

Journal of the
MARINE BIOLOGICAL ASSOCIATION
of the United Kingdom



CAMBRIDGE
 UNIVERSITY PRESS

**New species of Epacanthion (Nematoda:
 Thoracostomopsidae) from Patagonia coast, Río Negro and
 Chubut, Argentina**

Journal:	<i>Journal of the Marine Biological Association of the United Kingdom</i>
Manuscript ID:	JMBA-01-12-OA-0018
Manuscript Type:	Original Article
Date Submitted by the Author:	20-Jan-2012
Complete List of Authors:	Lo Russo, Virginia; Centro Nacional Patagónico (CONICET), Villares, Gabriela; Centro Nacional Patagónico (CONICET), Martelli, Antonella Pastor, Catalina; Centro Nacional Patagónico (CONICET), Harguinteguy, Carlos; Instituto Multidisciplinario de Biología Vegetal (UNC-CONICET),
Keywords:	description, systematics, Patagonian
Abstract:	Two new free-living marine nematodes belonging to the family Thoracostomopsidae, subfamily Enoplolaiminae and the genera Epacanthion are described from Patagonian coastal areas, Río Negro and Chubut provinces of Argentina. In <i>Epacanthion bicuspidatum</i> sp. nov. the main features are: two cusps on distal mandible end, presence of two rings of eight setae in the cervical region and eight setae in crown-shaped along the body, presence of one supplement distant two cbd from cloacae, gubernaculum and short spicule. <i>Epacanthion ampullatum</i> sp. nov. is characterized by having a tubular and long pre-cloacal supplement, short spicule, presence of gubernaculum, presence of three long setae on the tip of the tail, the presence of one supplement distant three cbd from cloacae and the presence of two small cusps on the distal end of the mandible.

SCHOLARONE™
 Manuscripts

Running head: *Epacanthion* species

New species of *Epacanthion* (Nematoda: Thoracostomopsidae) from Patagonia coast, Río Negro and Chubut, Argentina

Lo Russo, V.¹; Villares, G.¹; Martelli, A.¹; Pastor de Ward, C. T.¹ and Harguinteguy, C.²

¹Centro Nacional Patagónico (CONICET). C.C. 128 (9120) Puerto Madryn, Chubut. ARGENTINA.

²Instituto Multidisciplinario de Biología Vegetal (UNC-CONICET). CC 495 (5000) Córdoba, ARGENTINA.

E-mail:lorusso@cenpat.edu.ar

Abstract

Two new free-living marine nematodes belonging to the family Thoracostomopsidae, subfamily Enoplolaiminae and the genera *Epacanthion* are described from Patagonian coastal areas, Río Negro and Chubut provinces of Argentina. In *Epacanthion bicuspidatum* sp. nov. the main features are: two cusps on distal mandible end, presence of two rings of eight setae in the cervical region and eight setae in crown-shaped along the body, presence of one supplement distant two cbd from cloacae, gubernaculum and short spicule.

Epacanthion ampullatum sp. nov. is characterized by having a tubular and long pre-cloacal supplement, short spicule, presence of gubernaculum, presence of three long setae on the tip of the tail, the presence of one supplement distant three cbd from cloacae and the presence of two small cusps on the distal end of the mandible.

Keywords: description, systematics, Patagonian.

INTRODUCTION

During an ecological and taxonomical study, focus on the meiobenthos of Patagonia bays (Río Negro and Chubut provinces, Argentina), new free-living marine nematodes were found. This is the fifth paper of the series. From these areas we describe two new species of the genus *Epacanthion* Wieser, 1953.

The genus *Epacanthion* belongs to the family Thoracostomopsidae Filipjev, 1927. This family is composed of three subfamilies: Thoracostomopsinae Filipjev, 1927, with only one genus (*Thoracostomopsis* Ditlevsen, 1918), Trileptiinae Gerlach & Riemann, 1974, that has only one genus too (*Trileptium* Cobb, 1933) and Enoplolaiminae De Coninck, 1965. The subfamily Enoplolaiminae is mainly marine but has freshwater species. This subfamily has 18 genera and can be distinguished from the other subfamilies by the presence in the buccal cavity of three broad mandibles, formed of two longitudinal rods joined by a thin membrane between, and a cephalic capsule strongly sclerotized with three lips and the cephalic setae above them.

The most complete revision of the genus *Epacanthion* was made by Greenslade & Nicholas (1991). They established 21 species as belonging to it. Afterwards, Gagarin (2009) has described one new species (*E. macrolaima*) from the Mediterranean Sea and Guilherme *et*

al. (2009) has described another one (*E. agubernaculus*) from Brazil. In this last work, a new key for species identification was proposed.

We describe two new species of *Epacanthion*: *E. bicuspidatum* sp. nov. and *E. ampullatum* sp. nov..

MATERIAL AND METHODS

Description of sites studied

Samples were collected from Patagonia littoral coastal in seven separate locations at three different latitudes (Table 1, Figure 1).

The northernmost site (Banco Perdices) is in San Antonio bay, Río Negro province. This bay is located in the northwest of San Matías gulf. This bay is composed by a shallow channel system with small islands and sandbanks, which are completely covered at high tide. The tidal amplitude reaches 9.30 m, with low tides exposing a width muddy area of 7 km.

Four sampling sites are located in Nuevo gulf, Chubut province. Three of these sites are in the coastal area of Puerto Madryn city (Puerto Madryn I, II and III), and the other is further south (Cerro Avanzado). Nuevo gulf is situated in the south part of Península Valdés. This gulf is a semi-enclosed basin of 65 km in length and 46 km in width with 16.5 km in the mouth. Tidal current is the most important movement of water with tidal amplitude of 4 m.

The southernmost site (Rada Tilly) is located at central coast of San Jorge gulf, Chubut province. This gulf is a semicircle with 145 km of radius and 220 km of width of mouth. The tidal amplitude varies between 4 and 6 m.

Sample collection and treatment

On each site, five sediment samples were taken with a cylindrical Plexiglas corer (10 cm high and 2.8 cm in diameter). The samples were preserved in 5% formaldehyde in filtered seawater, and then were sieved through both 500 μm and 50 μm mesh sieves. The nematodes present on the 50 μm sieve were separated by Ludox™. Nematodes were fixed following the method described by Ditlevsen (1911) and preserved in anhydrous glycerine, counted and mounted on slides sealed with Canadax resin. Then they were identified to species level.

