

Two new species of Comesomatidae Filipjev, 1922 (Nematoda: Chromadorida) from sandy bottoms of Tenerife, Canary Islands

RODRIGO RIERA*, JORGE NÚÑEZ & MARÍA DEL CARMEN BRITO

*Benthos Laboratory, Department of Animal Biology, Faculty of Biology, University of La Laguna, 38206 La Laguna, Tenerife, Canary Islands, Spain. * corresponding author: rodrigo@cimacanarias.com*

Abstract

Two new species of Comesomatidae Filipjev, 1922 are described from sandy bottoms of Tenerife, Canary Islands. *Paracomesoma sigmoidalis* new species is characterized by having 35 precloacal supplements, S-shaped and slender spicules, and an elliptical plaque at the distal end of the gubernaculum. *Setosabatieria triangularis* new species is characterized by the number of turns (2.5) and development of the amphid (68% cbd), and a triangular gubernaculum.

Key words: Nematoda, Comesomatidae, *Paracomesoma*, *Setosabatieria*, free-living, soft-bottoms, Canary Islands, Tenerife

Introduction

The family Comesomatidae was erected by Filipjev (1922), and has the following features: annulated cuticle with transverse row of punctations; multispiral amphids, buccal cavity not folded anteriorly, gubernaculum with paired dorsal apophyses, precloacal supplements in males. Tail conico-cylindrical with a swollen tip. Males with two testes and females with two opposed and outstretched ovaries (Platt & Warwick, 1988).

During an ecological survey of the intertidal and shallow subtidal soft-bottoms of two stations in Tenerife, Canary Islands, two previously undescribed species belonging to the genera *Paracomesoma* Hope & Murphy, 1972 and *Setosabatieria* Platt, 1985 were recorded. The genus *Paracomesoma* belongs to the subfamily Comesomatinae, characterized by the presence of elongated spicules and the genus *Setosabatieria* belongs to the subfamily Sabatieriinae, characterized by the presence of short spicules and a buccal cavity not posteriorly expanded (Platt, 1985).

Material and methods

Samples were collected in the shallow subtidal, 3 m deep, sandy bottoms of Los Abrigos (SE Tenerife) and Los Cristianos (SW Tenerife). PVC cores of 4.5 cm inner diameter were taken to a depth of 30 cm in the sediment. These samples were fixed with 10% formaldehyde in seawater for one day and decanted through a sieve of 63 μm mesh size, and subsequently preserved in 70% ethanol. Specimens were mounted in glycerine gel and drawings of these were made using a camera lucida on a Leica DMLB microscope equipped with Nomarski interference contrast. All measurements are in micrometers and curved structures are measured along the arc.

Slides with type specimens of the new species are deposited in the collection of the Department of Animal Biology of the University of La Laguna (DBAULL) and in the Museum of Natural Sciences of Tenerife (TFMC).

Abbreviations used in the text are: a, body length divided by maximum body diameter; b, body length divided by pharyngeal length; c, body length divided by tail length; c', tail length divided by anal body diameter; cbd, corresponding body diameter; f, female; m, male; s', spicule length divided by anal body diameter; %V, position of vulva as a percentage of body length from anterior.

Results

Adenophorea Chitwood, 1933

Chromadorida Filipjev, 1929

Comesomatidae Filipjev, 1922

Genus *Paracomesoma* Hope & Murphy 1972

Type species. *Paracomesoma dubium* (Filipjev, 1918).

Cuticle with transverse striations or punctations, sometimes difficult to discern. Lateral differentiation lacking. Buccal cavity with three small triangular teeth. Spicules narrow and slender, not jointed. Gubernaculum small, sometimes inconspicuous, and without apophysis. Males with two opposed testes and females with two outstretched ovaries.

