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Cienfuegia gen. nov. (Xyalidae) and *Pseudoterschellingia* gen. nov. (Linhomoeidae), two new genera of free-living marine nematodes from the Caribbean Sea

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Two new genera of nematodes are described from the Caribbean Sea. *Cienfuegia* gen. nov. belongs to the Xyalidae based on the position of the anterior gonad constantly left of the intestine, cuticle clearly striated, second and third circle of anterior sensilla inserted at the same level and buccal cavity surrounded by pharynx. The new genus is differentiated from other genera by the buccal cavity divided in two chambers and by the four cephalic setae being longer than the six outer labial setae. Within the Xyalidae, *Cienfuegia* shows most affinities with the genera *Daptonema* and *Theristus*. *Pseudoterschellingia* gen. nov. is placed within the Linhomoeidae on the basis of the presence of anterior rounded amphidial fovea, unarmed narrow buccal cavity, distinctive cardia and presence of apophysis of gubernaculum. *Pseudoterschellingia* is closely related to the genera *Terschellingia* and *Terschellingioides*, but is differentiated by the crypto-spiral amphidial fovea, and conical buccal cavity surrounded by pharyngeal tissue.

Keywords: taxonomy; new genus; new species; free-living marine nematodes; Caribbean Sea

Introduction

The order Monhysterida (Chromadoria, Nematoda) is characterized by the holapomorphy of outstretched ovaries. It includes three superfamilies and nine families of free-living aquatic nematodes, Monhysteroidea (Monhysteridae, Sphaerolaimidae, Xyalidae), Siphonolaimoidea (Siphonolaimidae, Linhomoeidae) and Axonolaimoidea (Axonolaimidae, Comesomatidae, Coninckiidae, Diplopeltidae) (Lorenzen 1994), most of them from marine habitats (Warwick et al. 1998). The order also contains some of the most specious and conflicting genera of free-living marine nematodes such as *Theristus* Bastian 1865, *Daptonema* Cobb 1920 and *Monhystera* Bastian 1865. The present study deals with two new genera, belonging to the families Xyalidae (superfamily Monhysteroidea) and Linhomoeidae (superfamily Siphonolaimoidea); both genera were collected from muddy subtidal sediments in Cienfuegos Bay (Cuba, Caribbean Sea).

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The family Xyalidae Chitwood, 1951 has been reviewed by Lorenzen (1977) and Nicholas and Trueman (2002). The taxonomic features that characterize the family according to Nicholas and Trueman (2002) are: cuticle annulated, six outer labial setae plus four cephalic setae arranged in one circle, and female with a single outstretched anterior ovary. In their cladistic analysis, Nicholas and Trueman (2002) recognized 33 genera within the family. The genus *Paramphimonhystrella* Huang and Zhang 2006 was added recently to the family. However, the taxonomy of the Xyalidae remains partially unresolved at species as well as genus level because several highly specious genera (e.g. *Daptonema* and *Theristus*) apparently show taxonomic inflation while other genera, such as *Dactylaimus* Cobb 1920, are doubtful.

The family Linhomoeidae, Filipjev 1922 was reviewed by Gerlach (1963) and since then no further revision has been carried out. According to Lorenzen (1994) the family comprises 22 valid genera belonging to three subfamilies and is characterized by high heterogeneity in morphological features. The following features are characteristic of the family (although exceptions for each of them are present as a rule): cuticle often striated, pattern of anterior sensilla 6+6+4 with second and third circle separated and rarely at the same level, amphidial fovea rounded (rarely cryptospiral), buccal cavity frequently with cuticularized tooth-like structures or arches, cardia well developed, females usually with two outstretched ovaries and males with two testes, with the position of anterior and posterior gonads opposite (i.e. anterior gonad to left and posterior to right side of intestine). The family Linhomoeidae has several conflicting taxonomic issues such as the unclear differentiation between the genera *Linhomoeus* Bastian 1865 and *Paralinhomoeus* de Man 1907, poorly described genera such as *Anticyathus* Cobb 1920 and *Prosphaerolaimus* Filipjev 1918, or genera described upon a single juvenile specimen such as *Perilinhomoeus* Schuurmans-Stekhoven 1950.

