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A review of the genus *Richtersia* (Nematoda: Selachinematidae): new species from Golfo San José and Golfo San Matías, Chubut (Argentina)

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This article is a review of the genus *Richtersia* (Nematoda: Selachinematidae) with a key to species, genus diagnosis and lists of valid species. Two new *Richtersia* species from the Golfo San José and Golfo San Matías, Chubut province of Argentina are described: *Richtersia bicornis* sp. nov. is characterized by having two thorn structures after cuticular collar, and in total 32–40 longitudinal rows of spines arranged in eight groups in cervical region and precloacal spines similar in shape. *Richtersia argentinae* sp. nov. is characterized by the number of longitudinal rows of spines, amphid size and the precloacal spines configuration.

INTRODUCTION

During an ecological and taxonomical study of the meiobenthos of the Golfo San José and Golfo San Matías (Península Valdés, South Atlantic sea) many new free-living marine nematodes were found (Pastor de Ward, 2003, 2004). In this paper two new species of *Richtersia* Steiner, 1916 are described for this area.

Richtersia has been reviewed by Gerlach (1964), Gerlach & Riemann (1973), Boucher (1975) and Vincx (1981). We describe two new species: *R. bicornis* sp. nov. and *R. argentinae* sp. nov. and add a new key to all species.

MATERIALS AND METHODS

Description of sites studied

Golfo San José and Golfo San Matías are located in the northern part of the Península Valdés (42°14'–42°26'S; 64°02'–64°26'W) on the Atlantic coast of South America (Chubut province, Argentina) (Figure 1).

The *Richtersia* species described below were found in fine sand and mud (according to Wentworth scale), from 16 to 141 m depth.

Sample collection and treatment

During the cruise with the RV 'Austral' (September and October, 1984) 110 sea bottom samples were taken (by Lic. H. Zaixso). Samples were obtained with a van Veen bottom grab. At each sample site two vertical cylindrical Plexiglas core subsamples (10 cm deep, 1.4 cm in diameter) were taken from the top of the grab. They were preserved in 5% formaldehyde in seawater, decanted and sieved through both 500-μm and 50-μm mesh sieves. The nematodes present on the 50-μm sieve were counted and identified to species level. The specimens studied in the present paper were found at seven separate locations (Figure 1). Nematodes were fixed following the method described by Ditlevsen (1911) and preserved in pure glycerin.

Specimen analysis

Photographs were taken with Zeiss photo microscopy equipment with differential interference contrast (DIC) and drawings were made with the aid of a camera lucida.

Holotypes and allotypes are deposited in the Museo Nacional de Ciencias Naturales 'Bernardino Rivadavia' (MACN), Buenos Aires, Argentina. Paratypes are deposited in the MACN and in the Natural History Museum (NHM) of London, UK.

The measurements following previous works (Verschelde & Vincx, 1995; Verschelde et al., 1998) are in microns, and De Man's ratios, a, b and c used in this paper are calculated as standard.

Sediment analysis were carried out by dry sieving and classified according to Wentworth scale.

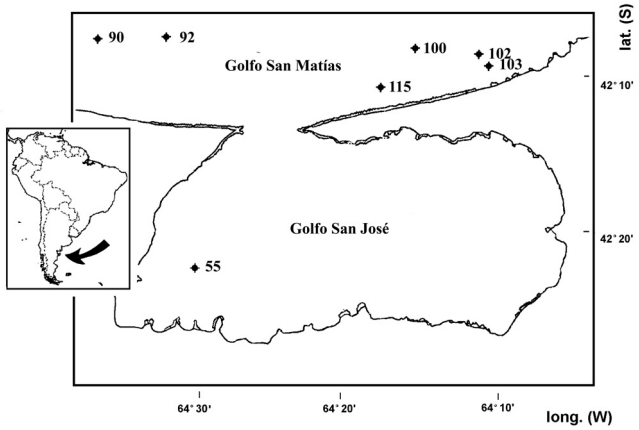

Figure 1. Map of Golfo San José and Golfo San Matías showing the sampling stations.

