



Research article

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Three new species of *Mesacanthion* Filipjev, 1927 (Nematoda: Thoracostomopsidae) from Argentine coasts

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Abstract. Three new species of *Mesacanthion* Filipjev, 1927 were found along Patagonian coasts (Argentina). *Mesacanthion bifidum* sp. nov. is characterized by short labial and cephalic setae, onchia of equal size, spicule arcuate, and gubernaculum with caudal apophysis, ending in two teeth. The species is related to *M. virile* (Ditlevsen, 1930) De Coninck & Schuurmans Stekhoven, 1933. However, the spicules and gubernaculum of both species are different in shape. *Mesacanthion longigubernaculum* sp. nov. is characterized by its long and slender body, striated cuticle, relatively long cephalic and cervical setae, onchia of different sizes, amphidial fovea lentil-shaped, spicule arcuate, gubernaculum surrounding the spicule, and tail conical-cylindrical with terminal setae. *Mesacanthion sanantoniensis* sp. nov. is characterized by its long and stout body, striated cuticle, long cephalic setae, onchia of different sizes, amphidial fovea pouch-shaped, spicule arcuate, gubernaculum with dorsal apophysis, and tail conical without terminal setae. Following the key of Jeong *et al.* (2019), the last two species are related to *M. pali* Wieser, 1959 and *M. longissimesetosum* Wieser, 1953, so we provide a key to differentiate the four species.

Keywords. Free-living marine nematodes, diversity, taxonomy, Patagonia, coastal area.

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Introduction

Since the middle of the 1970s, the free-living marine nematodes have been studied uninterruptedly in the Argentine coasts, the southernmost continental region of South America. More than 400 species have been distinguished along the coastal area that extends over 4725 km. The purpose of the studies was not only for ecological investigations but taxonomical. On the other hand, as most of the species found were new to science, intense work has been carried out over the years to try to describe them. To

date, descriptions of 74 species have been published. Among the species, some belonging to the genus *Mesacanthion* Filipjev, 1927 were found.

The family Thoracostomopsidae Filipjev, 1927 consists of three subfamilies: Thoracostomopsinae Filipjev, 1927, Trileptinae Gerlach & Riemann, 1974 and Enoplolaiminae De Coninck, 1965. Enoplolaiminae can be distinguished from the other subfamilies by their buccal cavity with three mandibles and three teeth. It has 17 genera (excluding *Hyptiolaimus* Cobb, 1930). Six species of Enoplolaiminae have been described in Argentina as new to science. They belong to the genera *Enoplolaimus* De Man, 1893 (1), *Epacanthion* Wieser, 1953 (2), *Mesacanthoides* Wieser, 1953 (1) and *Parasaveljevia* Wieser, 1953 (2).

Mesacanthion belongs to Enoplolaiminae. The most recent revision of *Mesacanthion* was from Jeong *et al.* (2019). An emended diagnosis is given as well as a list of valid species and species inquirenda and nomina nuda, a table with a comparison of diagnostic morphological characters of all species and a tabular and pictorial key to species with spicules shorter than two anal body diameters. After Jeong *et al.* (2019) the genus *Mesacanthion* has 39 valid species, 38 from marine environments and one from a freshwater environment. Three species were originally described in South America: *Mesacanthion longissimesetosum* Wieser, 1953 (Chile); *M. proximum* Gerlach, 1957 (Brazil); and *M. rigens* Gerlach, 1957 (Brazil). Another five species have been recorded for the region: *M. hirsutum* Gerlach, 1953; *M. infantile* (Ditlevsen, 1930) De Coninck & Schuurmans Stekhoven, 1933; *M. longispiculum* Gerlach, 1954; *M. majus* (Filipjev, 1927) Gerlach & Riemann, 1974; and *M. virile* (Ditlevsen, 1930) De Coninck & Schuurmans Stekhoven, 1933. In the present work, we describe the first three new species of *Mesacanthion* for the Argentine coast.

Material and methods

Description of the study sites

Samples were collected from three different areas along the Patagonian Atlantic coast, Argentina (Fig. 1). The northernmost site, the city of San Antonio Oeste (40°43' S, 64°58' W), is in San Antonio Bay, located in the northwest part of San Matías Gulf. About 220 kilometres to the south are two other sites, Puerto Madryn city (42°45' S, 65°02' W) and Bahía Kaiser (42°46' S, 64°59' W), both in Nuevo Gulf. The southernmost site, Rada Tilly (45°55'07" S, 67°32'79" W), is located in the middle part of San Jorge Gulf.

Sample collection and treatment

Samples were collected using a cylindrical plexiglass corer, fixed in 5% formaldehyde prepared in filtered seawater with rose Bengal, and then the fixed nematodes were sieved through both 500 µm and 50 µm mesh sieves. The nematodes retained on the 50 µm mesh were separated from the sediment by Ludox® TM and transferred to pure glycerin through a solution of ethanol:water:glycerin in 2:2:1 proportions and left at least one week in a desiccator. After that, they were mounted on glass slides sealed with CANADAX resin.

Specimen analysis

Morphometric data were obtained from camera lucida drawings using a Zeiss Standard WL microscope (D-7082 Oberkochen) with differential interference contrast (DIC). The measurements are given in micrometers. Images were taken using a Leica DM2500 microscope with incorporated camera. The literature was obtained from NeMys (Bezerra *et al.* 2021). The De Man's ratios 'a', 'b' and 'c' used in this paper were calculated as usual.

