

Neochromadora alejandroi sp. n. (Chromadorida: Chromadoridae) and *Cobbia macrodentata* sp. n. (Monhysterida: Xyalidae), two new species of free-living marine nematodes from the Patagonian coast

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Summary – Two new species belonging to the genera *Neochromadora* and *Cobbia* from the coastal zone of Patagonia, in the Río Negro and Chubut provinces of Argentina, are described. *Neochromadora alejandroi* sp. n. is characterised by gubernaculum and spicule shape, the presence of a thick cuticle on subventral tail area, shape of the pharyngeal bulb and length of the cephalic and somatic setae. *Cobbia macrodentata* sp. n. is characterised by the amphid position, the presence of a large dorsal tooth, the size and length of the cephalic setae, the shape of the gubernaculum which has small hooks at the distal end and the presence of precloacal pores. Keys to the species of both genera are provided.

Keywords – Argentina, descriptions, key, morphology, morphometrics, systematics, taxonomy.

During an ecological and taxonomical study of the meiobenthos of Patagonian littoral coastal sediments (2002-2007) in the gulfs of San Matías, San José and Nuevo, Argentina, many new free-living marine nematodes were found (Pastor de Ward, 2003, 2004; Lo Russo, 2005; Pastor de Ward & Lo Russo, 2007). This work describes two new species, one belonging to *Neochromadora* Micoletzky, 1924 and the other to *Cobbia* de Man, 1907.

Neochromadora belongs to the Hypodontolaiminae De Coninck, 1965. This subfamily includes 14 genera characterised by a cuticle striated with ornamentations. It has six outer labial and four cephalic setae with the slit-like amphid usually located level with the cephalic setae. The buccal cavity has a large hollow dorsal tooth and two small subventral teeth. The males have cup-shaped precloacal supplements. However, *Neochromadora* can be distinguished from other genera of this group by having a combination of heterogeneous punctate ornamentation with a lateral differentiation formed from dots which lack a longitudinal arrangement, and a pharynx with a single bulb. *Neochromadora* includes 26 valid species. It has been reviewed by Wieser (1954, 1959). We describe

Neochromadora alejandroi sp. n. and provide a new key to all valid species.

Cobbia de Man, 1907 belongs to the Xyalidae Chitwood, 1951. This family is characterised by having ten cephalic setae (six longer labial setae and four shorter cephalic setae). Additional cephalic setae are usually present. The buccal cavity is conical, with or without teeth. The last character is actually the one that distinguishes *Cobbia* from the other genera of the family as *Cobbia* has three such teeth. *Cobbia* has seven valid species and has been reviewed by Wieser (1956, 1959). We describe *Cobbia macrodentata* sp. n. and add a key to all valid species.

Materials and methods

DESCRIPTION OF SITES STUDIED

Specimens of both genera were found in four sampling sites at three Patagonian gulfs. Cormoranes beach (40°40'S; 65°65'W) is located at San Matías gulf. Fracaso beach (42°42'S; 64°64' W) is located at San José gulf, and

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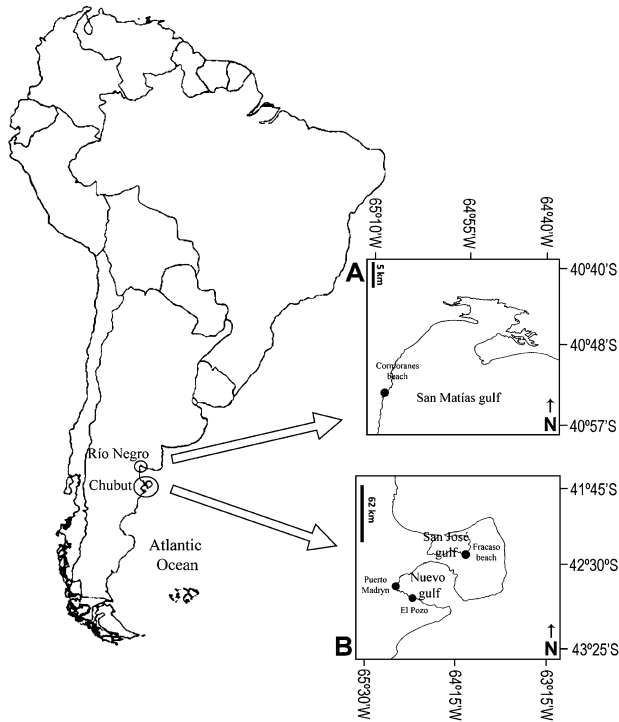


Fig. 1. Map showing the study sites. A: San Antonio bay; B: Península Valdés.