Table 1. *Differentiating data of male* Richtersia *species.*

Species	L	a	R	rspic	lspic	gub	csl	Amph%	turns	Locality
R. erinacei	627–695	5.3–8.8	8	225	95	35	8	48	1.5	Red Sea
R. farcimen	660–800	5.8–9.4	22	100	66	33	little	25	1	Red Sea
R. iberica	555	21.3	8	31	23	?8	2–7	100	4	Spain
R. imparis	398–466	8.0–9.1	50	50	134	32	1	25	3	Pernambuco, Brasil
R. inaequalis	585–695	10.5–14.4	28	113	44	21	1	50	3.5	Elbe estuary
R. spicana	575–658	12.1–14.0	8	120	55	25	14	73	2.5	Provence
R. deconicki	633–1036	15.5–21.8	24	72–86	45–47	21	little	86	3.7	Belgium
R. argentinae	550	7.3	24	42	65	40	1	52	4–4.5	Golfo San José, Argentina
R. bicornis	300–420	3–4	4–5 in 8 groups	45	78	40	4–5	42–57	3.5	Golfo San José, Argentina
R. spinosa	300–305	6.1–7.1	15–16	37	71	20	10–15	35–40	2	Corsica, Mediterranean Sea
R. coomansi	760–1075	10.9–17.8	20	85	185	35	3–7	60	5.2	Corsica, Mediterranean Sea
R. staresensis	510	15.4	numerous	87	46	25	2	90	4	Corsica, Mediterranean Sea
R. bathyalis	260–330	5.5–7.1	10	50–65	50–65	15	10	45	1	Corsica, Mediterranean Sea
R. collaris	369–548	6.2–7.2	60	47–71	47–71	35	little	50	3	Trébeurden, France
R. demani (*)	538	12.1	24	1cd	1cd	no	little	45	3.5	Baltic Sea
R. discorda	400–520	4.2–5.2	24	50–65	50–65	no	1	95	contorted	St Vincent's Bay, New Caledonia
R. heipi	235–340	7.6–9.4	30–32	30–33	30–40	10	1	95	1	Corsica, Mediterranean Sea
R. kreisi	356–542	6.3–11.4	26	43–45	43–45	30	1	100	1	Pierre Noire (Manche Occidentale)
R. mediterranea	575	12.2	66	60	108	25	little	70–80	1.5	Banyuls-sur-mer, Mediterranean Sea

*, from drawings.

Bibliography has been obtained from NeMys. Deprez, T. & all 2005. World Wide Web electronic publication www.nemys.ugent.be, version (12/2006).

Abbreviations used in tables and figures

Amph%, amphid diameter as percentage of corresponding body diameter; abd, anal body diameter; aw, amphid width; bda, body diameter at amphid level; bdc, body diameter at level of cephalic setae; bdnr, body diameter at level of nerve ring; bdph, body diameter at level of pharyngeal end; cd, diameter of cuticular collar; csl, cervical spines length on head; daa, distance from anterior end to anus; daph, distance from anterior end to pharyngeal end; darn, distance from anterior end to nerve ring; vd, distance from anterior end to vulva; dexp, distance from anterior end to excretor pore; dsca, distance cephalic setae to the anterior end; G, glandular tissue; gub, gubernaculums length; gub%, gubernaculums length as proportion of cloacal body diameter; L, total length; laps, length of post cloacal setae; lbps, length of precloacal setae; lcs, length cephalic setae; llse, length external labial setae; llsi, length internal labial setae; lss, length somatic setae; lspic, left spicular length (along the arc); lspic%, left spicule length as proportion of cloacal body diameter; mbd, maximum body diameter; naps, number of postcloacal spines; nbps, number of precloacal spines; nrh, number of rows of spines on head; nrt, number of rows of spines on tail ; PS, precloacal spines; V%, distance from the anterior end to the vulva opening in percentage of total length; R, rows number on head; rspic, right spicular length (along the arc); rsad, right spicule chord length as proportion of cloacal body diameter; sl, length of spinneret; t, tail length; tda, tail in anal diameters; tl, length of horns; turns, number of amphideal fovea turns. TS, postcloacal spines; M, males; F, females; j, juvenile.

SYSTEMATICS

Subclass CHROMADORIA Pearse, 1942
Order CHROMADORIDA Filipjev, 1929
Suborder CHROMADORINA Filipjev, 1929
Family SELACHINEMATIDAE Cobb, 1915
Genus *Richtersia* Steiner, 1916

Emended diagnosis

Selachinematidae. Distinctive short fusiform body. Cuticle with small body annuli ornamented with longitudinal rows or fields of spines and setae. Head usually set off from the body by a cuticular collar, in which lips and anterior setae are situated. Four cephalic and six cervical setae present. Buccal cavity is devoid of any teeth. Amphideal fovea, situated after cuticular collar. Pharynx without posterior bulb.

Male reproductive system monarchic, testis outstretched, with equal or unequal spicules, with or without gubernaculum. Without actual supplements but precloacal thorn-like spines can be present (even postcloacal ones).

Female reproductive system didelphic, amphidelphic; ovaries in general antidromously reflexed.