Institutional abbreviations

CNP-NEM = Collection of Nematodes of the Patagonia National Center (Centro Nacional Patagónico)

MACN-In = Invertebrate Collection of the Argentine Museum of Natural Science 'Bernardino Rivadavia' (Museo Argentino de Ciencias Naturales 'Bernardino Rivadavia')

Abbreviations for morphological terms

- a = body length/maximum body diameter
abd = anal body diameter
b = body length/pharynx length
c = body length/ tail length
c' = tail length/body width at level of cloacal opening or anus
cbd = corresponding body diameter
L = total body length

Results

Phylum Nematoda Potts, 1932
Class Enoplea Inglis, 1983
Order Enoplida Filipjev, 1929
Suborder Enoplina Chitwood & Chitwood, 1937
Superfamily Enoploidea Dujardin, 1845
Family Thoracostomopsidae Filipjev, 1927
Subfamily Enoplolaiminae De Coninck, 1965

Genus *Mesacanthion* Filipjev, 1927

Type species

Mesacanthion lucifer (Filipjev, 1927) Gerlach & Riemann, 1974

Diagnosis (after Jeong *et al.* 2019)

Outer labial and cephalic setae situated at middle or anterior end of cephalic capsule. Mandibles well-developed, provided with claws, arch-shaped, each consisting of two rod-like columns anteriorly united by a curved bar. Teeth shorter than mandibles. Spicule mostly short, unipartite and symmetrical, sometimes long, bipartite (divided by a seam: *M. ditlevseni* (Filipjev, 1927) Gerlach & Riemann, 1974) and asymmetrical (anisomorphic and anisometric: *M. diplechma* (Southern, 1914) Filipjev, 1927). If long, usually gubernaculum present with caudal apophysis. Marine and freshwater.

Mesacanthion bifidum sp. nov.

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Figs 2, 5D

Etymology

In reference to the proximal part of the gubernaculum that ends in two small pointed teeth, from the Latin word 'bifidum'.

Material examined

Holotype

ARGENTINA • ♂; Chubut, Nuevo Gulf, Puerto Madryn beach; 42°45' S, 65°02' W; 1 Mar. 2003; C. Pastor and V. Lo Russo leg.; high tide; fine sand sediments; CNP-NEM 936.

Table 1 (continued on next page). Measurements (μm) of *Mesacanthion bifidum* sp. nov., *M. longigubernaculum* sp. nov. and *M. sanantoniensis* sp. nov., including mean values (range).

Character	<i>M. bifidum</i> sp. nov.		<i>M. longigubernaculum</i> sp. nov.		<i>M. sanantoniensis</i> sp. nov.	
	Holotype ♂	♀♀	Holotype ♂	♂♂	Holotype ♂	♂♂
Number of specimens	1	3	1	2	1	2
L	2990	3363.3 (3150–3515)	1450	1445.7 (1380–1507)	2540	2466.7 (2120–2740)
a	19.9	25 (22.8–26.2)	55.8	52.9 (47.8–55.8)	20.8	24.7 (20.8–29.4)
b	4.9	4.9 (4.6–5.2)	4.1	4.5 (4.1–5.4)	4.2	4.1 (3.7–4.3)
c	13.8	14.7 (13.8–15.7)	13.9	14.6 (13.9–15.1)	12.3	13.1 (12.3–13.9)
Inner labial setae length	7	8 (7–9)	8.5	8 (7.5–8.5)	7.5	7.3 (7–7.5)
Outer labial setae length	23	20.5 (20–21)	18	19 (16–23)	36	33 (28–36)
Cephalic setae length	18	13 (12–14)	13	12 (9–14)	21	20.2 (17.5–22)
Buccal cavity width	13	22.3 (18–27)	8	10.3 (8–13)	16	15 (14–16)
Buccal cavity length	18	19.3 (17–21)	12	10.7 (10–12)	16	16.7 (16–17)
Cephalic diameter at cephalic setae level	29	39.3 (38–41)	18	18.8 (18–20)	34	31.3 (29–34)
Amphid aperture width	2	1.9 (1.8–2)	3	3.5 (3–4)	2	1.8 (1.5–2)
Body diameter at amphid level	36	50.7 (48–52)	21	21 (21–21)	38	36.3 (32–39)
Amphid width/cbd (%)	5.6	3.8 (3.5–4.2)	14.3	16.7 (14.3–19)	5.3	5.1 (3.8–6.3)
Cephalic capsule length	29	34 (32–36)	17	16 (14–17)	29	27.8 (26.5–29)
Cervical setae	10	15 (14–16)	9.5/20	13.3 (6.5–20)	9/13	10.2 (7.5–14)
Nerve ring from anterior end	205	241.7 (210–265)	125	110 (92–125)	210	200 (170–220)
Body diameter at nerve ring level	70	89.7 (87–94)	25	26.7 (24–31)	76	67 (48–77)
Pharynx length	615	686.7 (680–700)	350	325.3 (256–370)	600	603.3 (570–640)
Body diameter at pharynx base level	96	121.7 (115–132)	24	25.7 (23–30)	102	91.3 (60–112)
Maximum body diameter	150	134.7 (132–138)	26	27.5 (25–31.5)	122	103 (72–122)
Anal/cloacal distance from anterior end	2774	3133.7 (2922–3291)	1345.5	1346.5 (1287–1407)	2334	2277 (1967–2530)
Anal/cloacal body diameter	63	59.7 (57–63)	22.5	22.5 (20–25)	55	46.7 (36–55)
Spicule length as arc	93	–	22	22.7 (22–23)	71.5	71.2 (69–73)
Spicule length as cloacal diameter	1.5	–	1	1 (0.9–1.1)	1.3	1.6 (1.3–1.9)
Gubernaculum length	24	–	14	13.7 (10–17)	33	30.3 (27–33)
Gubernaculum apophysis length	21	–	–	–	–	–

Table 1 (continued).

Character	<i>M. bifidum</i> sp. nov.		<i>M. longigubernaculum</i> sp. nov.		<i>M. sanantoniensis</i> sp. nov.	
	Holotype ♂	♀	Holotype ♂	♂♂	Holotype ♂	♂♂
Gubernaculum as spicule length (%)	25.8	–	63.6	60.3 (43.5–73.9)	60	59.1 (42.5–75)
Precloacal organ length	34	–	5	4.7 (4–5)	21	19.3 (17–21)
Precloacal organ from anterior end	2520	–	1290	1317 (1233–1428)	2310	2163.3 (1790–2390)
Vulva from anterior end/Body length (%)	–	51.5 (51.1–52)	–	–	–	–
Tail length	216	229.7 (224–237)	104.5	99.2 (93–104.5)	206	189.7 (153–210)
<i>c'</i>	3.4	3.9 (3.6–4.2)	4.6	4.4 (4–4.7)	3.7	4.1 (3.7–4.3)

Paratypes

ARGENTINA • 1 ♀; same collection data as for holotype; CNP-NEM 937 • 2 ♀♀; Chubut, Nuevo Gulf, Bahía Kaiser; 42°46' S, 64°59' W; 8 m b.s.l.; Oct. 1997; C. Pastor leg.; CNP-NEM 938 to 939.