Puerto Madryn (42°42'S; 65°65'W) and El Pozo beaches (42°42'S; 64°64'W) are at Nuevo gulf (Fig. 1).

SAMPLE COLLECTION AND TREATMENT

In each site, 15 samples were collected from the upper, middle and lower littoral zones using a Plexiglas corer (2.9 cm inner diam.). The samples were fixed in the field in 5% formalin with rose Bengal.

Samples were sieved through 500 μm and 50 μm mesh sieves. The sediment retained on the last sieve was used to extract nematodes by the elutriation/decantation/LUDOX TM method and specimens were mounted on slides in pure glycerin.

SPECIMEN ANALYSIS

Nematodes were identified, drawn and described using a Zeiss microscope with differential interference contrast (DIC) and photographed using an Olympus BX51 microscope with a Nikon D80 digital camera. For generic diagnosis and nematode identifications, Platt and Warwick (1988), the synopses of Warwick *et al.* (1998) and NeMys web page (Deprez *et al.*, 2005) were used. 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.

Results

*Neochromadora alejandroi** sp. n. (Fig. 2)

MEASUREMENTS

See Table 1.

DESCRIPTION

Male (holotype)

Body length 595 μm , max. diam. 18 μm . Cuticle heterogeneous with lateral differentiation formed from two longitudinal rows of dots. Cuticle ornamentation beginning posterior to amphidial fovea and covering body up to tail. Somatic setae 11 μm long, situated in two longitudinal rows throughout and on both sides of body. Head with ten cephalic setae, four being 15 μm long and six 6 μm long. Internal and external labial setae not seen. Amphidial aperture small, oval to circular, at level of cephalic setae (25% of cephalic diam.). Stoma with one hollow, large dorsal tooth 4 μm long and two smaller subventral teeth. Pharynx cylindrical with well developed, ball-shaped pharyngeal bulb. Excretory pore 48 μm from anterior end. Single anterior testis located to right of intestine. Spicule curved with manubrium, 26 μm or 1.4 anal diam. long. Gubernaculum parallel to posterior part of spicule, dilated at proximal end. Six or seven cup-shaped precloacal supplements present plus a thick cuticular plate in subventral tail area. Tail conical in shape with a long, fine, spinneret. Caudal setae present.

Female (paratype)

Similar to male in general body shape, anterior sensilla, amphids and cuticle. Tail 60 μm long, conical in shape. Genital system didelphic, amphidelphic. Both ovaries reflexed. Anterior ovary to right, posterior to left of intestine. Vulva located well posterior. Muscular vagina, glands present near vulva. Uterus well developed, with one spermatheca for each ovary.

* Dedicated to R. Alejandro Sepúlveda in recognition of the help given during this work.