Specimen analysis

Morphometric data were obtained from camera lucida drawings using a Zeiss microscope with differential interference contrast (DIC). The measurements are in microns. Photographs were taken with Olympus BX51 microscopy equipment with differential interference contrast (DIC) equipped with a digital camera Nikon D80. Sediment analysis were carried out by dry sieving and classified according to Wentworth scale. Bibliography has been obtained from NeMys (Deprez, 2006). Type specimens were deposited in the Museo Nacional de Ciencias Naturales "Bernardino Rivadavia", and the paratypes were deposited at the Nematodes Patagónicos collection in the Centro Nacional Patagónico, Argentina. De Man's ratios, a, b and c used in this paper were calculated as standard.

Abbreviations used in tables and figures

bcl= buccal cavity length; bcw= buccal cavity width; cbd= cloacal body diameter; cs ant= anterior cervical setae; cs post= posterior cervical setae; daa= distance from anterior end to anus; daph= pharynx length; dav= distance from anterior end to vulva; mbd= maximum body diameter; hd= head diameter; lcs= length cephalic setae; llsi= length internal labial setae; llse= length external labial setae; Spic= spicular length in microns, along the arc; Spic%= spicule chord as proportion of anal body diameter; c'= tail in anal diameter; Gub= gubernaculum length; Gub%= gubernaculum length as proportion of anal body diameter; L= Total body length; V%= distance from the anterior end to the vulva opening in percentage of total length; T= tail length; PS= pre-cloacal supplement. Measurements are in μm .

RESULTS AND DISCUSSION

SYSTEMATICS

Order ENOPLIDA Filipjev, 1929
 Suborder ENOPLINA Chitwood & Chitwood, 1937
 Superfamily ENOPLOIDEA Dujardin, 1845
 Family THORACOSTOMOPSIDAE Filipjev, 1927
 Subfamily ENOPLOLAIMINAE De Coninck, 1965
 Genus *Epacanthion* Wieser, 1953
Epacanthion bicuspidatum sp. nov.
 (Figure 2; Plate 1; Table 2)

TYPE MATERIAL

Holotype: adult male. Registration number MACN-In..... ; type locality: Puerto Madryn I; coordinates: 42°45'S; 65°01'W; low littoral. Collected by C.T. Pastor de Ward and V. Lo Russo, 1 March 2006.

Paratype: adult female. Registration number MACN-In.....; type locality: Puerto Madryn I; coordinates: 42°45'S; 65°01'W; low littoral. Collected by C.T. Pastor de Ward and V. Lo Russo, 1 March 2006.

OTHER MATERIAL:

- Two males and one female. Registration number CNP NEM.....; type locality: Puerto Madryn II; coordinates: 42°46'S; 65°00'W; low littoral. Collected by C. Harguinteguy, 15 June 2003.
- One male. Registration number CNP NEM.....; type locality: Cerro Avanzado; coordinates: 42°49'S; 64°52'W; low littoral. Collected by C. Harguinteguy, 15 June 2003.

- One male and two females. Registration number CNP NEM.....; type locality: Puerto Madryn I; coordinates: 42°45'S; 65°01'W; low littoral. Collected by C.T. Pastor de Ward and V. Lo Russo, 1 March 2006.
- One female. Registration number CNP NEM.....; type locality: Puerto Madryn III; coordinates: 42°47'S; 65°00'W; low littoral. Collected by C. Harguinteguy, 15 June 2003.
- Two juveniles. Registration number CNP NEM.....; type locality: Banco Perdices; coordinates: 40°47'S; 64°50'W; high littoral. Collected by G. Villares and V. Lo Russo, 14 February 2009.

ETYMOLOGY

From Latin word "*bicuspdatum*" (adj.) =bicuspid, two cusps on the basis of the mandible

MATERIAL EXAMINED

Measurements: see Table 2.

DESCRIPTION

Male (Holotype): Cylindrical body (L=1450 µm). Smooth cuticle. Sclerotized cephalic capsule. Lips smooth and associated with three strongly sclerotized mandibles (10 µm long) composed each one of two longitudinal solid bars united by a thin membrane. The mandibles are straight with a proximal end expanded laterally ending in two curved teeth on each side. Two cusps with two teeth on the basis of each mandible were observed.

Each lip presents two labial setae (9-10 µm). There are six short (12 µm) and four long (19 µm) cephalic setae inserted at base of lip flats. Six long (17 µm) and six short (10 µm) cervical setae inserted below the position of the amphidial fovea. Eight setae arranged in two circles in the cervical region and below a third circle consisting of four setae. Somatic setae (6-8 µm) on the body follow a pattern standing in crowns, never found scattered.

Amphidial fovea slightly distinct, 4 µm width. Oesophagus cylindrical, long and muscular (250 µm long). Reproductive system diorchic, testes located at the left of the intestine, extending to the anterior region of the body. Two short, equal spicules, 20 µm (1 cbd) in chord length. Gubernaculum present, triangular in shape. One tubular and sclerotized pre-cloacal supplement (5 µm long), 50 µm distant from the cloaca and 218 µm distant from the extreme of the tail. Eight setae (6 µm long) arranged in a circle below the pre-cloacal supplement and located 35 µm distant from the cloaca. Tail cylindrical-conical in shape (168 µm long). Caudal glands not observed.

Female (Paratype): Females are similar to males in general body shape.

Reproductive system diorchic, with two antidromously reflexed ovaries left to the intestine. Vulva 62 % of body length, short vagina. Tail 180 µm long, cylindrical-conical in shape.

DIAGNOSIS AND RELATIONSHIPS

Epacanthion bicuspidatum sp. nov. is characterized by having two cusps on distal mandible end, the presence of two rings of eight setae in the cervical region and eighth setae in crown-shaped along the body, the presence of one supplement distant two cbd from cloacae, gubernaculum and short spicule.

Epacanthion bicuspidatum sp. nov. resembles with *E. galeatum* Boucher, 1977 by the presence and length of a pre-cloacal supplement, presence of gubernaculum and value of c, but it can be distinguished from it by the length of spicule, value of a and b, distance between the pre-cloacal supplement-cloaca, presence of setae in crown-shaped along the body.