Differential diagnosis

Richtersia is a rather aberrant genus and distinctively separated from other genera in the Selachinematidae family (Platt & Warwick, 1988) by having tubular stoma, longitudinal rows of spines and no punctuations on cuticle. Only *Latronema* genus (ex: *L. deconincki* Boucher, 1976), presents longitudinal rows of small spines. Some diagnostic characters found in *Richtersia* genus as thorns and spines, together with absence of punctuations are usually presented too in some genera of Desmodoridae, Epsilonematidae and Draconematidae (Desmodoroidea Filipjev, 1922) and they are not present in Chromadoroidea genera. We could

Table 2. *Measurements (μm) of* Richtersia bicornis *sp. nov. and* Richtersia argentinae *sp. nov.*

	A. *Richtersia bicornis* sp. nov.		B. *Richtersia argentinae* sp. nov.		
	Holotype Male	Paratype Males N=3	Holotype Male	Paratype Females N=3	Paratype Juveniles N=2
L	360	300–420 (372.0)	550	260–340 (303.3)	240–280 (260)
a	3.6	3–4 (4.0)	7.3	6.2–7.1 (6.6)	8.0–6.3 (2.9)
b	3.6	2.7–3.9 (3.5)	3.1	2.6–2.9 (2.8)	2.9–3.0 (2.9)
c	6	5.1–8.0 (6.8)	10.0	5.5–8.4 (6.7)	5.6–5.7 (5.6)
llsi	6	6	6	6	4
llse	7	5–7 (5.7)	6	6	4
lcs	5	3–5 (3.7)	2	2	1
dsca	2	2	5	2–3 (2.6)	2
aw	20	15–18 (16.0)	13	4–5 (4.3)	5
bda	35	32–35 (34.0)	25	20–21 (20.3)	18
turns	3.5	3.5	4–4.5	0.5–1	0.5
Amph%	57	42–51 (47.1)	52	19–25 (21.3)	25–27 (26.4)
nrh	4–5 in 8 groups	4–5 in 8 groups	24	16–20	16
nrt	1 in 6 groups	1 in 6 groups	16	7–8	8
cd	30	25–30 (27.5)	20	17–19 (18)	16–17 (16.5)
darn	50	60	75	40–60 (52)	40–45 (42.5)
daph	100	100–107 (106.6)	180	100–115 (106.6)	80–95 (87.5)
dexp	50	45–50 (48.3)	135	80–90 (86.6)	60–65 (62.5)
bdnr	75	70–80 (73.3)	45	30–38 (34.3)	30
bdph	90	90	60	30–40 (36)	30–33 (31.5)
mbd	100	98–100 (99.3)	75	40–50 (46)	35–38 (36.5)
bdc	24	22–35 (28.3)	15	15–18 (17)	15–17 (16)
daa	300	316–360 (316.0)	495	254–334 (296.6)	234.3–274.4 (254.3)
abd	30	15–30 (23.3)	30	25–30 (25)	22–28 (25)
lss	7	6–7 (6.7)	1	?	0.5
vd	–	–	–	160–210 (193.3)	–
V%	–	–	–	61–68 (63.7)	–
rspic	50	45–62 (54.0)	65	–	–
rspic%	1.7	2–3 (2.4)	2	–	–
lspic	95	78–85 (81.7)	42	–	–
lspic%	3.2	3–5 (3.8)	1	–	–
gub	40	30–40 (33.3)	40	–	–
gub%	1.3	1–2 (1.5)	1	–	–
pl	15	12–15 (13.5)	15–20	–	–
nbps	9	11–12 (11.3)		–	–
lbps	6	6	5–10	–	–
naps	6	3–4 (3.7)		–	–
laps	5	4–5 (4.7)	no	–	–
tda	2	2–3 (2.5)	2	0.6–1.2 (0.9)	0.9–1.2 (1.1)
t	60	48–60 (55.7)	55	37–55 (46.3)	42–50 (46)
tl	18	17–18 (17.7)	20	18–30 (24.3)	25–30 (27.5)
twa	15	13–15 (14)	30	14–21 (17.6)	13–15 (14)
si	7	6–7 (6.8)	5	4–5 (4.3)	4–5 (4.5)

*, range, mean value in parentheses.

assume that *Latronema* and *Richtersia* are two intermediate genera from which Desmodoroidea lineage evolved.

Discussion

The combination of the following characters is unique for the genus within the family Selachinematidae: buccal cavity without teeth, extremely short (up to 300 μm) and fusiform body, and presence of longitudinal rows of spines.

Representatives of the genus *Richtersia* are mostly found in fine sand (median grain size between 100 and 200 μm) but have also been found in muddy sediments.

Boucher (1975) recognized four species inquirendae: *R. tenuis* (Kreis, 1929); *R. pilosa* (Kreis, 1937); *R. elongata* Schuurmans Stekhoven, 1950 and *R. norvegica* Allgen, 1940.

Including *R. bicornis* and *R. argentinae* sp. nov., there are now nineteen (19) valid species in the genus *Richtersia*. We add a key and supplement differentiating data in Table 1.