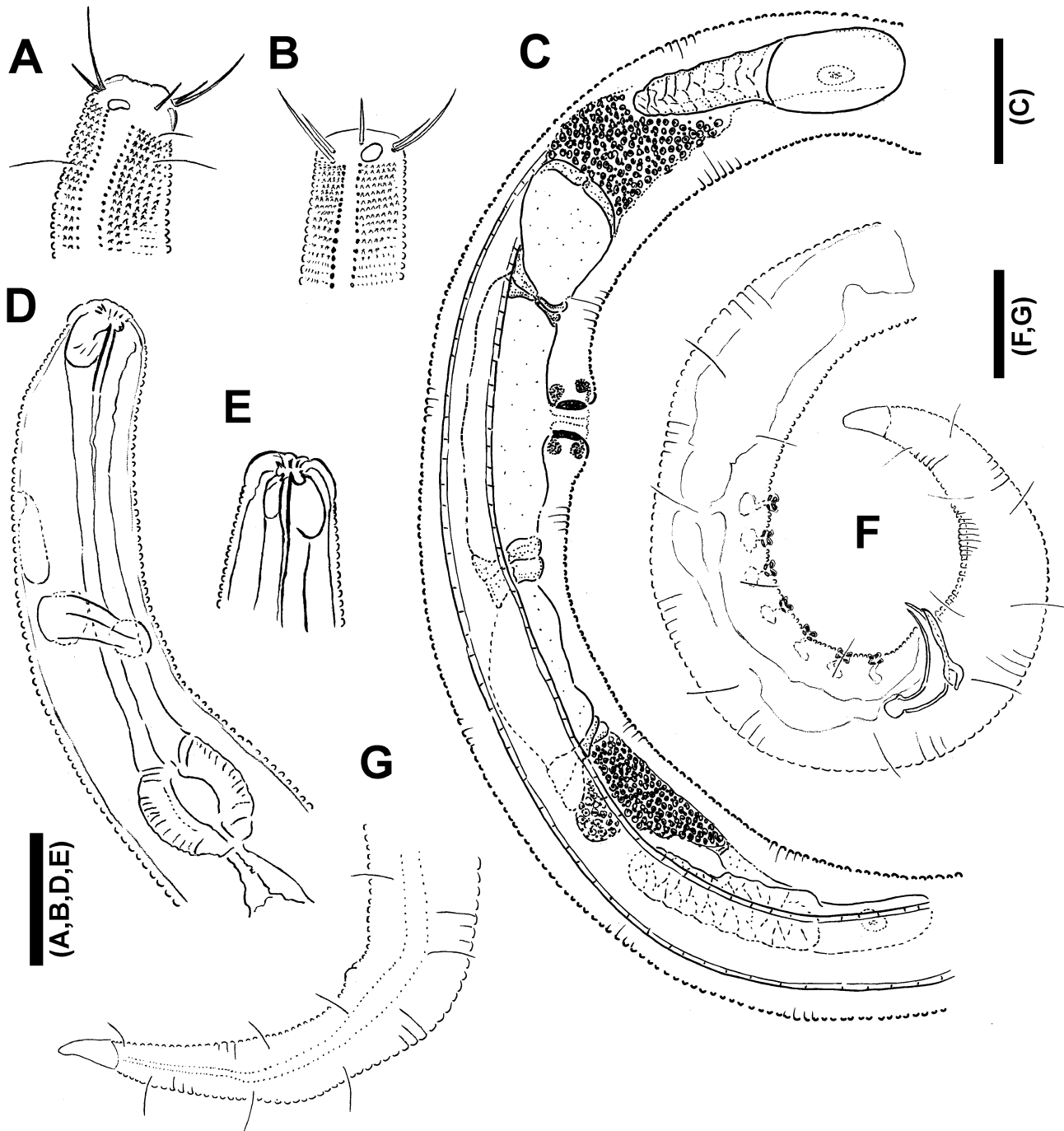


Fig. 2. *Neochromadora alejandroi* sp. n. A: Head region of holotype male; B: Head region of paratype female; C: Reproductive system of paratype female; D: Anterior end of holotype male, showing buccal cavity, pharyngeal bulb and nerve ring; E: Anterior end of paratype female, showing buccal cavity; F: Posterior end of holotype male, showing copulatory apparatus and precloacal supplements; G: Posterior end of paratype female. (Scale bars = 20 μ m.)

Table 1. Morphometrics of *Neochromadora alejandroi* sp. n. All measurements are in μm and in the form: mean \pm s.d. (range).