Epacanthion bicuspidatum sp. nov. resembles with: *E. brevispiculum* Mawson, 1956, *E. brevispiculosum* Mawson, 1958, *E. bütschlii* (Southern, 1914), *E. durapelle* (Kreis, 1929), *E. microdentatus* Wieser, 1953, *E. exploratoris* Greenslade & Nicholas, 1991 and *E. macrolaimus* Gagarin, 2009 by the presence of one pre-cloacal supplement but differs from all in the length of the spicule.

Epacanthion bicuspidatum sp. nov. differs with: *E. agubernaculus* Guilherme *et al.*, 2009 by the presence of gubernaculum, *E. multipapillatum* (Wieser, 1959) and *E. oweni* Keppner, 1986 by the presence of one pre-cloacal supplement; *E. pellucidum* (Saveljev, 1912) by the length of the gubernaculum, *E. enoploidiformis* (Gerlach, 1953), *E. georgei* Inglis, 1971, *E. gorgonocephalum* Warwick, 1970 and *E. oliffi* Inglis, 1966 by the presence of pre-cloacal supplement; *E. mawsoni* Warwick, 1977 and *E. polysetosum* (Jensen, 1986) by the length of the spicule and the distance pre-cloacal supplement-cloaca; *E. nadjae* Sergeeva, 1974, *E. saveljevi* (Filipjev, 1927) by the length of the spicule (equal length) and *E. stekhoveni* Greenslade & Nicholas, 1991 by the absence of setae sparse (only two medial setae) in the tail.

Genus *Epacanthion* Wieser, 1953

Epacanthion ampullatum sp. nov.

(Figure 3; Plate 2; Table 3)

TYPE MATERIAL

Holotype: adult male. Registration number MACN-In.....; type locality: Rada Tilly; coordinates: 45°55'S; 67°35'W; mid littoral. Collected by C.T. Pastor de Ward, 1 April 2006.

Paratype: adult female. Registration number MACN-In...; type locality: Rada Tilly; coordinates: 45°55'S; 67°35'W; mid littoral. Collected by C.T. Pastor de Ward, 1 April 2006.

OTHER MATERIAL:

- One male, two females and one juvenile. Registration number MACN-In...; type locality: Rada Tilly; coordinates: 45°55'S; 67°35'W; mid littoral. Collected by C.T. Pastor de Ward, 1 April 2006.
- Two males and two females. Registration number CNP NEM....; type locality: Rada Tilly; coordinates: 45°55'S; 67°35'W; mid littoral. Collected by C.T. Pastor de Ward, 1 April 2006.

ETYMOLOGY

From Latin word "*ampullatum*" (adj.) = blister, refers to presence of ampulla.

MATERIAL EXAMINED

Measurements: see Table 3.

DESCRIPTION

Male (Holotype): Cylindrical body (L=1450 μm). Smooth cuticle. Sclerotized cephalic capsule. Lips striated and composed of three sclerotized mandibles (18 μm long) of two longitudinal solid bars united by a thin membrane, mandibles expanded laterally in the proximal end with one tooth on each side. Two cusps with one small tooth on each were observed on their distal end.

Two labial (14 μm) setae were observed in each lip. Six short (20 μm) and six long (42 μm) cephalic setae inserted at base of lip flats. Somatic setae are present (8 μm) on the body, with no distinct pattern. Amphidial fovea very small, slightly distinct 2 μm width. Oesophagus cylindrical, long and muscular (360 μm long). Reproductive system diorchic, testes located at the left of the intestine, extending to the anterior region of the body. Two short, equal spicules, 18 μm (0.72 cbd) in chord length. Gubernaculum present, triangular in shape. One long tubular precloacal supplement, sclerotized (15 μm long), 50 μm in front of the cloaca and 127 μm distant from the extreme of the tail. Tail 70 μm long, (2.8 cbd), approximately 1/2 cylindrical in shape. In the tip of the tail are seen two long setae (20 μm) and one short setae (9 μm). Caudal glands not observed.

Female (Paratype): Females are similar to males in general body shape.

Reproductive system diorchic, with two antidromously reflexed ovaries left to the intestine. Vulva 65 % of body length, short vagina. Tail 85 μm long, (3 cbd) approximately 1/2 cylindrical in shape. Two long setae (33 μm) and one short setae (8 μm) on the tip of the tail. Caudal glands not observed.

DIAGNOSIS AND RELATIONSHIPS

Epacanthion ampullatum sp. nov. is characterized by having a tubular and long pre-cloacal supplement, short spicule, presence of gubernaculum, presence of three long setae on the tip of the tail, the presence of one supplement distant three cbd from cloacae and the presence of two small cusps on the distal end of the mandible.

Epacanthion ampullatum sp. nov. resembles with *E. galeatum* Boucher, 1977 by the body length, the presence of gubernaculum, value of a and b, but differs in the value of c, the distance between the pre-cloacal supplement and the cloaca, the length of the spicule, the length of cephalic setae, presence of three setae on the tip of the tail.

Epacanthion ampullatum sp. nov. resembles with: *E. brevispiculum* Mawson, 1956, *E. brevispiculosum* Mawson, 1958, *E. bütschlii* (Southern, 1914), *E. durapelle* (Kreis, 1929), *E. microdentatus* Wieser, 1953, *E. exploratoris* Greenslade & Nicholas, 1991 and *E. macrolaimus* Gagarin, 2009 by the presence of one pre-cloacal supplement but differs from all of them in the length of the spicule.

Epacanthion ampullatum sp. nov. differs with: *E. agubernaculus* Guilherme *et al.*, 2009 by the presence of gubernaculums; *E. multipapillatum* (Wieser, 1959), *E. oweni* Keppner, 1986 by the presence of one pre-cloacal supplement; *E. pellucidum* (Saveljev, 1912) by the

length of the gubernaculum; *E. enoploidiformis* (Gerlach, 1953), *E. georgei* Inglis, 1971, *E. gorgonocephalum* Warwick, 1970, *E. oliffi* Inglis, 1966 by the presence of pre-cloacal supplement; *E. mawsoni* Warwick, 1977 by the length of the body, the shape of the tail and the distance pre-cloacal supplement-cloaca; *E. polysetosum* (Jensen, 1986) by the distance pre-cloacal supplement- cloaca; *E. nadjae* Sergeeva ,1974, *E. saveljevi* (Filipjev, 1927) by the length of the spicule (equal length) and *E. stekhoveni* Greenslade & Nicholas, 1991 by the absence of setae sparse (only two medial setae) in the tail.