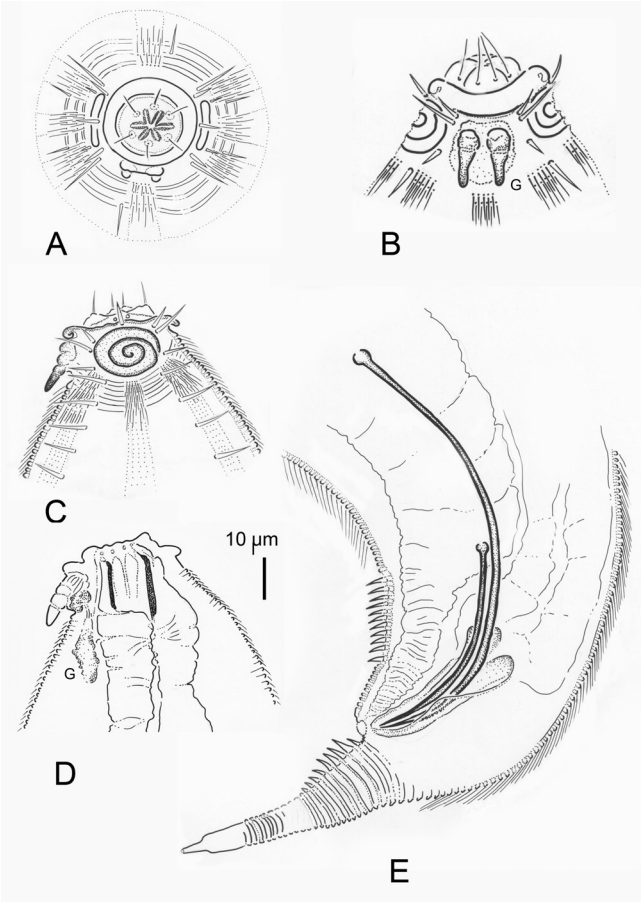

Figure 2. *Richtersia bicornis* sp. nov.: (A) apical view, scheme; (B) male head in subventral view, scheme; (C) head of male holotype, amphid level; (D) head of male holotype, buccal cavity level; (E) copulatory apparatus male holotype.

Key for the species of genus Richtersia

(For construction of this key and Table 1 only male characters were considered)

1. Male with round multispiral amphid.....2
— Male amphid oval shaped uni-, crypto- or multispiral or other shape.....8

2. Spicules unequal length.....3
— Spicules equal length.....7

3. Male cuticle (just after amphid level) with up to 8 longitudinal rows of cervical spines and/or setae.....4
— Male cuticle (just behind the amphid level) with more than 8 longitudinal rows of cervical spines.....5

4. Male amphid more than three turns..... .....*R. iberica*, Riemann & Schrage, 1977
— Male amphid less than three turns.....6

5. With precloacal supplements as specialized spines.....9
— Without precloacal supplements as specialized spines.. 12

6. Right spicule less than 200 µm..... .....*R. spicana*, Vitiello, 1973
— Right spicule more than 200 µm..... .....*R. erinacei*, Gerlach, 1964

7. Without gubernaculum.....*R. demani*, Stekhoven, 1935
— With gubernaculum.....*R. collaris*, Steiner, 1916

8. Male amphid irregular in shape..... .....*R. discorda*, Inglis, 1968
— Male amphid oval shaped.....16

9. With equal spines.....*R. inaequalis*, Riemann, 1966
— With unequal spines.....10

10. Males with 40 or more rows of spines.....11
— Males with 24 or less longitudinal rows of spines and precloacal spines alternating short and long setae (wave shape).....*R. argentinae* sp. nov.

11. Males with 32–40 longitudinal rows of spines arranged in 8 groups in the cervical region, and two horns in cuticular collar.....*R. bicornis* sp. nov.
— Males with equidistant longitudinal rows of spines..... .....*R. imparis*, Gerlach, 1956

12. Male amphid with less than two turns..... .....*R. farcimen*, Gerlach, 1964
— Male amphid with two or more turns.....13

13. Male amphid with two turns..... .....*R. spinosa*, Soetaert & Vincx, 1987
— Male amphid with more than two turns.....14

14. Male amphid with three turns..... .....*R. deconicki*, Vincx, 1981
— Male amphid with more than three turns.....15

15. Male amphid with four turns..... .....*R. starensis*, Soetaert & Vincx, 1987
— Male amphid with five turns..... .....*R. coomansi*, Soetaert & Vincx, 1987

16. Male amphid less than 60% of corresponding diameter .....*R. bathyalis*, Soetaert & Vincx, 1987
— Male amphid 100% of corresponding diameter.....17

17. Males with less than 20 rows of spines..... .....*R. kreisi*, Boucher, 1975
— Males with more than 20 rows of spines.....18

18. Spicules unequal in size..... .....*R. mediterranea*, Soetaert & Vincx, 1987
— Equal spicules.....*R. heipi*, Soetaert & Vincx, 1987

Richtersia bicornis sp. nov.
(Figures 1–3; Tables 1 & 2)

Type material

Holotype: adult male (SANJO 92/j1; coordinates: 64°33'54"W 42°09'46"S, water depth 141.4 m; mean particle diameter 65.4 µm; fines 65%). MACN-In 36957; Collected by H. Zaixso, at Golfo San Matías, 9 September 1984.