Parameter	Male		Female	Juvenile	Additional material		
	Holotype	Paratypes	Paratypes	Paratypes	Male	Female	Juvenile
n	–	7	7	2	2	1	4
L	595	583 \pm 18.4 (564-621)	536 \pm 46.8 (460-580)	270; 460	484.5	604	488
a	33.1	33.7 \pm 3.9 (28-38.3)	23.8 \pm 2.3 (20-26.5)	27; 26.3	21	25.2	21
b	7.4	7.2 \pm 0.3 (6.7-7.7)	6.4 \pm 0.7 (5.1-7.5)	4.3; 6	6.3	6.4	6.3
c	9.9	9.8 \pm 0.6 (9-10.8)	8.3 \pm 1 (6.4-9.2)	5.7; 7.7	7.3	9.7	8.1
c'	3.2	3.1 \pm 0.3 (2.6-3.6)	3.9 \pm 0.8 (2.6-4.8)	4.7; 4.8	2.9	4.1	3
V	–	–	87.7 \pm 1.7 (84.5-89.1)	–	–	89.7	–
T	60	59.4 \pm 4.6 (52-65)	66 \pm 12.6 (52-90)	47; 60	66.5	62	60.2
Length of long cephalic setae	15	13.9 \pm 0.9 (12-15)	13.6 \pm 0.7 (12-14)	9; 14	10	14	8.2
Amphid diam.	5	3.4 \pm 0.6 (2.4-4)	3.2 \pm 0.4 (3-4)	not seen	3	4.5	3.1
Cephalic diam./amphid diam. (%)	25	25.5 \pm 12.2 (20-36.4)	27.59 \pm 14.3 (21.4-36.4)	–; 27.3	24.2	32.1	27.9
Pharynx length	80	81 \pm 5.2 (77-93)	84 \pm 5.2 (74-92)	63; 77	77	94	77
Body diam. at level of pharynx base	18	18.3 \pm 0.8 (17.5-20)	19.8 \pm 2 (16-22.5)	14; 15	21.5	25	22.4
Max. body diam.	18	17.5 \pm 2 (15-21)	22.6 \pm 1.2 (20-24)	10; 17.5	23	25	23.5
Body diam. at level of cephalic setae	20	11.4 \pm 1.5 (10-15)	12.8 \pm 1.5 (10.5-15)	11; 12	13	14	11
Anterior end to anus/cloaca	535	523 \pm 15.7 (510-556)	470 \pm 38.8 (406-517)	223; 400	418	542	428
Anal/cloacal body diam.	19	18.9 \pm 0.9 (17.5-20)	17.4 \pm 2.9 (13-22)	10; 12.5	22.5	15	20.6
Anterior end to vulva	–	–	270 \pm 25.7 (232-297)	–	–	325	–
Spicule length (arc)	26	27.5 \pm 2.1 (23-29)	–	–	27.2	–	–
Spicule length as cloacal diam.	1.4	1.5 \pm 0.1 (1.1-1.5)	–	–	1.2	–	–
Gubernaculum	16.5	17.9 \pm 1.5 (16-20)	–	–	23.5	–	–
Gubernaculum length as cloacal diam.	0.9	0.9 \pm 0.1 (0.8-1.1)	–	–	1	–	–

TYPE HABITAT AND LOCALITY

Middle littoral zone, Cormoranes beach, San Matías gulf, Argentina. Collected by C.T. Pastor de Ward, 4 March 2006.

TYPE MATERIAL

Holotype male (MACN-In 39293) and paratype female (MACN-In 39294) deposited in Museo Nacional de Ciencias Naturales ‘Bernardino Rivadavia’, Argentina. Fifteen paratypes (seven males, six females and two juveniles) deposited in the personal collection of C.T. Pastor de Ward.

OTHER HABITAT AND LOCALITIES

Middle littoral zone, Fracaso beach, San José gulf, Argentina. Collected by C.T. Pastor de Ward, 16 June 2002; lower littoral zone, El Pozo, Nuevo gulf, Argentina. Collected by C.T. Pastor de Ward and V. Lo Russo, 2 March 2006; lower littoral zone, Puerto Madryn, Nuevo gulf. Collected by C.T. Pastor de Ward and V. Lo Russo, 1 March 2006.

ADDITIONAL MATERIAL

From Fracaso beach, two voucher males (CNP-NEM 1524 and CNP-NEM 1525) deposited in Centro Nacional Patagónico (Argentina) and three juveniles deposited in the personal collection of C.T. Pastor de Ward. From El Pozo, one voucher female deposited in the personal collection of C.T. Pastor de Ward. From Puerto Madryn, one voucher juvenile deposited in the personal collection of C.T. Pastor de Ward.

DIAGNOSIS AND RELATIONSHIPS

Neochromadora alejandroi sp. n. is distinctive by the body length, long cephalic and somatic setae, presence of a well-developed pharyngeal bulb and the thick cuticle on the subventral tail area.

In having long cephalic and somatic setae it is similar to *N. trichophora* Steiner, 1921, *N. poecilosoma* (de Man, 1893) Micoletzky, 1924, *N. izhorica* (Filipjev, 1929) Schuurmans Stekhoven, 1935, *N. tecta* Gerlach, 1951, *N. lateralis* Wieser, 1954, *N. appiana* Wieser, 1959, *N. pugilator* Wieser, 1959, *N. alatocorpa* Hopper, 1961, *N. munita* Lorenzen, 1971 and *N. oshoroana* Kito, 1981, but differs from all the species of this group by having the smallest body length. The new species has cephalic setae of more than one head diam. long, no more than

seven precloacal supplements, lacks precloacal setae and has an L-shaped spicule (*N. munita* and *N. poecilosoma* have cephalic setae less than one head diam. long, both have nine precloacal supplements plus one precloacal seta and both have an arcuate spicule). The L-shaped spicule distinguishes the new species from *N. izhorica* and *N. tecta*, in both of which it is arcuate and, in addition, these two species have a longer spicule. In *N. alejandroi* sp. n. the lateral differentiation starts after the amphidial fovea vs posterior to the pharyngeal bulb in *N. pugilator* and *N. appiana* and the dorsal tooth is straight vs S-shaped. The new species has no more than seven similar precloacal supplements vs 11 precloacal supplements with one modified in *N. alatocorpa*, and the length of the gubernaculum is only half that of the spicule vs two-thirds in *N. alatocorpa*. Finally, it differs from *N. trichophora* and *N. oshoroana* by having six or seven precloacal supplements vs none.