Description**Measurements**

See Table 1.

Male (holotype)

Large and stout body. Cuticle smooth. Few short (about 9–12 µm long) somatic setae scattered along body. Cephalic region set-off with presence of cephalic capsule (17 µm in height). Cephalic capsule with same thickness throughout its rough surface. Anterior edge located at level of cephalic setae. Posterior end with no real incisions forming lobes but with slightly scalloped edge. Three rounded lips. Each lip carries two inner slender labial setae (9 µm long). Six outer labial setae (18 µm long) and four barely shorter cephalic setae (17 µm long) located at anterior of cephalic capsule, arranged in single crown. Immediately posterior to cephalic capsule four short subdorsal and subventral subcephalic setae (about 4 µm) and further posteriorly (about 30 µm after cephalic capsule), arranged in four subdorsal and subventral groups of two or three, larger cervical setae present (15 µm long). Amphideal aperture circular and amphideal fovea pouch-shaped, small (8% of cbd), laterally located just posterior to capsule end. Metanemes not seen. Funnel-shaped buccal cavity with wide opening widens at level of mandibles. Its armature consists of three mandibles, each composed of two vertical rods (16 µm) united by arcuate bar (7 µm), at top ending as left and right claws. Each mandible has tooth (13 µm). The three teeth equal in size. No ocellus nor pigment spots. Pharynx cylindrical with irregular contours, cardia not visible. Nerve ring lying at about 33% of pharynx length from anterior end. Excretory-secretory system not visible. Reproductive system diorchic, with opposed and outstretched testes in right position relative to intestine. One precloacal supplement, bar-shaped, located about 3 abd above cloaca. No precloacal setae present. Spicules paired, arcuate, with slight manubrium (1.4 abd). Gubernaculum small (26% of spicule, 0.4 abd), embracing spicule, two dorso-caudal apophyses present. The gubernaculum divided into two parts. Proximal part with two small pointed teeth, surrounds tips of spicules. Arched dense zone, shaped like ring, separates it from distal triangular part. Tail 3.4 abd long, conical with end part cylindrical ($1/5$ approximately). Few short caudal setae can be seen. Caudal gland bodies in pre-anal region. Terminal setae not present. Cuticle around spinneret hardly englobed.

Female

Similar to males in general body shape, anterior sensilla, amphideal fovea and cuticle. Females longer and larger than males. Lips not rounded but pointed. Short somatic setae present all along body (9–12 μm) in greater quantity than in males. Reproductive system didelphic amphidelphic, with two antidromously reflexed ovaries, positioned left of intestine. Vulva and vagina conspicuous, with associated musculature. Vulva not sclerotized. Tail conical, ending in $\frac{1}{5}$ cylindrical part, but this part less differentiated than in males. Caudal gland bodies in pre-anal region. Many short caudal setae. Terminal setae not present. Cuticle around spinneret englobed.