Material and methods

Samples of sediment were collected from Cienfuegos Bay, Cuba, Caribbean Sea (22°9′ N, 80°27′ W) in February 2006 using hand-held plastic cores by SCUBA divers. The Bay is characterized by a narrow entrance (i.e. it is a semi-enclosed bay), an area of around 90 km^2, with average depth of 14 m, and a predominance of muddy bottoms.

The collected samples of sediment were preserved in 8% hot formalin buffered with borax and processed in the laboratory. Samples were sieved over 500-μm and 63-μm mesh-size sieves and the latter fraction was collected. Sorting of nematodes from the sediment was carried out using a flotation technique with a high-density solution (1.16 $g\,cm^{-3}$, commercial sugar crystals dissolved in filtered tap water). The supernatant was preserved in 4% buffered formalin plus 1% alcoholic eosin for staining the animals. Nematodes were picked out under a stereomicroscope (56×), transferred to anhydrous glycerol and mounted on glass slides. Species were identified and described using a phase contrast microscope Leica DMR (maximum magnification 1000×) and a Reichert Polyvar microscope (highest magnification 1250×) both with drawing tubes. Measurements of straight and curved features were taken with a ruler and a curvimeter respectively with 1 μm of error at the highest magnification and around 60 μm of error for longer measurements such as body length.

The taxonomic classification by Lorenzen (1994) was followed at taxonomic levels above genus. The abbreviations used hereafter: abd, anal body diameter; amp.fov.d., distance from anterior border of amphidial fovea to anterior body end; amp.fov. Ø, diameter of amphidial fovea; ant., anterior; buc.cav., buccal cavity diameter; ceph.s., cephalic setae; V, distance between vulva and anterior body end as proportion of body length; S-E-pore, position of secretory/excretory pore as proportion of pharynx length from anterior end; gen.branch, length of genital branch in male or female; gubernac., gubernaculum; nerv.ring, position of nerve ring as proportion of pharynx length from anterior end; o.l.s., length of outer labial setae; pharyng., pharyngostom; post, posterior; spic.arc, length of spicules along the arc; spic.cord, length of spicules by the cord.

Results and discussion

Order **MONHYSTERIDA** Lorenzen, 1981
Superfamily **MONHYSTEROIDEA** de Man, 1876
Family **XYALIDAE** Chitwood, 1951
Genus ***Cienfuegia*** gen. nov.

Etymology

Refers to Cienfuegos Bay, Cuba, Caribbean Sea where the specimens were collected.

Diagnosis

Xyalidae. Cuticle coarsely striated. Head with six low lips, buccal cavity conical with two chambers marked by a constriction, without tooth or other cuticularized structures; inner labial sensilla not visible in light microscopy, six outer labial setae shorter than four cephalic setae, second and third circles of anterior sensilla at the same level or very close; amphidial fovea rounded, relatively small and positioned anteriorly in head region, at level of buccal cavity; cardia without pericardial cells. Female reproductive system with one outstretched anterior ovary; male reproductive system monorchic, i.e. with one outstretched anterior testis; gonads in both sexes at left of intestine; gubernaculum with well-developed dorsocaudal apophyses; tail with three caudal glands and without terminal setae at tail tip.

Type species

Cienfuegia cachoi gen. nov., sp. nov.

Discussion and relationships

Cienfuegia gen. nov. is classified within the family Xyalidae based upon the position of the anterior gonad constantly left of the intestine (holapomorphy for the family), cuticle striated, second and third circle of anterior sensilla inserted at the same level or very close, and buccal cavity surrounded by pharynx. *Cienfuegia* gen. nov. shows some affinities with the genera *Diplolaimella* Allgén 1929 and *Diplolaimelloides* Meyl 1954 (Monhysteridae) with the presence of a bipartite buccal cavity. However, in

Cienfuegia gen. nov. the two chambers are indicated only by a slight constriction and a change in orientation of their walls compared with two clearly differentiated chambers in the two other genera. *Cienfuegia* gen. nov. is characterized by the following characters: structure of buccal cavity, and four cephalic setae longer than the six outer labial setae. Nicholas and Trueman (2002) made a cladistic analysis of the family Xyalidae based on maximum parsimony, using eight species of Monhysteridae and four species of *Sphaerolaimus* (Sphaerolaimidae) as outgroups. The data matrix used is not based on any prior judgement as to which character states are primitive and which derived. Transformation series simply define separate observable conditions, only treated as an ordered series where a change implies that the lineage has passed through an intermediate condition. In the parsimony consensus tree the species of the Monhysteridae formed a separate paraphyletic group; the remaining species are divided into 14 groups, a few of them representing clades including the 'outgroup' *Sphaerolaimus* (hereafter we use the same labels that these authors used for the clades).