Up to now, the genus *Paracomesoma* comprises 6 species: *P. dubium* (Filipjev, 1918), *P. hexasetosum* (Chitwood, 1937), *P. inaequale* Jensen & Gerlach, 1977, *P. longispiculum* (Timm, 1961), *P. quadrisetosum* (Chitwood, 1937) and *P. siphon* (Gerlach, 1956).

***Paracomesoma sigmoidalis* sp. nov.**

(Figures 1, 2, Table 1)

Type locality. Los Abrigos beach (Tenerife, Canary Islands).

Type material. Holotype, adult male 2.6 mm long, mounted on a slide (coordinates 28°08'34''N/16°26'21''W; 3 m depth) [TFMCBMNA/00010]. Collected by R. Riera, May 2000. Allotype, adult female, 2.2 mm long, mounted on a slide (coordinates 28°02'59''N/16°42'55''W; 3 m depth) [DBAULL NE/TC7S11].

Paratypes. Adult male, 2.6 mm long, mounted on a slide (coordinates 28°08'34''N/16°26'21''W; 3 m depth) [DBAULL NE/TA11S11]. Collected by R. Riera, March 2000. Adult male, 2.3 mm long, mounted on a slide (coordinates 28°08'34''N/16°26'21''W; 3 m depth) [DBAULL NE/TAS12]. Additional specimens (two males and four females) in R. Riera collection.

Meristic data. Abrigos subtidal: May, 2 males (Holotype and m4), March, 1 male (m2), December, 1 male (m3) and 3 females (f3, f4 and f5); Cristianos subtidal: November, 1 female (Allotype), April, 1 female (f2).

Etymology. The specific name refers to the S-shaped spicules of this species.

Description.

Male: Body slender, attenuating towards both ends. Head slightly round and not set off. Cuticle smooth, without marked punctations nor lateral differentiation. Amphids are 50% of the corresponding body diameter in width, multispiral of 3.5 turns, located at 5 µm from the anterior end. Buccal cavity conical and small, with three small teeth, difficult to discern. Inner labial setae inconspicuous. 6 outer labial setae 0.3 cephalic diameters long and 4 cephalic setae 1.6 cephalic diameters long, situated at the median part of the head. Subcephalic setae 14 µm long, located at 28 µm from the anterior end. Pharynx slender and cylindrical. Ventral gland and nerve ring not seen.

The reproductive system is diorchic, with two opposed testes, difficult to discern. Spicules 3.6–5.2 anal diameters long, slender, S-shaped, without marked capitulum. Gubernaculum 0.8–0.9 anal diameters long, slender, proximally compressed. An elliptical plaque present at the distal end of the gubernaculum. 35 precloacal supplements, each penetrated by a duct; posteriormost precloacal supplement situated at 45 µm from the cloaca. Tail 2.4–4.4 anal diameters long, cylindrical and filiform in most of its length, with a swollen posterior tip. 2 subterminal setae 15 µm long, located at 5 µm from the posterior tip. Spinneret well developed.

Female: They are similar to males. Total body length slightly shorter than in males (1.7–2.3 mm). Tail longer than in males (5–6 anal diameters).

The reproductive system is didelphic, with two outstretched ovaries, almost inconspicuous. Vulva located in the posterior half of the body, at the level of 53.9–55.2% of the total body length.