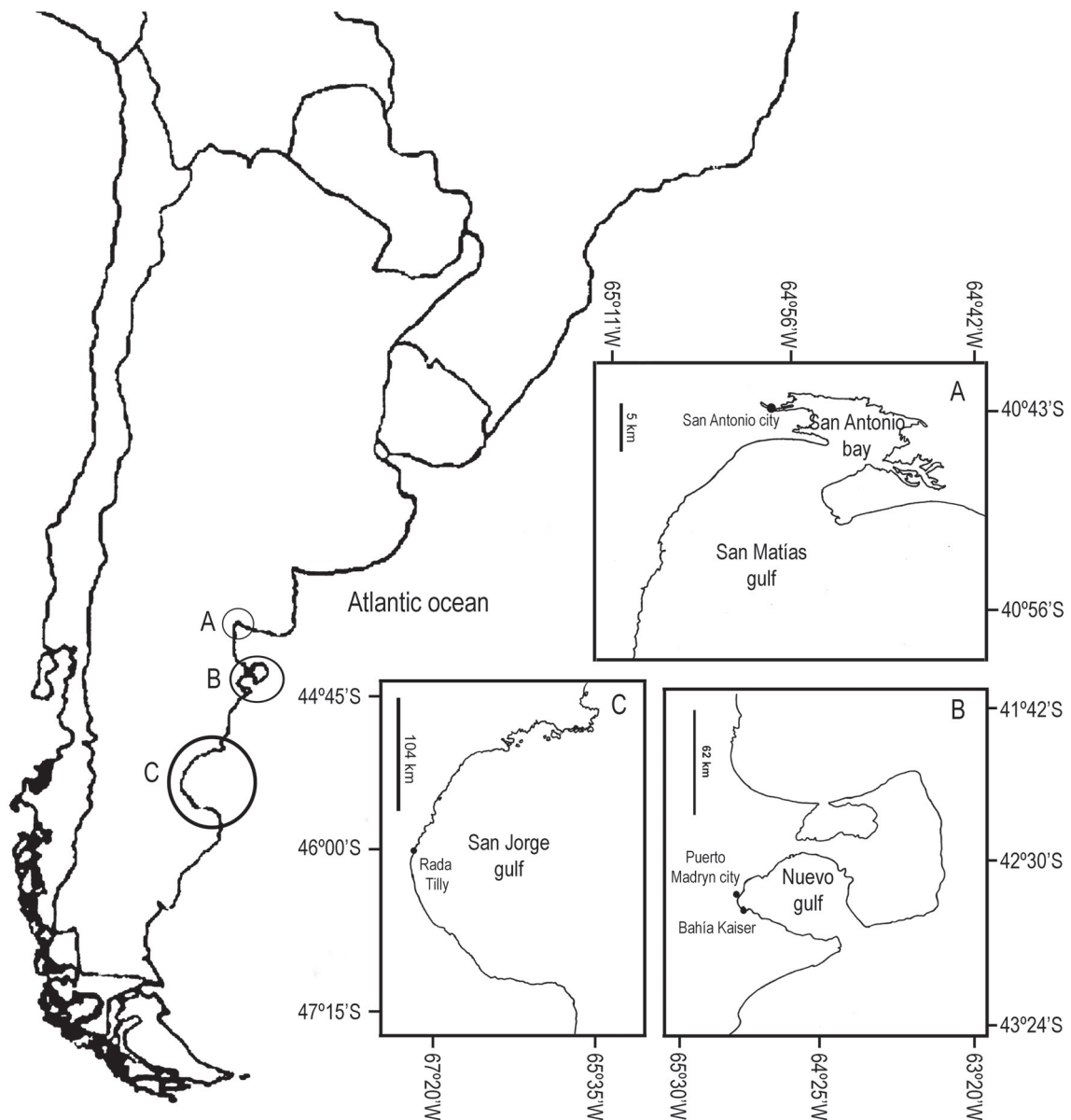


Fig. 1. Map showing the study sites; map of sampling areas. A. ‘San Antonio Oeste river estuary’, Río Negro Province. B. ‘Puerto Madryn city’ and ‘Bahía Kaiser’, Chubut Province. C. ‘Rada Tilly’, Chubut Province.

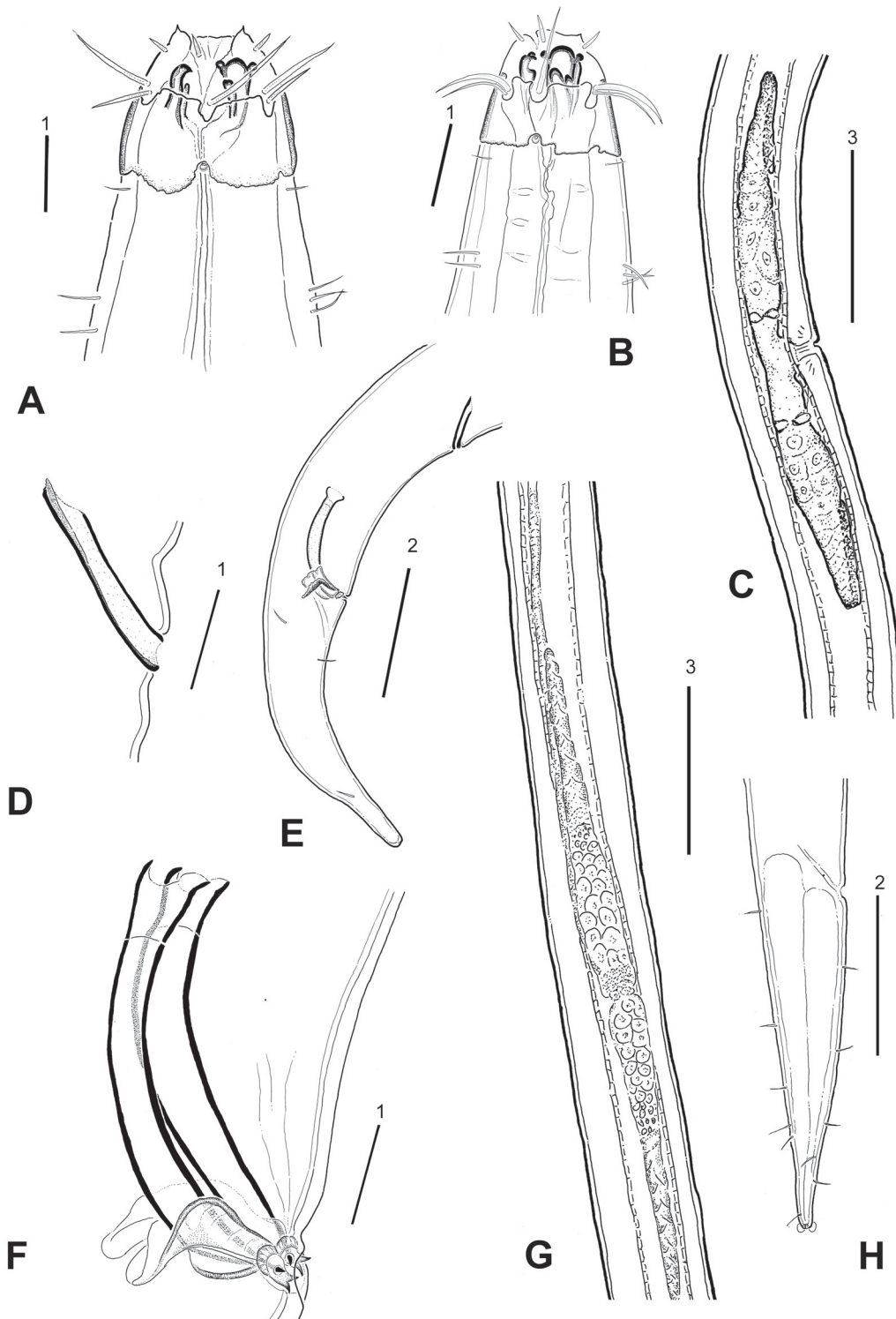


Fig. 2. *Mesacanthion bifidum* sp. nov. **A.** Cephalic sense organs on anterior end of female paratype (CNP-NEM 983). **B.** Cephalic sense organs on male holotype (CNP-NEM 936). **C.** Female paratype (CNP-NEM 983) showing vulva and gonadal apparatus. **D.** Precloacal supplement organ of male holotype (CNP-NEM 936). **E.** Posterior end of male holotype (CNP-NEM 936). **F.** Copulatory apparatus, spicules and gubernaculum of male holotype (CNP-NEM 936). **G.** Gonads of male holotype (CNP-NEM 936). **H.** Posterior end of female paratype (CNP-NEM 983). Scale bars: 1 = 20 µm; 2 = 100 µm; 3 = 200 µm.

Differential diagnosis

Mesacanthion bifidum sp. nov. is characterized by its smooth cuticle, relatively short labial and cephalic setae, onchia of equal size, amphidial fovea pouch-shaped, spicule arcuate, gubernaculum with pointed tips at the proximal end and dorso-caudal apophysis, and tail conical-cylindrical without terminal setae.