The genus *Cienfuegia* has affinities with the poorly defined groups B and C of Nicholas and Trueman (2002); group B includes several genera: *Daptonema* Cobb 1920 (partim), *Filipjeva* Ditlevsen 1928, *Paramonohystera* Steiner 1916 (partim), *Stylotheristus* Lorenzen 1977 and *Theristus* (*Penzancia*) Bastian 1865. Group C included other species of *Daptonema*, *Paramonohystera* and *Zygonemella* Cobb 1920. The shared features between *Cienfuegia* and the eight mentioned genera are mainly the six outer labial setiform sensilla, absence of additional cephalic setae (although they are present in *Stylotheristus* and in two species of *Theristus*: *T. manicatus* and *T. interstitialis*), a circular amphidial fovea, an unarmed buccal cavity, a conico-cylindrical tail, and a triangular cardia. An additional feature of *Cienfuegia* relates it to species belonging to the clade F [includes species of *Theristus* (*Theristus*) Bastian 1865 and the genera *Robustnema* Nicholas 1996 and *Echinotheristus* Thun and Riemann 1967]: absence of terminal setae on the tail, presence of dorsocaudal apophyses of gubernaculum.

The differentiation between the genera *Daptonema* and *Theristus* is problematic and mainly based on tail shape, presence of terminal setae and the structure of the male copulatory apparatus (see Wieser 1956). *Cienfuegia* gen. nov. possesses intermediate tail-related features: conico-cylindrical tail (as in *Daptonema*) without terminal setae (as in *Theristus*); the strong and cuticularized apophysis of the gubernaculum and the shape of spicules are close to those in several species of the subgenus *Theristus* (*Theristus*) although a few species of *Daptonema* also possess a well-developed gubernaculum apophysis (e.g. in *D. laxus* Wieser 1956, *D. setosum* Bütschli 1874). A summary of the main shared and differentiating features between *Cienfuegia* gen. nov. and related genera is present in Table 1.

Species ***Cienfuegia cachoi*** gen. nov., sp. nov.
(Figures 1 and 2; measurements in Table 2)

Material

One male holotype, 11 ♂, 8 ♀ and 5 juvenile paratype specimens. Holotype male, slide 412.D.3 deposited in the Department of Marine Collections, National

Table 1. Main shared and differentiating features between *Cienfuegia* gen. nov. and related genera within Xyalidae.

Feature	*Cienfuegia* gen. nov.	*Daptonema* Cobb 1920	*Filipjeva* Ditlevsen 1928	*Paramonohystera* Steiner 1916	*Stylotheristus* Lorenzen 1977	*Theristus* Bastian 1865	*Zygonemella* Cobb 1920
Six outer labial sensilla	setiform	setiform	setiform	setiform	setiform	setiform	setiform
Cephalic setae	four	four or six	four	four or six	six	four or six	four
Additional cephalic setae	no	no	no	no	yes	yes or no	no
Buccal cavity shape	unarmed and bipartite	unarmed and one chamber	unarmed and one chamber	unarmed and one chamber	unarmed and one chamber	unarmed and one chamber	unarmed and one chamber
Dorsocaudal apophysis	present	mostly absent	absent	absent	absent	present or absent	absent
Tail shape	conical cylindrical	conical cylindrical	conical cylindrical	conical cylindrical	conical cylindrical	conical	conical cylindrical
Terminal setae	absent	present	present	present	present	absent	present