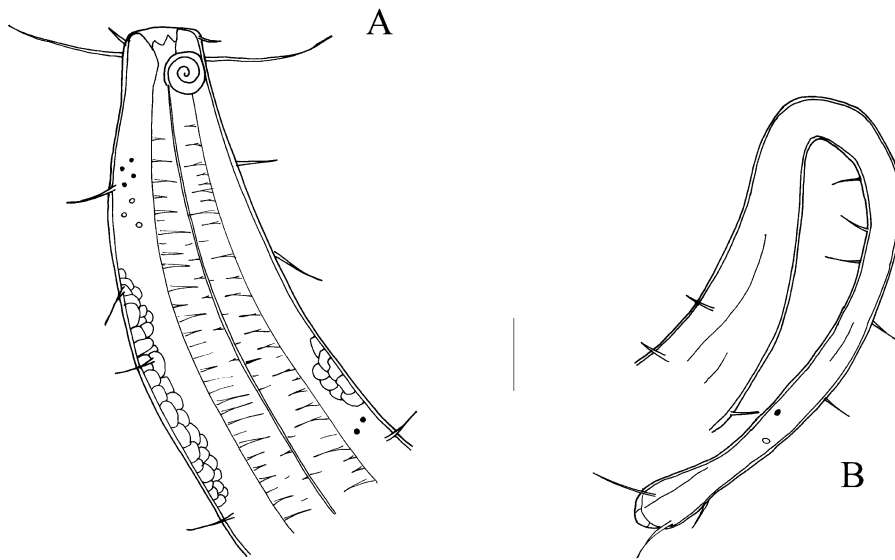


FIGURE 1. *Paracomesoma sigmoidalis* sp. nov. Holotype. A. Anterior end. B. Posterior end. Scale = 22 μm .

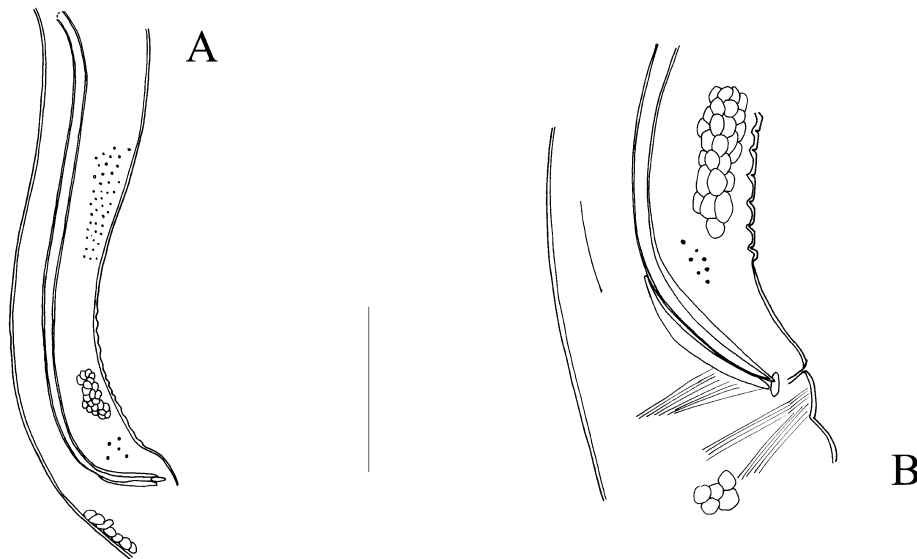


FIGURE 2. *Paracomesoma sigmoidalis* sp. nov. Holotype. A. Spicule. B. Distal end of the spicule, gubernaculum and precloacal supplements. Scale A = 75 μm , B = 50 μm .

Discussion. *Paracomesoma sigmoidalis* new species is closely related to *P. inaequale* Jensen & Gerlach, 1977, in general body shape, but the latter species differs in having a longer tail, 6.3–7.5 anal diameters in males and 8–9 anal diameters in females, and the

number of precloacal supplements (25–32 in *P. inaequale* and 35 in *P. sigmoidalis*). *P. siphon* (Gerlach, 1956) and *P. hexasetosum* (Chitwood, 1937) resemble *P. sigmoidalis* new species although they differ, like not as *P. inaequale*, in the presence of a larger tail and the number of precloacal supplements (30 in *P. siphon* and 40 or more in *P. hexasetosum*). Moreover, *P. siphon* has more developed amphids (80% cbd) and *P. sigmoidalis* new species can be distinguished from the latter two species by having subcephalic setae more anteriorly located.

TABLE 1. Measurements of *Paracomesomea sigmoidalis* sp. nov. in μm .