Following the key of Jeong *et al.* (2019), our new species is closely related to *M. virile*. Both species share some characteristics, such as spicules length less than 2 abd and gubernaculum with dorso-caudal apophysis and triangular shape with two parts. The male in *M. bifidum* sp. nov. has the outer labial setae less than 1 cephalic diameter in length, whereas in *M. virile* they are about 1.25 cephalic diameters. The position of the precloacal supplementary organ in *M. virile* is closer to the cloaca (1.1 spicule length distant from the anus) than in *M. bifidum* sp. nov. (2.7 spicule lengths distant from the anus) and the spicules of both species are quite different. *M. virile* has an L-shaped spicule with a mid-projection for muscle insertion, whereas *M. bifidum* sp. nov. has an arcuate spicule without projections. On the other hand, the gubernaculum also has differences in shape. Although in both species the distal part is rather similar, the proximal part is rod-like in *M. virile*, whereas in *M. bifidum* sp. nov. two-pointed structures surround the spicule tip in the posterior position.

Mesacanthion longigubernaculum sp. nov.

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Figs 3, 5A, C

Etymology

In reference to the length of the gubernaculum.

Material examined

Holotype

ARGENTINA • ♂; Chubut, San Jorge Gulf, Rada Tilly; 45°55'07" S, 67°32'79" W; 1 Apr. 2006; C. Pastor leg.; high littoral; fine sand sediments; CNP-NEM 27442.

Paratypes

ARGENTINA • 2 ♂♂; same collection data as for holotype; CNP-NEM 27259 and 27443.

Description

Measurements

See Table 1.

Male (holotype)

Long and slender body. Cuticle slightly striated. Cephalic region set off with presence of delicate cephalic capsule (7 µm in height). Cephalic capsule with same thickness throughout its smooth surface. Anterior edge located above level of cephalic setae. Posterior end of cephalic capsule almost straight. No ocellus nor pigment spots. Three rounded lips, higher than mandibles. Each lip carries two inner labial setae (8.5 µm long). Six outer labial setae (18 µm long), longer than four cephalic setae (13 µm long), located at half the total height of cephalic capsule. Posterior to cephalic capsule one crown of subcephalic setae formed by six pairs of setae with one short (7 µm) and one long seta (20 µm). Then, crown of cervical setae (20 µm behind first) formed by four setae, two in subdorsal position and two in subventral position, and eight setae (7–20 µm) in same position as first crown. After nerve ring, another crown composed of groups of 4–5 short and scattered setae (about 4 µm) arranged in rows beside one longer seta (20 µm). Rest of body presents few long somatic setae (about 14 µm) until cloaca. Amphideal aperture lentil-shaped, small (14% of cbd) located just posterior to capsule end. Metanemes not seen.

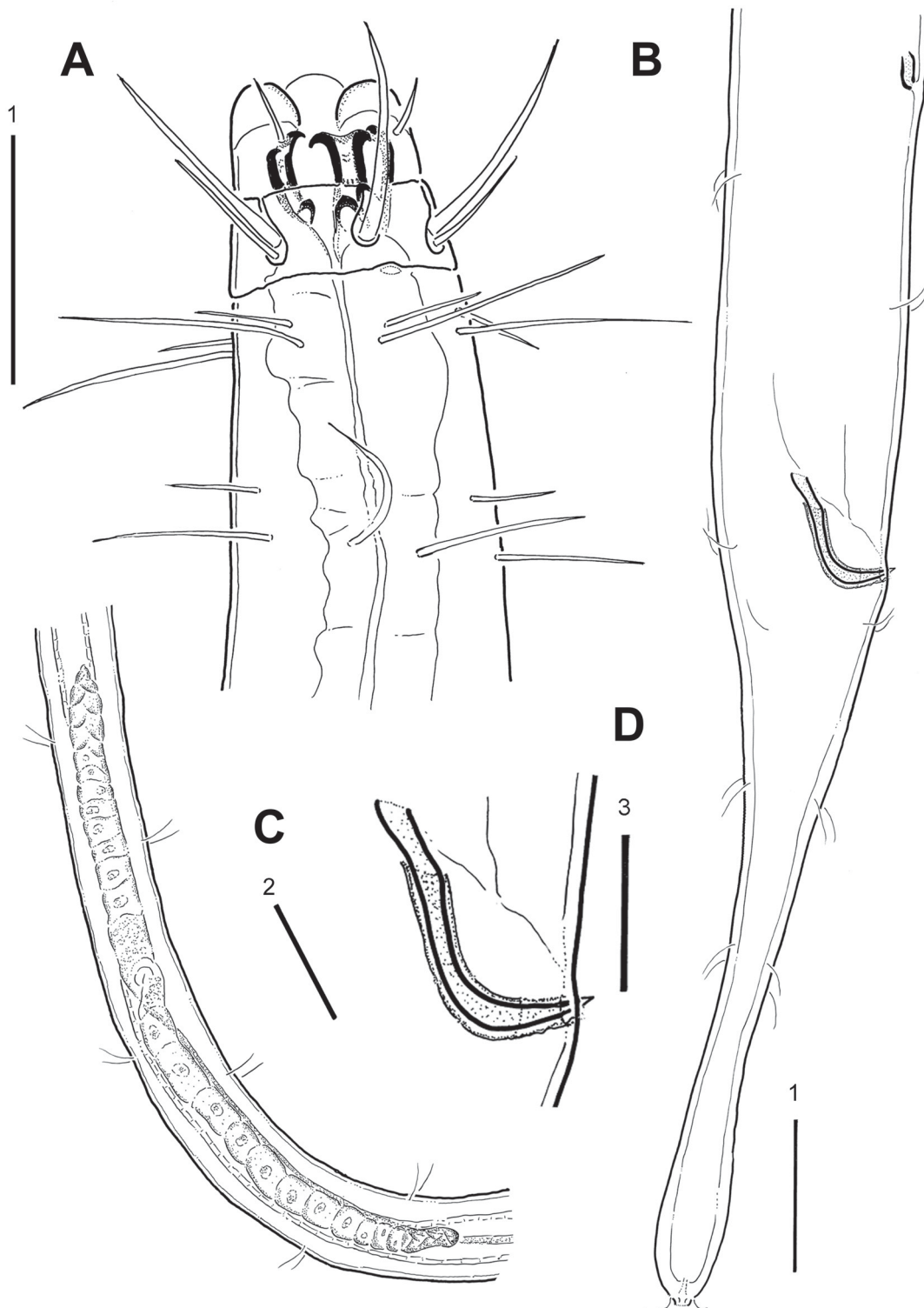


Fig. 3. *Mesacanthion longigubernaculum* sp. nov., ♂, holotype (CNP-NEM 27442). **A.** Cephalic sense organs on anterior end. **B.** Posterior end, showing copulatory apparatus and precloacal supplement organ. **C.** Gonads. **D.** Copulatory apparatus, spicules and gubernaculum. Scale bars: 1 = 20 μ m; 2 = 100 μ m; 3 = 10 μ m.