Paratype 1: adult male (SANJO 55/j2; coordinates: 42°22'12"S 64°31'48"W, water depth 51.1 m; mean particle diameter 113.6 µm; fines 19%). MACN-In 36958. Collected by H. Zaixso, at Golfo San José, 22 August 1984.

Paratype 2: adult male (SANJO 102/j2; coordinates: 42°09'54"S 64°09'00"W, water depth 91.4 m; mean particle

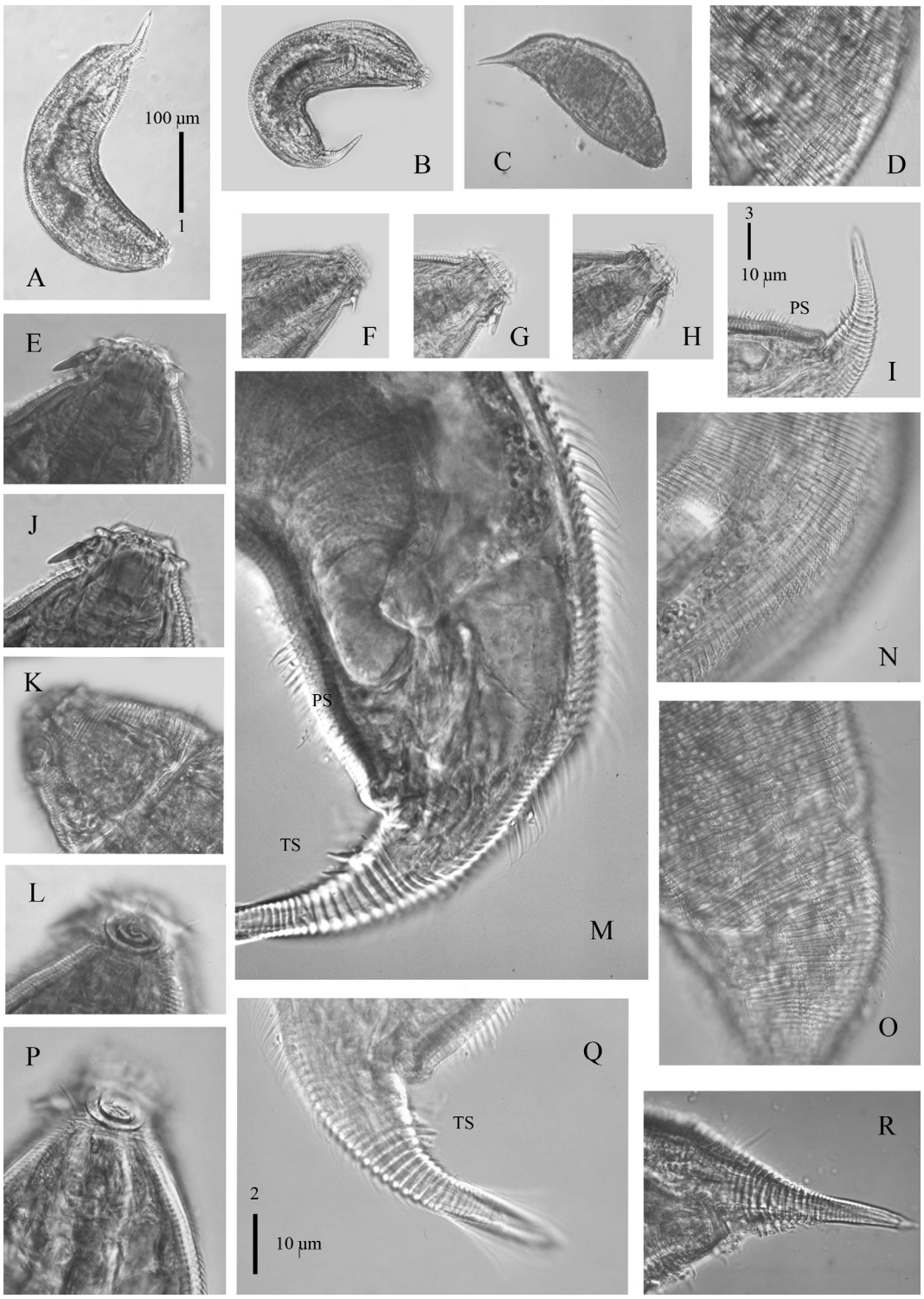

Figure 3. *Richtersia bicornis* sp. nov.: (A, B, C) entire males; (D) groups of spines on male cervical region; (E) cornus view; (F, G, H) corola and labial region at different focus levels; (I) male tail, detail of precloacal spines; (J) buccal cavity; (K) male head in subdorsal view; (L) amphid on anterior end of male; (M) male copulatory apparatus; (N) groups of spines on mid-body region; (O) groups of spines on tail; (P) amphid an cephalic setae; (Q, R) male tail. Scales: 1, A, B, C; 2, D, E, J, K, L, P, Q, M, R, N, O, ; 3, F, G, H, I.

diameter 88.9 µm; fines 5%). NHM 2007.173. Collected by H. Zaixso, at Golfo San Matías, 9 September 1984.