ADDITIONAL CONSIDERATIONS

As *Epacanthion murmanicum* Saveljev, 1912 was described without figures and appears to be similar to *E. georgei*, was considered as species inquirendae by Greenslade & Nicholas (1991). For that reason was not considered in the previous comparisons. *E. flagellicaudum* Gerlach, 1956 also was not considered because is only known from one juvenile.

The last key for *Epacanthion* is from Guilherme *et al.* (2009), that is a modified version of that present in Greenslade & Nicholas (1991). We modified here a part of that key to add our two new species and *E. macrolaimus* Gagarin, 2009.

10. Spicules 2.5 anal diameters, gubernaculum present, lips not striated...*E. microdentatum*
 - Spicules less than 2.5 anal diameters, lip flaps striated.....10'
- 10'. Spicules about 2 anal diameters.....*E. macrolaimus*
 - Spicules about 1 anal diameter.....11
11. Small species (1.5-2.0 mm long), posterior rim of cephalic capsule crenelated11'
 - Large species (2.2-2.9 mm long), posterior rim of cephalic capsule not crenelated.....*E. exploratoris*
- 11'. Tail with caudal setae.....*E. ampullatum* **sp. nov.**
 - Tail without caudal setae.....11''
- 11''. Somatic setae following a pattern standing in crowns.....*E. bicuspidatum* **sp. nov.**
 - Somatic setae sparse without a pattern.....*E. galeatum*

REFERENCES

- Boucher, G.** (1977) Nematodes des sable fins infralittoraux de la Pierre Noire (Manche occidentale). IV. Enoplida. *Bulletin du Museum National d'Histoire Naturelle, Zoologie* 325, 733-52.
- Chitwood, B. G. and Chitwood, M. B.** (1937) *An Introduction to Nematology*. 2nd edition. Baltimore: Monumental Printing Co..
- Cobb, N.A.** (1933) New nemic genera and species, with taxonomic notes. *Journal of Parasitology* XX, 81-94.
- De Coninck, L.A** (1965) Classe des Nematodes - Systematique des Nematodes et sous-classe des Adenophorea. In Grasse P. (ed) *Traite de Zoologie*. Masson, Paris pp. 586-681.
- Ditlevsen, H.** (1911). Danish free-living nematodes. *Videnskabelige Meddelelser Dansk Naturhistorisk Forening* 63, 213-256.
- Ditlevsen, H.** (1918) Marine freeliving Nematodes from Danish waters. *Videnskabelige Meddelelser Dansk Naturhistorisk Forening* 70, 147-214.
- Dujardin, F.** (1845) *Histoire naturelle des Helminthes ou vers intestinaux*. Paris: Libraire encyclopedique de Roret, (Suites a Buffon).
- Filipjev, I.** (1927) Les Nematodes libres des mers setentrionales appartenant a la famille des Enoplidae. *Archiv für Naturgeschichte* 91, 1-216.
- Filipjev, I.** (1929) Les Nématodes libres de l'extrémité orientale du Golfe de Finlande et de la baie de la Néva. *Études de la Neva* 5, 3-22.
- Gagarin, V.G.** (2009) New species of enoplids (Nematoda: Enoplida) from Mediterranean Sea. *Invertebrate Zoology* 6, 117-127.
- Gerlach, S.A.** (1953) Die Nematodenbesiedlung des Sandstrandes und des Küstengrundwassers an der italienischen Küste. I. Systematischer Teil *Archivio Zoologico Italiano* 37, 517-640.
- Gerlach, S. A** (1956) Neue nematoden aus dem Ktistengrundwasser des Golfes de Gascogne (Biskaya). *Vie et Milieu* 6, 426-34.
- Gerlach, SA and Riemann, F.** (1974) The Bremerhaven Checklist of Aquatic Nematodes. A catalogue of Nematoda Adenophorea excluding the Dorylaimidae. *Veroffentlichungen des Instituts für Meeresforschung in Bremerhaven* 4, 1-734.
- Greenslade, P. and Nicholas, W. L.** (1991) Some Thoracostomopsidae (Nematoda: Enoplida) from Australia, including. Descriptions of Two Genera and Diagnostic Keys. *Invertebrate Taxonomy* 4, 1031-52.

- Guilherme, B.C., Da Silva, M.C. and Esteves, A. M.** (2009) Description of a new species of *Epacanthion* (Thoracostomopsidae, Nematoda) from Brazil and a modified key for species identification. *Zootaxa* 2096, 99-108.
- Inglis, W.G.** (1966) Marine nematodes from Durban, South Africa. *Bulletin of the British Museum of Natural History (Zoology)* 14, 81-106.
- Inglis, W. G.** (1971) Marine Enoplida (Nematoda) from the coast of Western Australia. Records of the coast of Western Australia. *Records of the South Australian Museum* 16, 1-13.
- Jensen, P.** (1986) The nematode fauna in the sulphide-rich brine seep and adjacent bottoms of the East Flower Garden NW. Gulf of Mexico. III. Enoplida. *Zoologia Scripta*, 15, 93-99.
- Keppner, E. J.** (1986) New species of free-living marine nematodes (Nematoda: Enoplida) from Bay County, Florida, U.S.A *Transactions of the American Microscopical Society* 105,319-37
- Kreis, H.** (1929) Freilebende marine Nematoden von der Nordwestküste Frankreichs (Treburden: Cotes du Nord). *Capita Zoologica* 2, 1-98.
- Mawson, P.M.** (1956) Free-living nematodes. Section I: Enoploidea from Antarctic stations. *Reports of the British, Australian and New Zealand Antarctic Research Expedition*, (B) 6, 37-74.
- Mawson, P.M.** (1958) Free-living Nematodes. Section 2: Additional Enoploidea from Antarctic stations. *Reports of the British, Australian and New Zealand Antarctic Research Expedition*, (B) 6, 291-305.
- NeMys, Deprez, T.** (2006) World Wide Web electronic publication www.nemys.ugent.be, version (12/2006).
- Sergeeva, N. G.** (1974) New free-living nematodes (Enoplida) from the Black Sea. 2. *Zoologicheskii Zhurnal* 53,120-124.
- Southern, R.** (1914) Nematelminths, Kinorhyncha and Chaetognatha - *Proceedings of the Royal Irish Academy* 30, 1-80.
- Saveljev, S.** (1912) Zur Kenntnis der Freilebenden Nematoden des Kolafjords und des Relictensees. *Trudy Imperatorckago S-Peterbourbskago Obschestva Estestvoispytatelei* 43, 73-126.
- Warwick, R.M.** (1970) Fourteen new species of freelifving marine nematodes from the Exe estuary. *Bulletin of the British Museum Natural History (Zoology)* 19, 137-177.