	Holotype m1	m2	m3	m4	Allotype f1	f2	f3	f4	f5
Total body length	2600	2657.1	2342.9	2485.7	1757.1	2000	2185.7	2314.3	1998.7
a	37.1	53.1	50.9	38.2	47.1	50	55.6	58.9	50.6
b	7.7	10.8	10.8	8.7	8.9	7.4	11.8	10.1	10.9
c	7.9	14.3	15	10.4	9.8	6.7	10.6	11.8	9.8
Cephalic diameter	22.1	21.4	22.6	21.7	11.4	12.5	14.3	14.3	12.9
Inner labial setae	-	-	-	-	-	-	-	-	-
Outer labial setae	7.1	6.9	8.1	7.5	7.1	10	8.6	8.6	9.2
Cephalic setae	34	39.3	35.7	30	25.7	31.4	31.4	34.6	28.9
Subcephalic setae	14.3	13	14.3	11.4	10	11.4	11	13	10
Buccal cavity diameter	8.6	10.7	14.3	8.6	7.1	7.1	5.7	5.7	7.2
Amphid diameter	8.6	14.3	12.9	12.9	7.1	10.0	8.6	11.4	7.1
Amphid height	11.4	21.4	14.3	12.9	7.1	11.4	10	12.9	7.1
Amphid from anterior	8.6	10	5.7	5.7	5.7	5.7	8.6	5.7	6.3
Pharynx length	335.7	246.4	217.9	285.7	196.4	271.4	185.7	228.6	183.9
Pharynx cbd	60.7	46.4	32.1	53.6	35.7	38.4	35.7	35.7	39.1
Maximum body diameter	70	50	46	65	37.3	40	39.3	39.3	39.5
Vulva from anterior					957.1	1104.5	1178.1	1256.7	1095.3
V%					54.5	55.2	53.9	54.3	54.8
Spicule length	253.6	164.3	185.7	271.4					
Gubernaculum length	53.6	58.7	52.9	56.4					
s'	0.8	0.9	0.8	0.9					
Tail length	185.7	156	328.6	239.3	178.6	300	207.1	196.4	204.6
Anal body diameter	66	65.7	67.9	60.7	35.7	50	35.7	39.3	39.4
c'	2.8	2.4	4.8	3.9	5	6	5.8	5	5.1
Spicule length/Tail length	0.9	1.2	0.8	1.1					

Ecology. This species was recorded in Los Abrigos subtidal from medium sands (280 µm, median particle size). The organic matter content was 0.78% and 5.47% carbonates. In Los Cristianos it was collected from fine sands (150–160 µm, median particle size). The organic matter content ranged from 0.006% to 0.53% and 19.32–22.56% carbonates.

Genus *Setosabatieria* Platt, 1985

Type species. *Setosabatieria hilarula* (De Man, 1922).

Cuticle smooth. Buccal cavity small, cup-shaped, without marked teeth. Rows of developed subcephalic setae. Gubernaculum with developed apophysis, dorsocaudally directed. Males with two opposed testes and females with two opposed and reflexed ovaries.

The genus *Setosabatieria* includes 3 species (Guo & Warwick, 2001): *S. fibulata* (Wieser, 1954), *S. hilarula* (De Man, 1922) and *S. jingjingae* Guo & Warwick, 2001.

Setosabatieria triangularis sp. nov.

(Figure 3, Table 2)

Type locality. Los Cristianos beach (Tenerife, Canary Islands).

Type material. Holotype. Adult male 1.7 mm long, mounted on a slide (coordinates 28°02'58"N/16°42'54"W; 3 m depth) [TFMCMNA/00011]. Collected by R. Riera, November 2000. Allotype, adult female, 2.1 mm long, mounted on a slide (coordinates 28°02'58"N/16°42'54"W; 3 m depth) [DBAULL NE/TC1S11]. Collected by R. Riera, May 2000.