One male additional specimen (CENPAT-NEMATODA collection no. 693, (SANJO 90/j2; coordinates: 42°09'46"S 64°33'54"W, water depth 141.4 m; mean particle diameter 65.4 µm; fines 99%). Collected by H. Zaixso, at Golfo San Matías, 9 September 1984.

Etymology

From Latin : *cornu*, *-us* (noun) = horn; *bicornis*, *-is*, *-e* (adj.) = double horned; in reference to the cuticular ornamentation in subventral position, behind the collar.

Description

Males (Measurements, see Table 2)

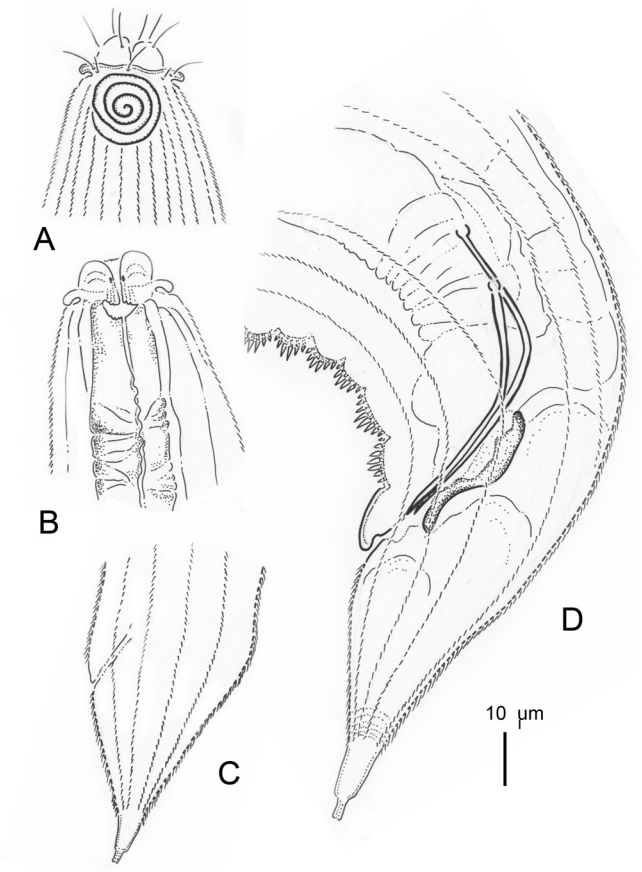

Figure 4. *Richtersia argentinae* sp. nov.: (A) head of male holotype, amphid level; (B) head of male holotype, buccal cavity; (C) female tail; (D) copulatory apparatus male holotype and tail.

Body short, plump truncated anteriorly, tapering posteriorly, tail short.

Cuticle annulated, annuli becoming wider from 1 µm in cervical region up to 2 µm on tail. Every annule carrying spines arranged in groups of longitudinal rows: eight groups of 4–5 rows of spines each in cervical region; eight groups of 2–3 rows each in the mid-body region, six groups/rows of one row each at the level of cloacal opening, subventral rows modified as pre- and post-cloacal thorn-like spines (Verschelde & Vincx, 1994). The six posterior rows end in anterior tail region. Slender non-annulated tail end. Tail carrying ventral setae only. Spines on longitudinal rows pointing backward. Spines becoming progressively larger and thicker from head region (4–5 µm) toward cloacal region (8–10 µm). Somatic setae (13 µm) in six rows: one dorsosublateral, one ventrosublateral, one subventral and one subdorsal. Regularly distributed on cervical region, scarce on the rest of the body.

Cephalic region with a thick and prominent cuticular collar, carrying the amphideal fovea, the external circle of setae and two prominent horns. The horns are connected, at the level of their basal cuticle, to a glandular organ situated in subventral position (Figure 2B,D).

Amphideal fovea (width 42–57% of corresponding head width) a round spiral, ventrally wound, three and a half turns, located 4 µm from anterior end.

The six internal labial setae (6 µm) situated at the base of labial membrane; the six external labial (3–5 µm) and the four cephalic setae (5–7 µm) on the cuticular collar. Four cervical setae (Verschelde et al., 1995) present, one at each side of the amphideal fovea.

Stoma triangular, unarmed and surrounded by pharyngeal tissue. Pharynx cylindrical, short, muscular, (100–110 µm long) and without bulb. Nerve ring around the middle of the pharynx. Ventral pore just before the nerve ring (45–50 µm from anterior end).

Cardia triangular and small. Intestine overlapping posterior part of the pharynx, located right to the testis.

Reproductive system monarchic; testis outstretched, reaching into pharyngeal region. Two unequal spicules, right spicule shorter than left spicule. Right spicule, 50 µm (3 abd) in chord length. Left spicule, 95 µm (3.6 abd). Capitulum and velum present on both spicules. Gubernaculum double without apophysis, 40 µm (1.3 abd).