Neochromadora lateralis, described from Chile and based on only one female, is considered herein as *species inquirenda*.

Key, based on males, of all known species of *Neochromadora*

1. Precloacal supplements absent 2
 - Precloacal supplements present 7
2. Gubernaculum with lateral projection or apophysis 3
 - Gubernaculum simple 5
3. Spicule larger than cloacal diam. long
 - *N. nitida* Timm, 1961
 - Spicule equal or shorter than cloacal diam. long ... 4
4. Somatic setae numerous and longer than half body diam. *N. trichophora* (Steiner, 1921)
 - Somatic setae scattered and shorter than half body diam. *N. oshoroana* Kito, 1981
5. Spicule length longer than cloacal diam. 6
 - Spicule length equal or shorter than cloacal diam. ...
 - *N. notocraspedota* Allgén, 1958
6. Cervical setae present .. *N. brevisetosa* Wieser, 1954
 - Cervical setae absent ... *N. calathifera* Wieser, 1954
7. Small precloacal supplements (<10% cloacal diam. long) 8
 - Large precloacal supplements (>10% cloacal diam. long) 19
8. Precloacal setae present 9
 - Precloacal setae absent 12

9. With one precloacal seta 10
 – With two precloacal setae
 *N. lineata* Pastor de Ward, 1985

10. Spicule length equal or shorter than cloacal diam. ... 11
 – Spicule length longer than cloacal diam.
 *N. bilineata* Kito, 1978

11. Gubernaculum *ca* 75% of spicule length
 *N. appiana* Wieser, 1959
 – Gubernaculum *ca* 50% of spicule length
 *N. poecilosoma* (de Man, 1893)

12. Pharynx with offset bulb 13
 – Pharynx lacking offset bulb 15

13. All precloacal supplements equal 14
 – Some precloacal supplements modified
 *N. alatocorpa* Hopper, 1961

14. Ten precloacal supplements
 *N. aberrans* (Cobb, 1930)
 – 13 precloacal supplements
 *N. pugilator* Wieser, 1959

15. Spicule arcuate 16
 – Spicule L-shaped 18

16. Lateral differentiation beginning at cephalic level ... 17
 – Lateral differentiation beginning at end of pharynx
 *N. poecilosomoides* (Filipjev, 1918)

17. Spicule two cloacal diam. long
 *N. izhorica* (Filipjev, 1930)
 – Spicule shorter than two cloacal diam. long
 *N. sabulicola* (Filipjev, 1918)

18. Lateral alae present along body
 *N. angelica* Riemann, 1976
 – Lateral alae absent *N. nicolae* Timm, 1961

19. Gubernaculum *ca* 50% spicule length 20
 – Gubernaculum *ca* 67% of spicule length 23

20. Spicule L-shaped 21
 – Spicule arcuate 22

21. Precloacal supplements equidistant
 *N. alejandroi* sp. n.
 – Precloacal supplements not equidistant
 *N. bonita* Gerlach, 1956

22. Precloacal setae present
 *N. papillosa* Pastor de Ward, 1985
 – Precloacal setae absent *N. tecta* Gerlach, 1951

23. Gubernaculum with lateral projection or apophysis .. 24

– Gubernaculum simple 25

24. Precloacal setae present .. *N. munita* Lorenzen, 1971
 – Precloacal setae absent .. *N. complexa* Gerlach, 1953

25. Large dorsal tooth *N. paratecta* Blome, 1974
 – Small teeth 26

26. Cephalic setae shorter than 0.5 cephalic diam.
 *N. coudenhovei* Wieser, 1956
 – Cephalic setae *ca* 0.5 cephalic diam.
 *N. craspedota* (Steiner, 1916)

***Cobbia macrodentata** sp. n.**
 (Fig. 3)

MEASUREMENTS

See Table 2.