Warwick, R. M. (1977) Some free-living marine nematodes from the Isles of Scilly. *Journal of natural History* 11, 381-392

Wieser, W. (1953) Free-living marine nematodes I Enoploidea. *Reports of The Lund University Chile Expedition 1948-1948. 10. Lunds Universitets Arsskrift* N.F. Avd. 2. Bd 49 Nr 6, 155 pp.

Wieser, W. (1959). Free-living nematodes and other small invertebrates of Puget Sounds beaches. *Seattle (University of Washington Press)* 19, 1-179.

For Review Only

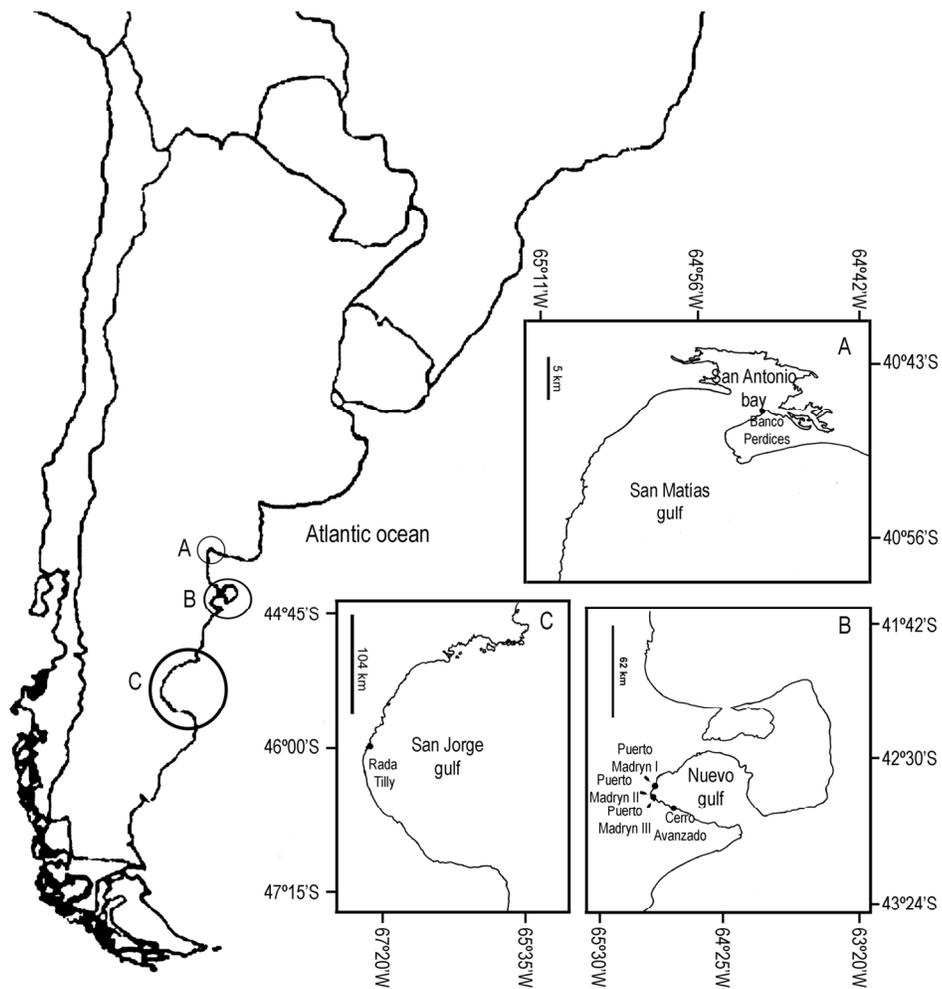


Fig. 1. Map showing the three sampling areas with the location of samples stations: (A) San Antonio bay (Río Negro); (B) Nuevo gulf (Chubut); (C) San Jorge gulf (Chubut).
145x145mm (300 x 300 DPI)