Cloacal opening in ventro-posterior position, 9–12 pairs of pre-cloacal spines (6 µm long) in subventral position, at 15 µm from the cloaca. On the tail in subventral position 3–6 pairs of postcloacal spines (4–5 µm long) just after cloacae. Tail very short, 60 µm long (2 abd), conical in shape. Three caudal glands present, ending together.

Females

Over 280 samples were analysed from Golfo San José and Golfo San Matías, no females or juveniles were found.

Diagnosis

Richtersia bicornis sp. nov. is characterized by its 32–40 longitudinal rows of spines arranged in eight groups in cervical region, and its two horns subventrally in the head region.

Differential diagnosis

Richtersia bicornis sp. nov. is the only species characterized by two horn structures posterior to the cuticular collar in the head region and 32–40 longitudinal rows of spines arranged in eight groups in the cervical region, and can therefore not be confused with any other species of this genus.

Discussion

In the genus *Richtersia*, several species with unequal spicules have been described, but there are only four of them with precloacal thorn-like spines, they are: *R. inaequalis* Riemann, 1966; *R. imparis* Gerlach, 1956 and the two new species of this paper *R. bicornis* sp. nov. and *R. argentinae* sp. nov.

Remark

It is important to note that *R. bicornis* sp. nov. has a very distinct configuration of characters when compared with all the species of *Richtersia*. It could in the future be considered as a new genus, if more specimens are found, and a more complete (including females) description can be given. The new horn structure could probably be used for an anchoring function.

Richtersia argentinae sp. nov.
(Figures 1, 4, 5; Tables 1 & 2)

Type material

Holotype: adult male (SANJO 55/j2; coordinates: 42°22'12"S 64°31'48"W; water depth 51 m; mean particle