DESCRIPTION

Male (holotype)

Body length 1125 μm , max. diam. 25 μm . Cuticle annulated. Cephalic sensilla present in 6 + 6 + 6 circles, internal labial setae not seen. Six external labial setae 8.8 μm long, six thin cephalic setae (9 μm) and six robust cephalic setae (27.8 μm). Amphidial aperture circular, bigger in male than in female, located 28 μm from anterior end. Buccal cavity containing large dorsal tooth 4.5 μm long and two smaller subventral teeth. Two rings inside buccal cavity visible. Pharynx cylindrical, lacking terminal bulb. Genital system diorchic, with one functional anterior testis to left of intestine and posterior testis vestigial to right of intestine. *Vas deferens* without granulation. Spicules curved, with manubrium, 26 μm or one cloacal body diam. long. Gubernaculum lightly cuticularised, distally with three small hooks or teeth. In precloacal region, at least three tiny pores have been observed. Tail 135 μm long, cylindrical with two short caudal setae and two longer (10 μm) subdorsal setae.

Female (paratype)

Similar to male in general body shape. Amphid smaller, located 28 μm from anterior end. Tail 140 μm long, conoid-cylindrical in shape. Monodelphic, with single genital branch to left of intestine, ovary outstretched. Vulva located well posterior, surrounded by conspicuous

* So named in reference to the shape and size of the dorsal tooth.