Funnel-shaped buccal cavity with wide opening diminishing its width towards level of mandibles to their base. Mandibles composed of two vertical rods (10 µm) united by delicate arcuate bar (4 µm) at top and ending as claws. Dorsal tooth slightly smaller than two ventrosublateral teeth. All teeth pointed. Pharynx cylindrical with irregular contours. Cardia triangular and going into intestine. Nerve ring lying at about 36% of pharynx length from anterior end. Secretory-excretory system not visible. Reproductive system diorchic, with opposed and outstretched testes in right position relative to intestine. One small precloacal bar-shaped supplement located about 3 abd above copulatory organ, almost parallel to body wall. Subventral precloacal setae present. Spicules paired, with distal portion arcuate ($\frac{2}{3}$) and proximal portion straight and dorsally directed ($\frac{1}{3}$). Gubernaculum without apophysis, barely evident surrounding spicule, 63% of spicule. Tail 4.6 abd long, conical in first part ($\frac{1}{3}$) with end part cylindrical ($\frac{2}{3}$ approximately). Caudal gland bodies in pre-anal region. Few caudal setae of same length as somatic setae and two small (3 µm) terminal setae present.

Female

Unknown.

Differential diagnosis

Mesacanthion longigubernaculum sp. nov. is characterized by its long and slender body, striated cuticle, relatively long cephalic and cervical setae, onchia of different sizes, amphidial fovea lentil-shaped, spicule arcuate, gubernaculum surrounding the spicule, and tail conical-cylindrical with terminal setae.

Following the key of Jeong *et al.* (2019), *M. longigubernaculum* sp. nov. is similar to *M. longissimesetosum* and *M. pali*. However, *M. longigubernaculum* sp. nov. differs from *M. longissimesetosum* in having shorter inner and outer labial setae (8 and 19 vs 12 and 65–70 µm, respectively) and cephalic setae (12 vs 65 µm), a higher *a* index (52.9 vs 30), and a different shape of the gubernaculum. *Mesacanthion pali* has longer inner and outer labial setae (24 and 84 vs 8 and 19 µm, respectively), lower *b* and *c'* indices (*b* = 3 vs 4.5; *c'* = 2.8 vs 4.4), a longer cephalic capsule (26 vs 16 µm), a gubernaculum with well-developed apophysis and the precloacal organ located at more than 2 spicule lengths from the anus.

Mesacanthion sanantoniensis sp. nov.

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Figs 4, 5B, E

Etymology

Named after the locality where this species was found.

Material examined

Holotype

ARGENTINA • ♂; Río Negro, San Matías Gulf, San Antonio Oeste; 40°43' S, 64°58' W; 10 Oct. 2006; C. Pastor leg.; lower littoral; fine sand sediments; CNP-NEM 849.

Paratypes

ARGENTINA • 1 ♂; same collection data as for holotype; CNP-NEM 848 • 1 ♂; Río Negro, San Matías Gulf, San Antonio Oeste; 40°43' S, 64°56' W; 17 Jun. 2006; C. Pastor leg.; lower littoral; fine sand sediments; MACN-In 43853.

Description

Measurements

See Table 1.