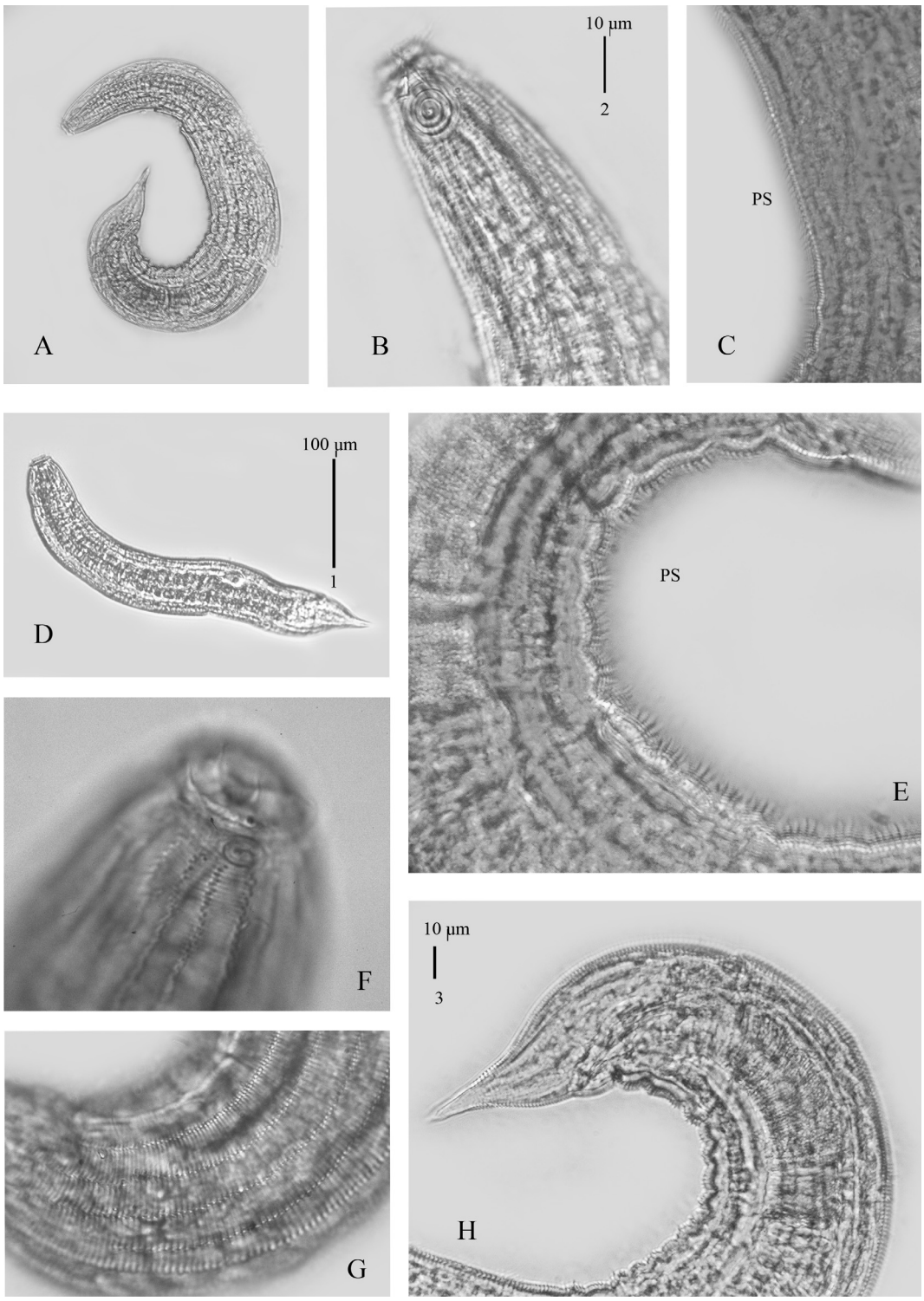

Figure 5. *Richtersia argentinae* sp. nov.: (A) entire male; (B) holotype male anterior end; (C) precloacal spines at mid-body region; (D) entire female; (E) precloacal spines near cloaca; (F) female anterior end; (G) rows of cuticular spines on tail; (H) male posterior end. Scales: 1, A, D; 2, B,C,E,F,G; 3, H.

diameter 114 µm; fines 19%). MACN-In 36959. Collected by H. Zaixso, at Golfo San José, 22 August 1984.

Paratype 1: one immature female (SANJO 103/j2, coordinates: 42°10'37"S 64°07'55"W; water depth 16 m; mean particle diameter 176 µm; fines 8%). MACN-In 36960. Collected by H. Zaixso, at Golfo San Matías, 9 September 1984.

Paratype 2: one immature female (SANJO 100/j2, 42°09'46"S 64°16'12"W; water depth 140 m; mean particle diameter 178 µm; fines 5%). NHM 2007.174. Collected by H. Zaixso, at Golfo San Matías, 9 September 1984.

One female and two juvenile additional specimens in CENPAT-NEMATODA collection no. 697 (F), 698–699 (juv), (SANJO 115/j2, coordinates: 42°11'42"S 64°15'54"W, water depth 16 m; mean particle diameter 176 µm; fines 3% and samples SANJO 103/j2, 100/j2). Collected by H. Zaixso, at Golfo San Matías, 9 September 1984.

Etymology

From the Latin name '*Argentina*, *-ae*'; genitive, meaning 'Argentina's *Richtersia*', in reference to the country in which it was found.

Diagnosis

Males (Measurements, see Table 2)

Body short, clumsy, truncated anteriorly, tapering posteriorly with a conical tail end.

Cuticle annulated, annuli 1 μm wide. In cervical region each annules with short spines (1 μm in all the body) arranged in 26 longitudinal rows: seven in mediolateral, two lateroventral, two laterodorsal, one dorsal and one in ventral. In posterior part of the body arranged in 12 longitudinal rows. No spines on tail. Tip of tail not annulated (20 μm).

Somatic setae not observed.

Head sharply set off from the body by a thick cuticular collar, forming a cup in which lips and anterior setae are situated. Amphideal fovea, situated after cuticular collar, a round multispiral (52% of corresponding head width), ventrally wound, four turns, located 5 μm from anterior end.

Six internal labial setae (6 μm) situated at the base of labial membrane, six external labial (6 μm) and four cephalic setae (2 μm), appearing on median cuticular collar. Cervical setae absent.

Lip region retracted, forming a pyramidal invagination of cheilostome wall into the stoma.

Stoma unarmed and surrounded by pharyngeal tissue. Pharynx cylindrical and muscular (180 μm long). Nerve ring before the middle of the pharynx. Ventral pore after nerve ring (135 μm from anterior end).

Cardia not observed.

Reproductive system monochic; outstretched testis left from intestine. Spicules, unequal in size: rigth spicule, 65 μm (2.2 abd) in chord length. Left spicule, 42 μm (1.4 abd). Gubernaculum double without apophysis, 40 μm (1.3 abd). Precloacal thorns or thorn-like spines (Verschelde & Vincx, 1994) present from middle of the body to the cloacal opening. They are arranged in groups of 5–6 spines of different sizes (5–10 μm), (Figures 4D & 5C,E).

Tail 55 μm long (1.8 abd). Three caudal glands, ending together.

Immature females (Measurements, see Table 2)

Females are similar to males in general body shape. Amphideal fovea (19–25% of corresponding head width) one turn transversally flattened spiral, situated on cuticular collar. Reproductive system as in adult females, not observed. Only vulva, a short vagina and two germinal ovaries were observed. Tail 55 μm (0.9 abd).

Diagnosis

Richtersia argentinae sp. nov. is characterized by the number of longitudinal rows of spines, amphid size and the precloacal spines configuration.

Differential diagnosis

A precloacal spines configuration similar to *R. argentinae* sp. nov. has been found in *R. imparis* Gerlach, 1956. In this species, however, the males have more longitudinal rows of spines on head, a multispiral amphideal fovea with three turns (25% of corresponding head width) and no cuticular collar on head have been observed.

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