Paratypes. Adult male, 2.4 mm long, mounted on a slide (coordinates 28°02'58"N/16°42'54"W; 3 m depth) [DBAULL NE/TC7S11]. Collected by R. Riera, November 2000. Collected by R. Riera, May 2000. Adult female, 1.6 mm long, mounted on a slide (coordinates 28°02'58"N/16°42'54"W; 3 m depth) [DBAULL NE/TC7S12]. Collected by R. Riera, November 2000.

Meristic data. Cristianos subtidal: May, 1 female (Allotype), November, 1 female (f2), 2 males (Holotype and m2).

Etymology. The specific name refers to the triangular gubernaculum of this species.

Description.

Male: Body slender, attenuating towards both ends. Head round and slightly set off. Cuticle with very fine transverse striations, sometimes inconspicuous in the posterior half. Amphids are 68% of the corresponding body diameter in width, consisting of 2.5 turns, located at 6 µm from the anterior end. Buccal cavity conical and small, without noticeable teeth. Inner labial setae lacking. Six outer labial setae 2 µm long and 4 cephalic setae 1.6

cephalic diameters long, situated on the anterior part of the head. Subcephalic setae 13 μm long, numerous, arranged in 6–9 rows and located at 21–60 μm from the anterior end. Pharynx narrow and cylindrical. Ventral gland and nerve ring not seen.

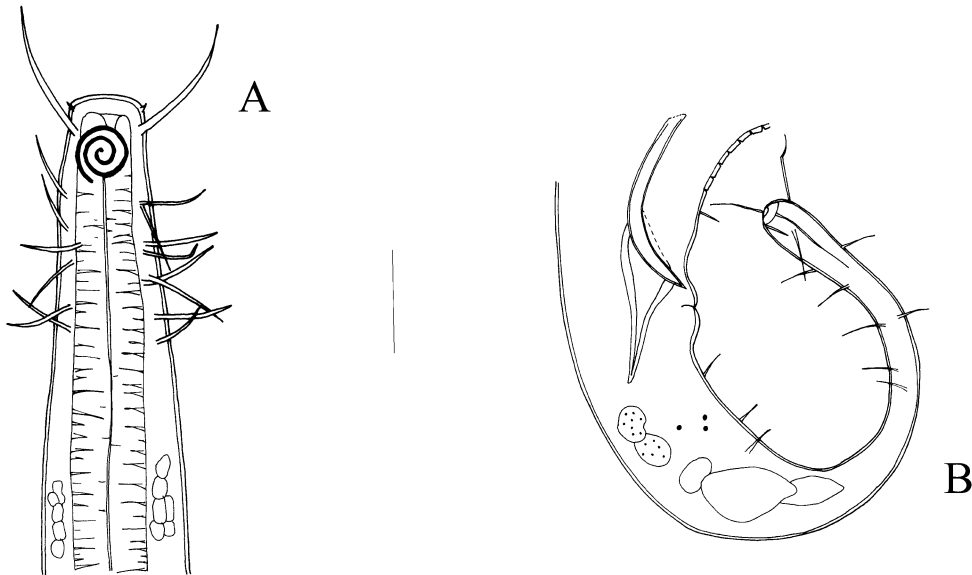


FIGURE 3. *Setosabatieria triangularis* sp. nov. Holotype. Male. A. Anterior end. B. Posterior end. Scale, A = 13 μm , B = 16 μm .

The reproductive system is dioecious, with two opposed testes, almost inconspicuous. Spicules 1.7 anal diameters long, paired, arcuated and without marked capitulum. Gubernaculum 0.75 anal diameters long, with slender apophysis and distally compressed. 15 precloacal supplements 3 μm wide, the posteriormost located at 21 μm from the cloaca. Precloacal seta 7 μm long, situated at 18 μm from the cloaca. Tail 5.3 anal diameters long, cylindrical and with slightly swollen posterior tip. Subterminal setae 17 μm long, located at 5 μm from the posterior end. Caudal setae 25 μm long. Spinneret conspicuous.