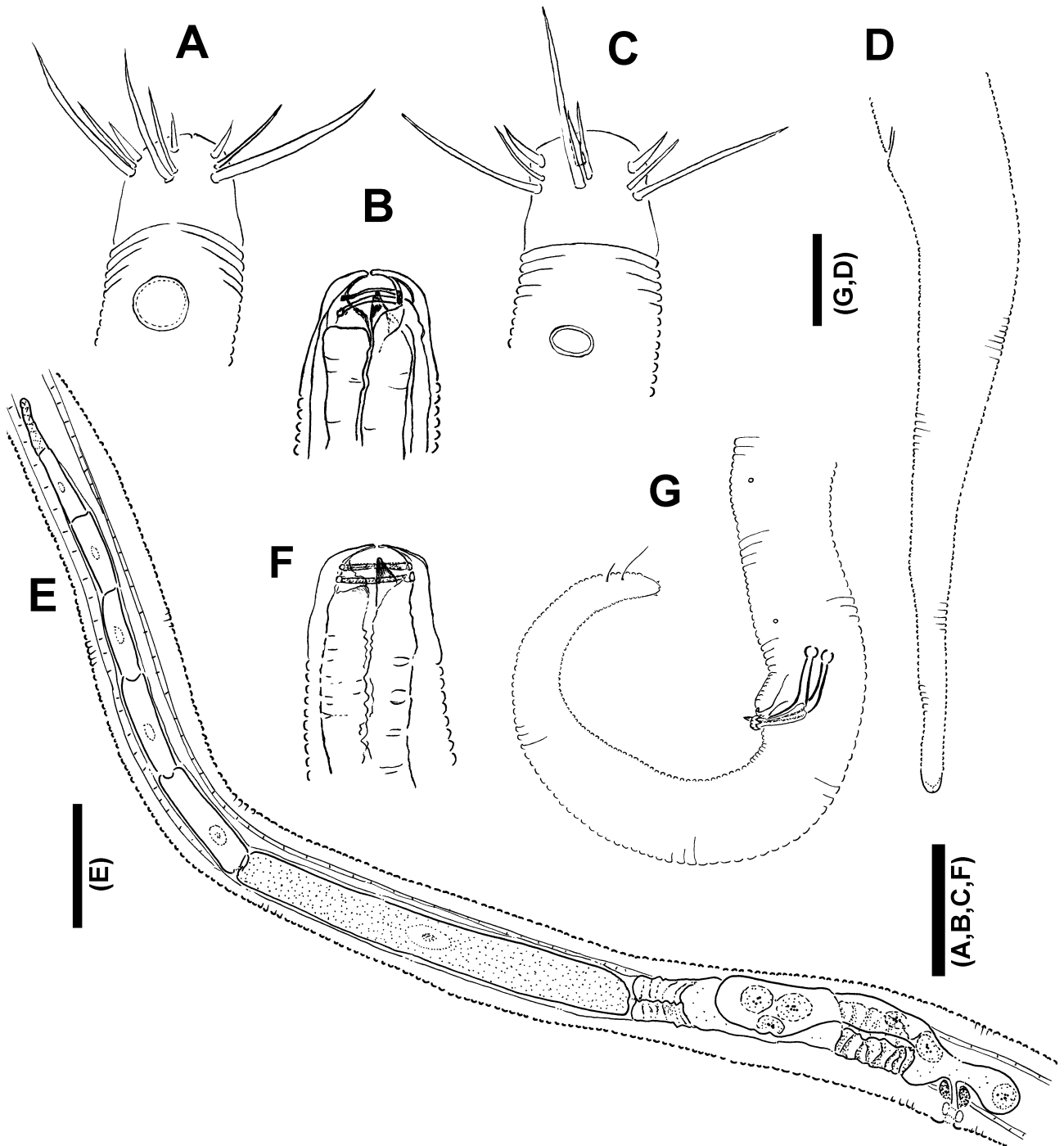


Fig. 3. *Cobbia macrodentata* sp. n. A: Head region of holotype male, amphid level; B: Anterior end of holotype male, buccal cavity; C: Head region of paratype female; D: Posterior end of paratype female; E: Reproductive system of paratype female; F: Anterior end of paratype female, buccal cavity; G: Posterior end of holotype male, showing the copulatory apparatus. (Scale bars = 20 μ m.)

Table 2. Morphometrics of *Cobbia macrodentata* sp. n. All measurements are in μm and in the form: mean \pm s.d. (range).

Parameter	Male		Female	Juvenile
	Holotype	Paratypes	Paratypes	Paratypes
n	–	8	10	2
L	1125	1222 \pm 56.2 (1125-1305)	1287 \pm 72.9 (1140-1420)	1110; 1310
a	45	54.7 \pm 5.5 (45-63.6)	44.5 \pm 6.1 (35.6-56.8)	39.6; 42.3
b	5.4	5.6 \pm 0.3 (5.3-6.1)	5.7 \pm 0.2 (5.2-6)	4.9; 5.8
c	8.3	9.5 \pm 0.6 (8.3-10.5)	8.3 \pm 1.0 (6.4-9.2)	8.9; 9.4
c'	5.4	6 \pm 0.8 (4.6-7.2)	9.3 \pm 0.7 (8.1-10.5)	6.6; 7.0
V	–	–	89.1 \pm 0.8 (87.6-90.5)	–
T	135	128 \pm 8.2 (120-145)	139 \pm 9.3 (120-150)	125
Length of labial papillae	8.8	8.5 \pm 0.7 (7-9.5)	9.1 \pm 1.2 (7-11.5)	7.5; 7.5
Length of short cephalic setae	9	8.9 \pm 0.7 (7.7-10)	9.3 \pm 0.8 (8-11)	not seen; 7.0
Length of long cephalic setae	27.8	27.5 \pm 1.6 (25-30)	29 \pm 1.7 (26-31.5)	26; 32.5
Amphid width	7.5	8.1 \pm 0.7 (7-9)	5.5 \pm 0.7 (4.5-6.5)	6; 6.5
Amphid length	7	7.4 \pm 0.9 (6-8.5)	4.8 \pm 0.5 (4-5.5)	5.5; 5.0
Body diam. at amphid level	20	20.7 \pm 1.0 (19-22.5)	21.3 \pm 1.0 (20-23.5)	21.5; 21.5
Cephalic diam./amphid diam. (%)	37.5	39.3 \pm 3.6 (31.8-45)	25.8 \pm 2.9 (21.4-29.5)	27.9; 30.2
Pharynx length	210	218 \pm 8.5 (200-230)	228 \pm 16.5 (190-250)	225; 225
Body diam. at pharynx base	22	20.9 \pm 1.4 (18-23)	24.3 \pm 2.4 (21-27)	22; 25
Max. body diam.	25	22.6 \pm 2.4 (18-25)	29.3 \pm 3.3 (25-35)	28; 31
Body diam. at level of cephalic setae	16	16.4 \pm 1.0 (14.5-18)	17.4 \pm 0.9 (16.5-19)	17.5; 19
Anterior end to anus/cloaca	990	1094 \pm 54.2 (990-1170)	1148 \pm 71.2 (1020-1285)	985; 1170
Anal/cloacal body diam.	25	21.8 \pm 2.1 (20-26)	21.6 \pm 3.1 (16-29)	19; 20
Anterior end to vulva	–	–	820 \pm 53.8 (730-935)	–
Spicule length (arc)	26	25.5 \pm 1.7 (22-27.7)	–	–

Table 2. (Continued).