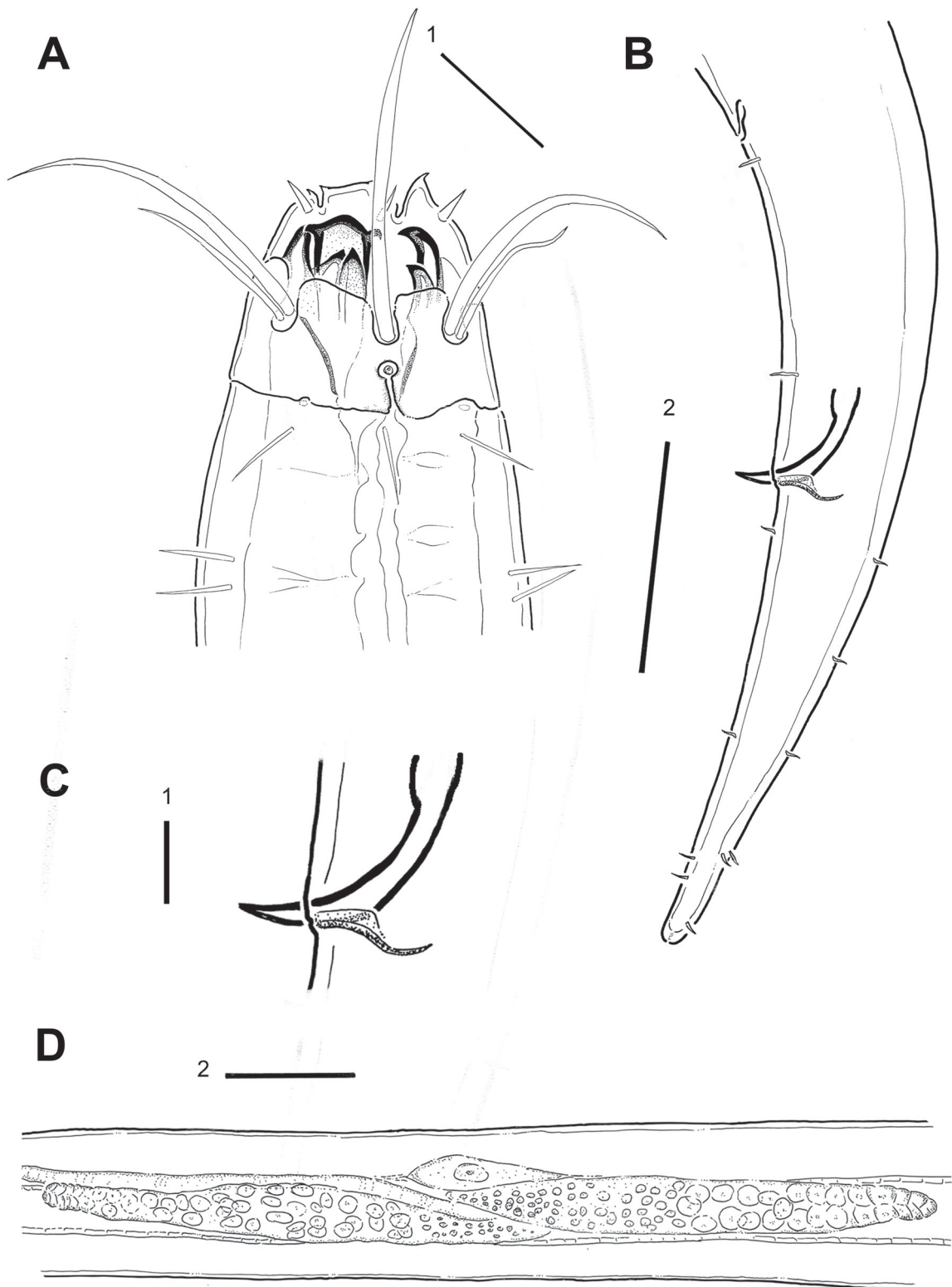


Fig. 4. *Mesacanthion sanantoniensis* sp. nov., ♂, holotype (CNP-NEM 849). **A.** Cephalic sense organs on anterior end. **B.** Posterior end, showing copulatory apparatus and precloacal supplement organ. **C.** Copulatory apparatus, spicules and gubernaculum. **D.** Gonads. Scale bars: 1 = 20 µm; 2 = 100 µm.

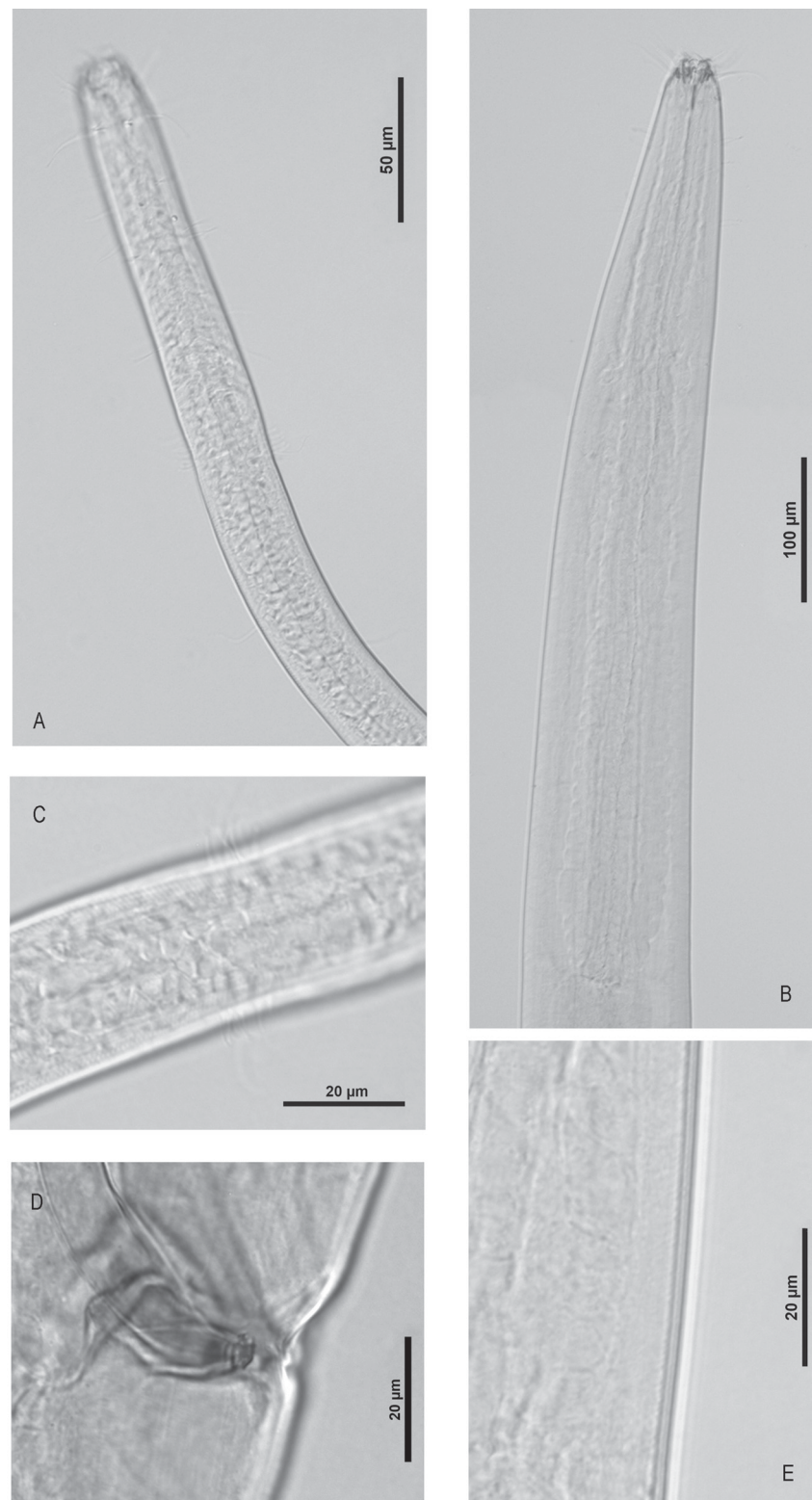


Fig. 5. **A.** Pharyngeal region of *Mesacanthion longigubernaculum* sp. nov., ♂, holotype (CNP-NEM 27442). **B.** Pharyngeal region of *M. sanantoniensis* sp. nov., ♂, paratype (CNP-NEM 848). **C.** Detail of *M. longigubernaculum* sp. nov., ♂, holotype (CNP-NEM 27442), showing cuticular striation. **D.** Gubernaculum of *M. bifidum* sp. nov., ♂, holotype (CNP-NEM 936). **E.** Detail of *M. sanantoniensis* sp. nov., ♂, paratype (CNP-NEM 848), showing cuticular striation.