Female: They are similar to males. Tail length slightly shorter than in males (3.2–4.5 anal diameters). The reproductive system is didelphic, with two opposed and reflexed ovaries. Vulva located in the anterior half of the body, at the level of 45.7% of the total body length.

Discussion. *Setosabatieria triangularis* new species most closely resembles *S. fibulata* (Wieser, 1954) in the shape of copulatory apparatus, but *S. triangularis* new species differs in having amphids 2.5 turns, occupying 68% of the corresponding body diameter, while *S. fibulata* possess more developed amphids (90% cbd), with 4.25 turns. *S. triangularis* new species can be distinguished from the remaining species of the genus: *S. hilarula* (De Man, 1922) and *S. jingjingae* (Guo & Warwick, 2001) in the number of amphid turns (3.25 in *S.*

hilarula and 3.5 in *S. jingjingae*) and the size of the gubernaculum, very slender with a triangular apophysis in *S. triangularis* new species but narrower and slender in *S. hilarula* and *S. jingjingae*.

Ecology. This species was recorded in Los Cristianos subtidal from fine sands (150–180 µm, median particle size). The organic matter content ranged from 0.006% to 1.01% and 19.32–27.35% carbonates.

TABLE 2. Measurements of *Setosabatieria triangularis* sp. nov. in µm. nd, not discernible.

	Holotype	m2	f1	f2
Total body length	1700	2371.4	2100	1657.1
a	31.7	44.2	30.9	27.3
b	8.1	15.4	7.4	14.9
c	9.9	14.4	18.4	7.3
Cephalic diameter	17	18.6	22.9	38.6
Inner labial setae	-	-	-	-
Outer labial setae	7	6.7	5.7	5.7
Cephalic setae	27	20	21.4	25.4
Subcephalic setae	12.9	16	22.9	20
Buccal cavity diameter	5.7	6	6	5.2
Amphid diameter	12.9	11.4	11	11.4
Amphid height	14.3	11.4	11	11.4
Amphid from anterior	10	15.7	10	9.7
Pharynx length	210.7	153.6	282.1	110.7
Pharynx cbd	39.3	32.1	39.3	46.4
Maximum body diameter	53.6	53.6	67.9	60.7
Vulva from anterior			nd	757.9
% V			nd	45.7
Spicule length	54	38.6		
Gubernaculum length	35.7	33.9		
s´	1.7	1.2		
Tail length	171	164.3	114.3	225
Anal body diameter	32	31.8	35.7	50
c´	5.3	5.2	3.2	4.5
Spicule length/Tail length	0.3	0.2		

Acknowledgements

The first author (R.R.) thanks Dr. Paul Somerfield (Plymouth Marine Laboratory, UK) for taxonomic advice when beginning this research on free-living marine nematodes. We are also grateful to Dr. Magda Vincx and Tom Gheskiere (Department of Marine, University of Ghent, Belgium) for providing laboratory facilities and help in bibliographic search. Authors also acknowledge Dr. Catalina Pastor de Ward (Centro Nacional Patagónico, Argentina) for change of ideas and encouragement.

References

- Filipjev, I. (1922) Encore sur les Nématodes libres de la Mar Noire. *Trudy Stavropol. Sel. Khoz. Inst.*, 1, 83–184.
- Guo, Y.Q. & Warwick, R.M. (2001) Three new species of free-living nematodes from the Bohai Sea, China. *Journal of Natural History*, 35, 1575–1586
- Platt, H.M. (1985) The freeliving marine nematode genus *Sabatieria* (Nematoda: Comesomatidae). Taxonomic revision and pictorial keys. *Zoological Journal of the Linnean Society*, 83, 27–78.
- Platt, H.M. & Warwick, R.M. (1988) *Free living marine nematodes. Part II Chromadorids*. E.J. Brill, Leiden, 502 pp.