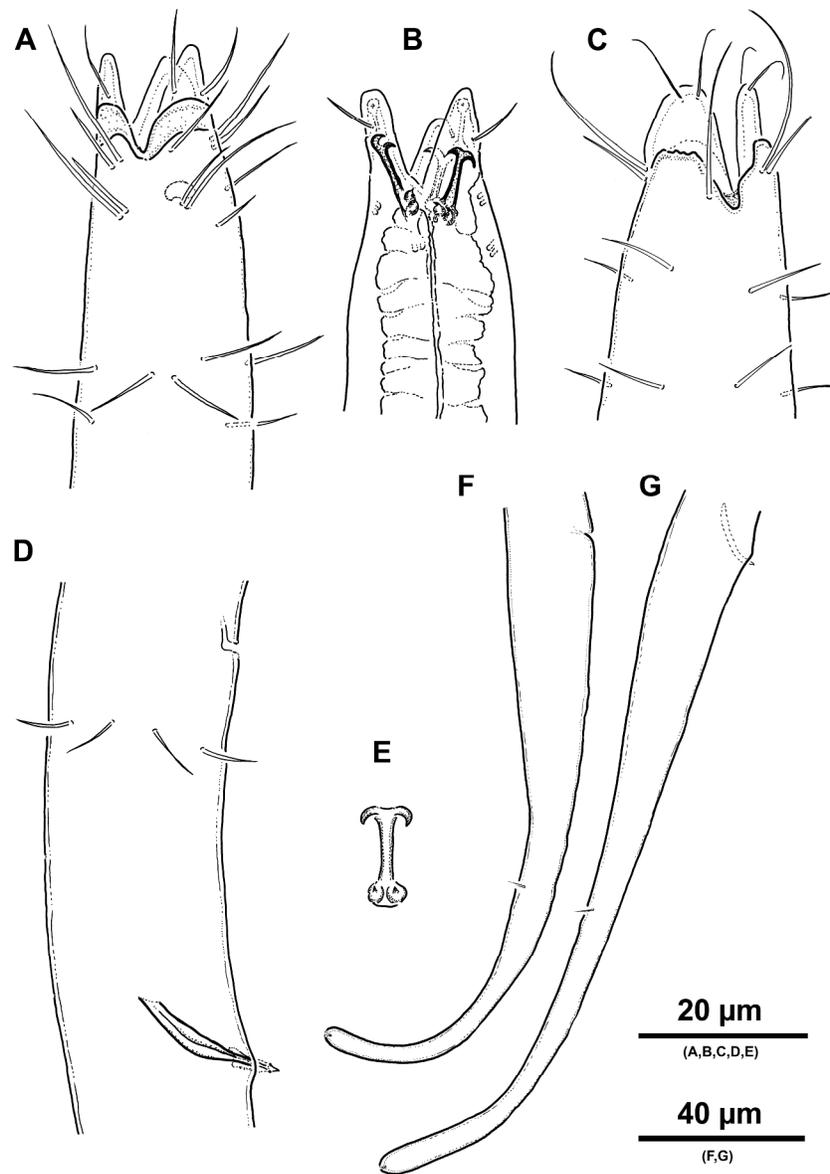


Fig. 2. *E. bicuspidatum* sp. nov.: (A) Anterior end of male holotype; (B) Head and buccal cavity with mandible of male holotype; (C) Anterior end of female paratype; (D) Copulatory apparatus and pre-cloacal supplement of male holotype; (E) Mandible and teeth of male holotype; (F) Posterior end of female paratype; (G) Posterior end of male holotype; (C) Head region of male holotype. Scale bars: A-E, 20 µm; F-G, 40 µm.
297x420mm (300 x 300 DPI)

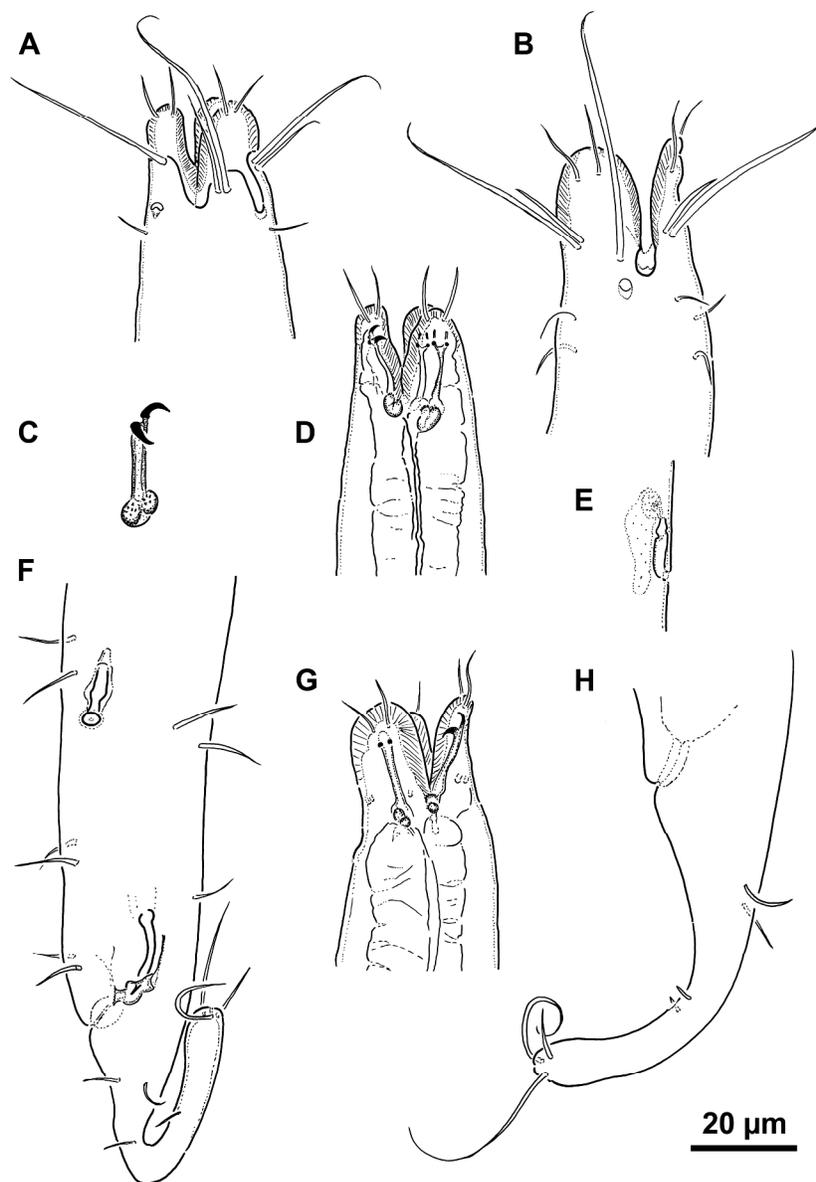


Fig. 3. *E. ampullatum* sp. nov.: (A) Anterior end of male holotype; (B) Anterior end of female paratype; (C) Mandible of male holotype; (D) Head and buccal cavity with mandible of male holotype; (E) Detail of the pre-cloacal supplement; (F) Copulatory apparatus and pre-cloacal supplement; (G) Head and buccal cavity with mandible of female paratype; (H) Posterior end of female paratype. Scale bars: A-H, 20 µm.
297x420mm (300 x 300 DPI)