Parameter	Male		Female	Juvenile
	Holotype	Paratypes	Paratypes	Paratypes
Spicule length as cloacal diam.	1	1.2 ± 0.1 (1-1.4)	–	–
Gubernaculum	8	8.6 ± 1.2 (7-11)	–	–
Gubernaculum length as cloacal diam.	0.3	0.4 ± 0.1 (0.3-0.5)	–	–

glands. Posterior branch of ovary not developed. Spermatheca large with an anterior and a posterior part. Thickening of musculature forming an ovjector and communicating with ovary. Ovary with large developing oocytes in growth zone and a very short germinal zone. Vagina anteriorly directed, not sclerotised.

TYPE HABITAT AND LOCALITY

Middle littoral zone, Fracaso beach, San José gulf, Argentina. Collected by C.T. Pastor de Ward, 16 June 2002.

TYPE MATERIAL

Holotype male (MACN-In 39291) and paratype female (MACN-In 39292) deposited in Museo Nacional de Ciencias Naturales ‘Bernardino Rivadavia’, Argentina. Two paratypes (one male and one female, CNP-NEM 1526 and CNP-NEM 1527) deposited in Centro Nacional Patagónico, Argentina. Other paratype specimens (seven males, eight females and two juveniles) deposited in the personal collection of C.T. Pastor de Ward.

DIAGNOSIS AND RELATIONSHIPS

Cobbia macrodentata sp. n. is characterised by having very long cephalic setae, the presence of teeth on the distal part of the gubernaculum and a conical tail.

It has the longest cephalic setae of all other known species and resembles *C. caledonia* Warwick & Platt, 1973, *C. dentata* Gerlach, 1953, *C. urinator* Wieser, 1959 and *C. trefusiaeformis* de Man, 1907, according to the key of Wieser (1959). The new species has a distally dentate vs simple gubernaculum in *C. caledonia* and *C. dentata*. *Cobbia macrodentata* sp. n. has a smaller body length, smaller ratio of spicule length to anal body diam. and shorter tail than *C. urinator* or *C. trefusiaeformis*.

The dorsal tooth is the most developed of the teeth comprising the buccal armature whereas in *C. triodonta* Filipjev, 1918 it is the least developed and the tail shape is conical shape vs filiform tail shape in *C. triodonta*. The new species has a gubernaculum lacking an apophysis and does not have cervical or somatic setae whereas *C. truncata* Wieser, 1959 has a gubernaculum with an apophysis and long and numerous cervical and somatic setae. From the recently described *C. sinica* Huang & Zhang, 2010, *C. macrodentata* sp. n. can be distinguished by having a cephalic setae configuration of six long and six short setae instead of six and four, and a gubernaculum lacking an apophysis vs present in *C. sinica*.

Even though *C. trefusiaeformis* may possess a different cephalic setae configuration according to de Man (1907), “Je croyais avoir vu que, chez la femelle, chacune des soies céphaliques était submédiane, accompagnée d’une autre plus courte, mais cette question reste incertaine”, here we consider a configuration of 6 + 4 + 2 for the key, based on the last description of the species (Warwick *et al.*, 1998). *Cobbia simplex* Allgén, 1929 was considered as *species inquirenda* by Wieser (1956) and *C. mawsoni* Cobb, 1930 and *C. scutata* Wieser, 1956 are herein considered as *species inquirendae* as they are known from only one and two female specimens, respectively.

Key, based on males, to all known species of *Cobbia*

1. Cephalic setae configuration of 6 + 4.....2
– Cephalic setae configuration of 6 + 4 + 2.....4
2. One large dorsal tooth and two small subventral teeth3
– Three similar subequal teeth
.....*C. triodonta* Filipjev, 1918

3. Amphid distance from anterior end >two cephalic diam. *C. caledonia* Warwick & Platt, 1973
– Amphid distance from anterior end <two cephalic diam. *C. sinica* Huang & Zhang, 2010
4. Gubernaculum with dorsal apophysis
..... *C. truncata* Wieser, 1959
– Gubernaculum without dorsal apophysis 5
5. Distal part of gubernaculum with teeth 6
– Distal part of gubernaculum without teeth
..... *C. dentata* Gerlach, 1953
6. Tail conical. *C. macrodentata* sp. n.
– Tail elongated, with flagelliform terminus 7
7. Flagelliform part of tail ca 75% of tail length
..... *C. trefusiaeformis* de Man, 1907
– Flagelliform part of tail ca 267% of tail length
..... *C. urinator* Wieser, 1959

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