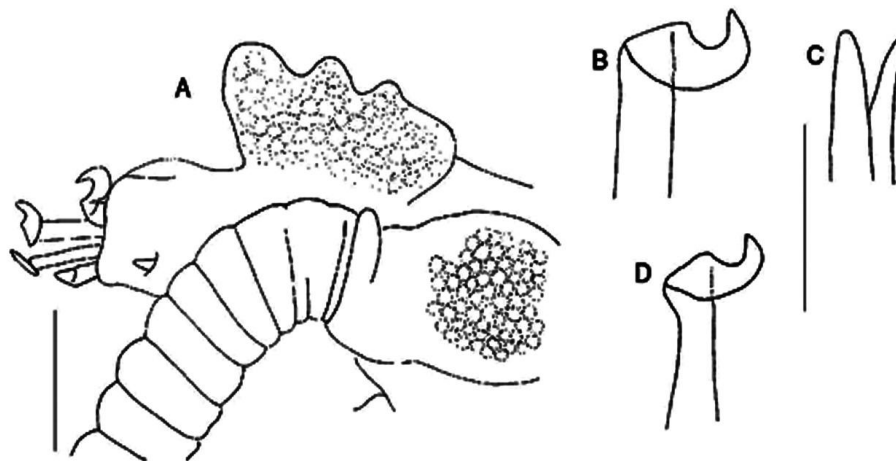


Figure 7. *Branchiosyllis pacifica* Rioja, 1941. MNCNM (16.01/11585). SEM. A. Parapodium of chaetiger 11, showing the branchiae, dorsal view. B, ventral unguis. C, aciculae, anterior parapodium. D, dorsal unguis. Scales- A, 48 μ m. B y D, 20 μ m.

Branchiosyllis riojai Góngora-Garza, García-Garza & de León González, 2011

Branchiosyllis riojai Góngora-Garza et al. 2011: 382, fig. 2.

Distribution. María Madre Island, Nayarit and Manzanillo, Colima, México.

Habitat. Sponges, algae, and beds of *Phragmatopoma*, at shallow depths.

Branchiosyllis salazari Ruiz-Ramírez & Harris, 2008

Branchiosyllis salazari Ruiz-Ramírez & Harris, 2008: 4, figs. 2, 3

Material examined. Parque Nacional de San Esteban

(Venezuela), algae and hydrozoans on a sunken ship, 2 m deep

Distribution. Yucatán (México). First report for Venezuela.

Habitat. Algae, sand, sponges, seaweeds, *Rhizophora* mangrove roots, shells.

Branchiosyllis sanmartini Góngora-Garza, García-Garza & de León González, 2011

Branchiosyllis sanmartini Góngora-Garza et al. 2011: 380, Fig. 1.

Distribution. Only known from the type locality, La Paz, Baja California Sur, México.

Habitat. Algae, at shallow depths.

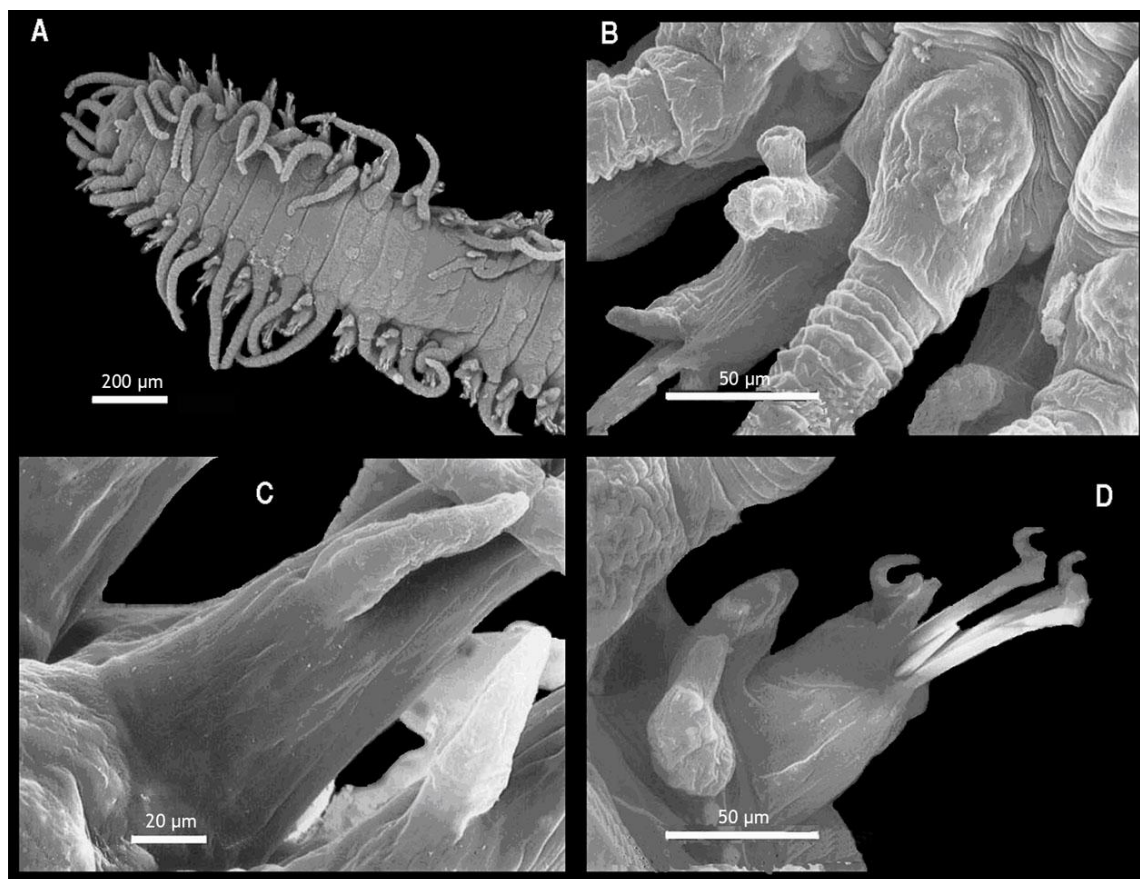


Figure 8. *Branchiosyllis pacifica* Rioja, 1941. MNCNM (16.01/11585). SEM. A. Anterior end, dorsal view. B. chaetiger 4, dorsal view; C. anterior parapodium, ventral view. D. Midbody parapodium, dorsal view