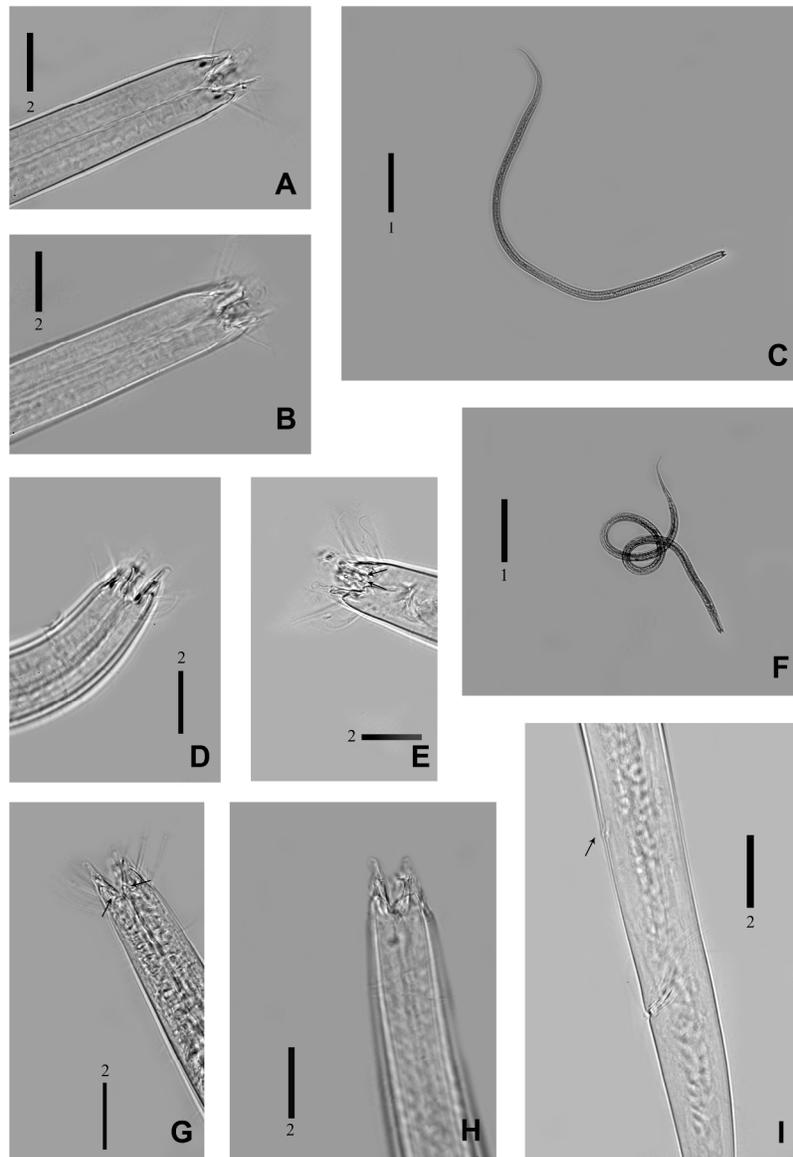


Plate 1. *E. bicuspidatum* sp. nov.: (A) Buccal cavity of female paratype; (B) Mandible and teeth of female paratype; (C) Entire female paratype; (D) Mandible and teeth of male paratype; (E) Cusp with two teeth of male paratype mandible (arrows); (F) Entire male holotype; (G) View mandibules cusps with tooth laterally of male holotype (arrows); (H) View teeth on proximal end of mandibules of male holotype; (I) Copulatory apparatus and pre-cloacal supplement of male paratype (arrow). Scale bars: A, B, D, E, G, H & I, 40 µm; C, F, 200 µm.

297x420mm (300 x 300 DPI)