Male (holotype)

Large and stout body. Cuticle slightly striated. Cephalic region set off with presence of cephalic capsule (16 μm in height). Cephalic capsule with same thickness throughout its rough surface. Anterior edge located above level of cephalic setae. Posterior end of cephalic capsule almost straight. No ocellus nor pigment spots. Three high lips with points facing outward. Each lip carries two inner labial setae (7 μm long). Six outer labial setae (32 μm long) double length of four cephalic setae (16 μm long), located at middle of cephalic capsule arranged in single crown. Near and posterior to cephalic capsule, short subcephalic setae (about 8–9 μm), two in subventral position, two lateral and two in subdorsal position. About 25 μm after cephalic capsule, toward nerve ring, pairs of cervical setae in subventral and subdorsal positions (same size as previous). Same size setae present between nerve ring and end of oesophagus, but not in pairs and scattered. Rest of body presents few shorter somatic setae (about 4 μm) until cloaca, except for longer one (8 μm) located just before precloacal organ. Amphideal aperture pore-shaped, small (7% of cbd), located at middle of cephalic capsule. Metanemes not seen. Funnel-shaped buccal cavity with wide opening that diminishes its width towards level of mandibles to their base. Its armature consists of three mandibles composed of two vertical rods (15 μm) united by arcuate bar (9 μm) at top and ending as claws. Each mandible associated with tooth forming a unit. Dorsal tooth slightly smaller (9 μm) than two ventrosublateral teeth (11 μm). Tip of teeth not very pointed. Pharynx cylindrical with irregular contours. Cardia barely visible, triangular and going into intestine. Nerve ring lying at about 33% of pharynx length from anterior end. Secretory-excretory system not visible. Reproductive system diorchic, with opposed and outstretched testes in right position relative to intestine. One ventral precloacal bar-shaped supplement located about 2.4 abd anterior to cloaca. Subventral precloacal setae present. Spicule paired, arcuate, with slight seam forming manubrium (1.5 abd). Gubernaculum with dorsal apophysis (29% of spicule), perpendicular to body axis. Tail 4.1 abd long, conical. It presents few setae in subventral and subdorsal positions (8 μm). Caudal gland bodies in anal region. Terminal setae not present.

Female

Unknown.

Differential diagnosis

Mesacanthion sanantoniensis sp. nov. is characterized by its long and stout body, striated cuticle, long cephalic setae, onchia of different sizes, amphidial fovea pouch-shaped, spicule arcuate, gubernaculum with dorsal apophysis, and tail conical without terminal setae.

As *M. longigubernaculum* sp. nov., *M. sanantoniensis* sp. nov. is similar to *M. longissimesetosum* and *M. pali*, according to the key of Jeong *et al.* (2019). They have males with a supplementary organ lying further away from the cloaca, presence of gubernaculum, and presence of subventral precloacal setae. *Mesacanthion sanantoniensis* sp. nov. has shorter inner and outer labial setae than *M. pali* (7.3 and 33 vs 24 and 92 μm , respectively), shorter cephalic setae (20.2 vs 84 μm), lower *a* index (24.7 vs 50), and higher *b* (4.1 vs 3.3) and *c'* (4.1 vs 2.8) indices, shorter mandibles (15 vs 25 μm) and a smaller precloacal organ (19.3 vs 31 μm). *Mesacanthion longissimesetosum* and *M. sanantoniensis* sp. nov. have differences in mandible shape. *Mesacanthion sanantoniensis* sp. nov. has mandibles ending in jaws, posteriorly straight and slightly smaller. *Mesacanthion longissimesetosum* has mandibles posteriorly arcuate and larger. *Mesacanthion sanantoniensis* sp. nov. has a distinct amphid and three crowns of cervical setae. *Mesacanthion longissimesetosum* has no amphid, and the cervical setae are not arranged in crowns. *Mesacanthion longissimesetosum* has two tiny precloacal setae just before the spicule vs none in *M. sanantoniensis* sp. nov. At the posterior part of the tail, the new species has two pairs of setae plus one single seta, and *M. longissimesetosum* has none.

Considering the similarities between *M. longigubernaculum* sp. nov., *M. sanantoniensis* sp. nov., *M. longissimesetosum* and *M. pali*, we provide a small key for an easy differentiation.

Key to species of *Mesacanthion* with simple spicules shorter than 2 abd and subventral precloacal setae present

This key can be taken as an addition of the last entrance (22) in the key to species of *Mesacanthion* in Jeong *et al.* (2019) to include two new species.

1. Precloacal supplement organ less than 2 spicule lengths distant to cloaca *M. pali* Wieser, 1959
– Precloacal supplement organ more than 2 spicule lengths distant to cloaca 2
2. Gubernaculum without dorsal apophysis *M. longigubernaculum* sp.nov.
– Gubernaculum with dorsal apophysis 3
3. De Man's *b* index greater than 5 *M. longissimesetosum* Wieser, 1953
– De Man's *b* index smaller than 5 *M. sanantoniensis* sp. nov.

Discussion

With the new species described in this study, the total number of *Mesacanthion* species amounts to 42. For South America, the number of species present is 11 including new and previously known species. The present work contributes with three new species to the general knowledge of the taxonomy of free-living marine nematodes and the genus of *Mesacanthion*, in particular.

Species of *Mesacanthion* are distributed all around the world, mostly in fine sand and mud sediments. Each one of the new species in this study was found in a different gulf on the Patagonian coasts. This results in an expansion in the distribution of the genus to new areas. They were found at different horizontal littoral and sublittoral zones, but all were inhabiting fine sand. This is also relevant for the biodiversity and ecology information of South America and Argentina.

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