Key to the current species of *Branchiosyllis* (modified from Álvarez-Campos *et al.* 2012)

- 1.- Body laterally compressed. Parapodia dorsally directed 2
 - Body dorso-ventrally flattened or cylindrical 3
- 2.- Dorsum strongly pigmented. Branchiae present *B. bonei* n. sp.
 - Dorsum not pigmented. Branchiae absent.... *B. orbiniiformis* San Martín, Hutchings & Aguado, 2008
- 3.- Body dorso-ventrally flattened. Only unguiae, unmodified falcigers absent (except *B. baringabooreen* and *B. diazi*) 4
 - Body cylindrical at least on anterior part of body. Falcigers bidentate, unidentate or both present, as well as unguiae 10
- 4.- Branchiae absent 5
 - Branchiae present 6
- 5.- Chaetal fascicle with three similar unguiae and occasional unmodified unidentate falciger *B. baringabooreen* San Martín, Hutchings & Aguado, 2008
 - Chaetal fascicle with two unguiae of different sizes *B. tagalog* Álvarez-Campos, San Martín & Aguado, 2012
- 6.- Bidentate and unidentate falcigers on anterior part of body, unguiae also present at least posteriorly *B. diazi* Rioja, 1958
 - Only unguiae throughout, unmodified falcigers absent 7
- 7.- Branchiae dome-shaped 8
 - Branchiae bi-, tri-, or tetralobed 9
- 8.- Branchiae small, not distinctly developed, without pigment *B. australis* Hartmann-Schröder, 1981
 - Branchiae distinct, well developed, pigmented *B. oculata* Ehlers, 1887
- 9.- Body pigmented, medium sized (up to 20 mm long, 140 chaetigers, but usually smaller). Branchiae with 2-3 lobes. Proventricle through about nine segments, with 30 muscle cell rows *B. lamellifera*

- Verrill, 1900 Body unpigmented, small (up to about 9 mm, 71 chaetigers). Branchiae with 2-4 lobes. Proventricle through 4-5 segments, with 22 muscle cell rows *B. pacifica* Rioja, 1941
- 10.- Body papillated *B. verruculosa* (Augener, 1913)
Body without papillae 10
- 11.- Large specimens with few chaetae. Dorsal band of segmental glands, opening throughout minute pores (SEM) *B. carmenroldanae* San Martín, Hutchings & Aguado, 2008
Parapodia always with numerous chaetae. Dorsal bands of segmental glands absent 12
- 12.- Dorsum completely black, anteriorly cylindrical, slightly flattened from midbody backwards. Palps with longitudinal Groove *B. sanmartini* Góngora-Garza, García-Garza & de León-González, 2011
Dorsum without pigment or with transversal bands, cylindrical throughout. Palps without longitudinal groove 13
- 13.- Body minute (up to 1.5 mm long, 25 chaetigers), orange in color, with dark stripes on anterior 4-5 chaetigers. Bidentate falcigers on 1-4 anterior parapodia; remaining parapodia only with unguiae *B. mayae* Álvarez-Campos, San Martín & Aguado, 2012
Larger body. Colour pattern different. Ungulae only present from midbody 14
- 14.- Anterior parapodia with 1-3 falcigers with elongated blades, with proximal tooth larger than distal one *B. lorenae* San Martín & Bone, 1999
Without these type of chaetae 15
- 15.- All falcigers, or most of them, unidentate. Shafts of compound chaetae on midbody and posterior parapodia with marked subdistal spurs 16
Some falcigers bidentate. Shafts without subdistal spurs 17
- 16.- Segments with distinct complete transverse black band. Few compound chaetae per parapodium (3-5), All unidentate. Most posterior parapodia with falcigers and unguiae *B. thylacine* San Martín, Hutchings & Aguado, 2008
Dorsum without complete transverse band; without colour pattern on dorsum or with 1-5 incomplete, thin bands. More compound chaetae per parapodium. Only most posterior parapodia with unguiae only *B. cirropunctata* (Michel, 1909)
- 17.- Some unguiae bidentate. Dorsal cirri with elongated articles *B. bathyalis* (Kirkegaard, 1995)
- Ungulae always unidentate. Articles of dorsal cirri more or less oval 18
- 18.- Ungulae only present on most posterior segments, with short shafts, difficult to see dorsally, hidden by unidentate falcigers with distinctly longer shafts *B. maculata* (Imajima, 1966)
Ungulae from midbody-posterior segments, with shafts not distinctly shorter than those of falcigers 19
- 19.- Anterior falcigers bidentate and unidentate. Proventricle long, through about 11-12 segments, with 35-38 muscle cell rows *B. riojai* Góngora-Garza, García-Garza & de León-González, 2011
Anterior falcigers bidentate. Proventricle shorter 20
- 20.- Anterior segments without colour pattern; complete transverse dark dorsal band on posterior segments. Proventricle with indistinct longitudinal line *B. salazari* Ruíz-Ramírez & Harris 2008
Without distinct colour pattern or only few, short and indistinct transverse lines on dorsum of anterior segments. Proventricle with distinct longitudinal line *B. exilis* (Gravier, 1900)

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