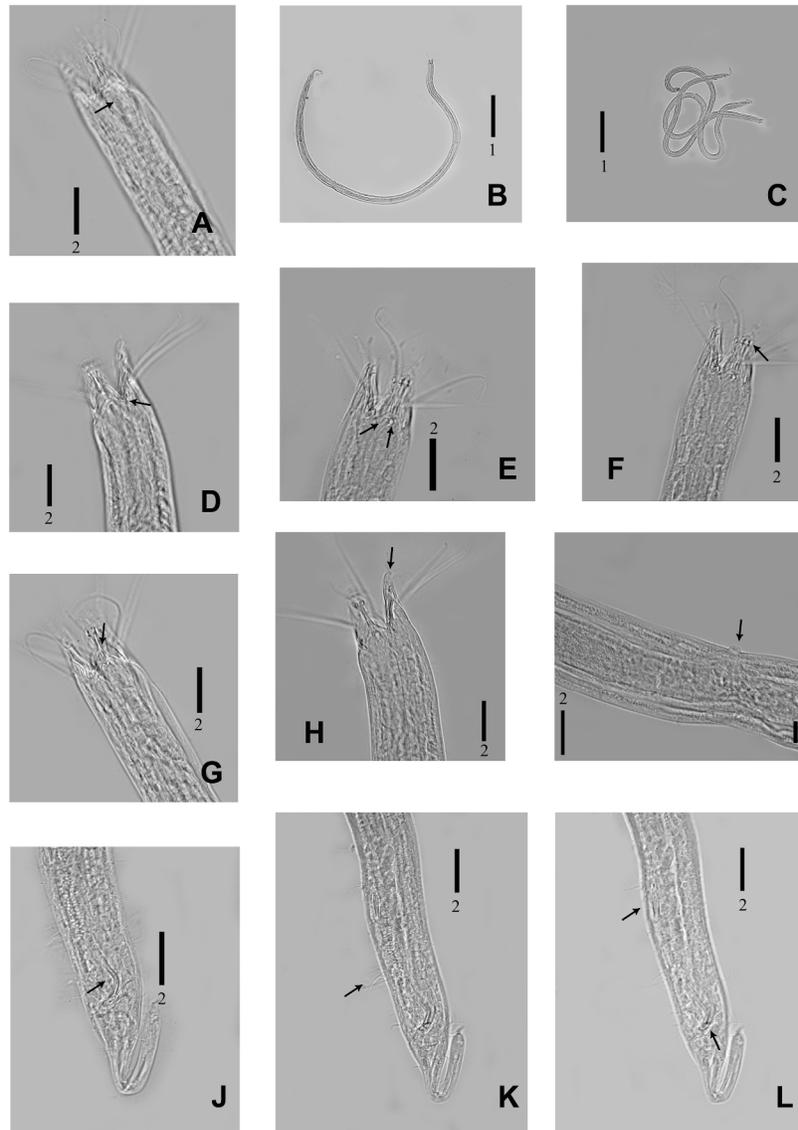


Plate 2. *E. ampullatum* sp. nov.: (A) Amphidial fovea on head of female paratype (arrow); (B) Entire female paratype; (C) Entire male holotype (M 1) and male paratype (M 2); (D) End of lip of female paratype (arrow); (E) View of two teeth on distal end of mandibles of male holotype (arrows); (F) Bifid proximal end of the mandible with two lateral teeth of male holotype (arrow); (G) Body of mandibles of female paratype (arrow); (H) Lip of female paratype (arrow); (I) Vulva (arrow); (J) Posterior end and spicule of male holotype (arrow); (K) Posterior end and pre-cloacal setae (arrow); (L) Gubernaculum and pre-cloacal supplement of male holotype (arrows). Scale bars: A, D-L, 40 μ m; B, C, 200 μ m.
297x420mm (300 x 300 DPI)

Site	Province	Latitude	Longitude	Type sediment
Banco Perdices	Río Negro	40° 47' S	64° 50' W	fine sand
Puerto Madryn I	Chubut	42° 45' S	65° 01' W	fine sand
Puerto Madryn II	Chubut	42° 46' S	65° 00' W	fine sand
Puerto Madryn III	Chubut	42° 47' S	65° 00' W	fine sand
Cerro Avanzado	Chubut	42° 49' S	64° 52' W	fine sand
Rada Tilly	Chubut	45° 55' S	67° 37' W	fine sand

Table 1. List of sampling sites.
106x28mm (300 x 300 DPI)

For Review Only

	Holotypo Male	Paratype Female	Males N=4	Females N=4	Juvenile N=2
L	1450	1500	1405(1340-1480)	1687.5(1560-1840)	1095 (940-1250)
a	58	60	62.5(61-65)	63.8(55-84)	39.1(34-45)
b	4.0	4.2	4.5(3.9-5)	4(3.5-4.6)	3.1(2.8-3.5)
c	8.6	8.3	10.4(7.44-14)	10(8.5-12)	8.2(7.8-8.5)
mbd	25	25	22.5(22-24)	27(22-30)	28
bcl	12	13	13(10-19)	15.2(12-18)	17.5(17-18)
bcw	4	6	5(3-8)	6.7(5-8)	7.5(6-9)
Hd	15	15	18(16-19)	18.7(16-22)	20(18-22)
Lcs (4)	19	18	18(18-20)	17(12-21)	16(14-18)
Lcs (6)	12	12	12(10-14)	9.5(7-12)	7(6-8)
Llsi	9	10	8(5-10)	10(7-14)	9(8-10)
Llse	9	10	8(5-10)	9(7-10)	9(8-10)
es ant	17	16	15(14-16)	14(12-15)	Not seen
es post	10	10	11(6-14)	6.2(6-7)	Not seen
daph	250	350	320(270-360)	410(340-520)	350(340-360)
cbd	20	20	20(19-22)	21(19-25)	19(16-22)
Spic	20	-	19(16-22)	-	-
Spic%	1	-	0.9(0.8-1.2)	-	-
Gub	6	-	8.3(7-10)	-	-
Gub%	0.24	-	0.4(0.32-0.5)	-	-
c'	10	10	7(5.1-9)	8(7-9)	7.1(6.9-7.3)
T	168	180	141(102-180)	167(140-195)	135(110-160)
Ps	1	-	1	-	-
Ps lenght	5	-	4.5(4-6)	-	-
Ps- tail	218	-	188(152-232)	-	-
Ps-cloaca	50	-	47(42-52)	-	-
Daa	1372	1320	1263(1160-1322)	1520(1400-1666)	-
Dva	-	935	-	638.7(560-750)	-
V%	-	62	-	37.8(34-45)	-

Table 2. Measurements (μm) of *E. bicuspidatum* sp. nov. (range, mean value in parentheses).
156x144mm (300 x 300 DPI)

	Holotypo	Paratype	Males	Females	Juvenile
	Male	Female	N=4	N=4	N=2
L	1450	1900	1718(1620-1900)	2200(1900-2400)	1350 (1300-1400)
a	45	47.5	69(59-81)	59(46-72)	47(40-54)
b	4.0	4	4(4-5.7)	5.7(4-8)	3.1(3-3.3)
c	20.7	22.3	19(16-26)	25(22-29)	15(14.4-15.6)
mbd	32	40	26(20-32)	39(32-52)	29.5(24-35)
bcl	14	18	19(17-19)	17(16-20)	16.5(15-18)
bcw	4	4	7(5-9)	7(5-8)	7(6-8)
Hd	21	21	20(18-22)	25(23-28)	21(16-26)
Lcs (4)	42	50	37(30-42)	47(42-54)	32(28-36)
Lcs (6)	20	16	15(14-18)	19(16-24)	15(14-16)
llsi	14	15	12(10-12)	10(8-14)	10.5(9-12)
llse	14	15	12(10-12)	10(8-14)	10.5(9-12)
daph	360	475	413(300-440)	407(320-500)	430
cbd	25	28	17(16-20)	25(20-32)	23(18-28)
Spic	18	-	15(12-17)	-	-
Spic%	0.72	-	1(0.8-1)	-	-
Gub	15	-	6(6-7)	-	-
Gub%	0.6	-	0.4	-	-
c'	2.8	3	5(3.2-6.2)	3.5(3-4.2)	4.1(3.2-5)
T	70	85	92(64-100)	88(78-102)	90
Ps	1	-	1	-	-
Ps lenght	18	-	11(10-12)	-	-
Ps- tail	127	-	141(124-150)	-	-
Ps-cloaca	50	-	52(46-60)	-	-
daa	1380	1815	1626(1518-1800)	2112(1815-2298)	-
dva	-	1230	-	1436(1230-1700)	-
V%	-	65	-	65(61-71)	-

Table 3. Measurements (μm) of *E. ampullatum* sp. nov. (range, mean value in parentheses).
153x142mm (300 x 300 DPI)