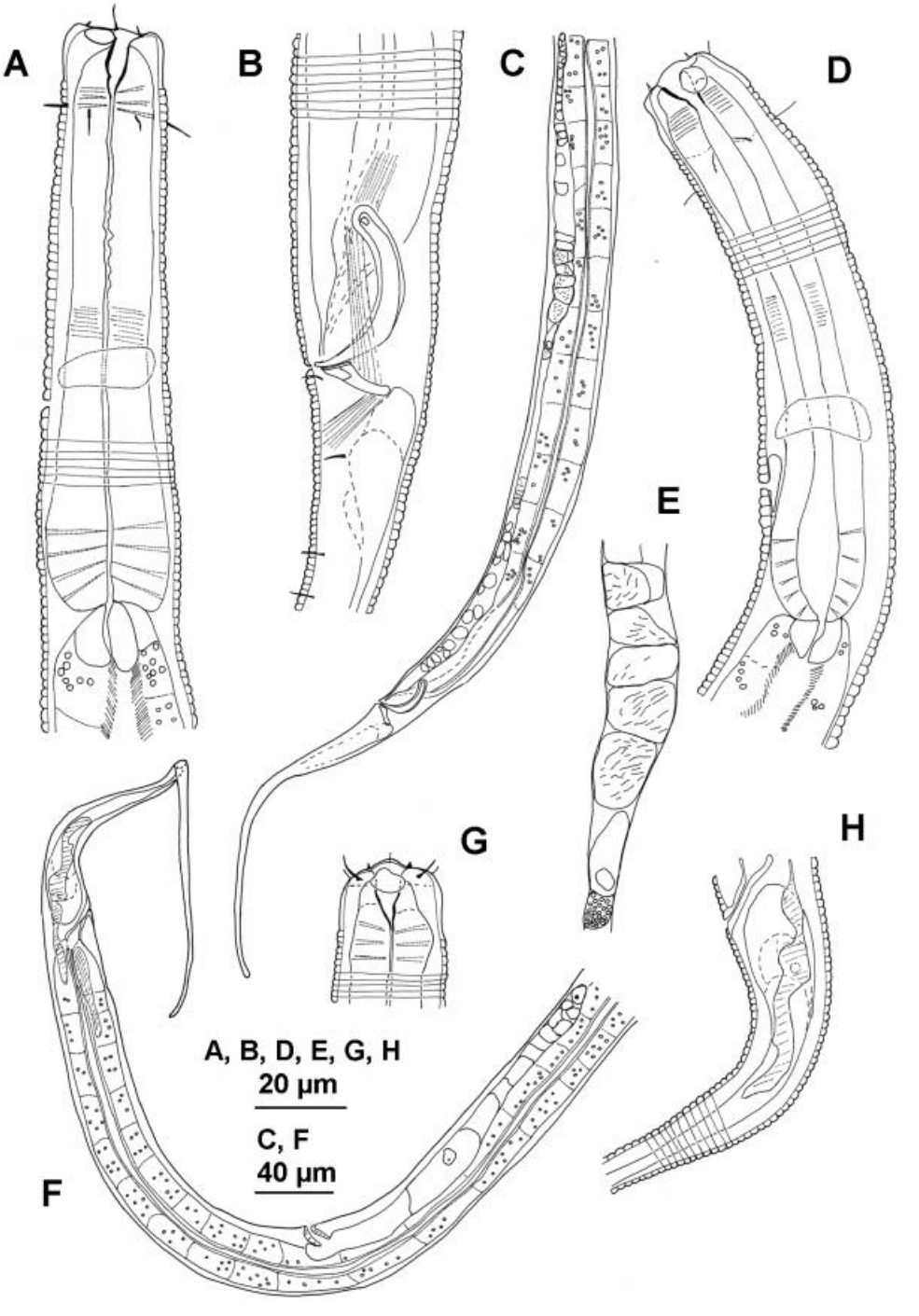

Figure 1. *Cienfuegia cachoi* gen. nov., sp. nov. (A) Pharynx, holotype, (B) spicular apparatus, (C) posterior part, male, (D) pharynx, female, (E) detail of sperm cells, (F) posterior part, female, (G) head, female, (H) detail of caudal and epidermic glands (stripped area), female. Position of cervical setae were showed in (A) and (D) even when they are not in the same optical section that internal structures.

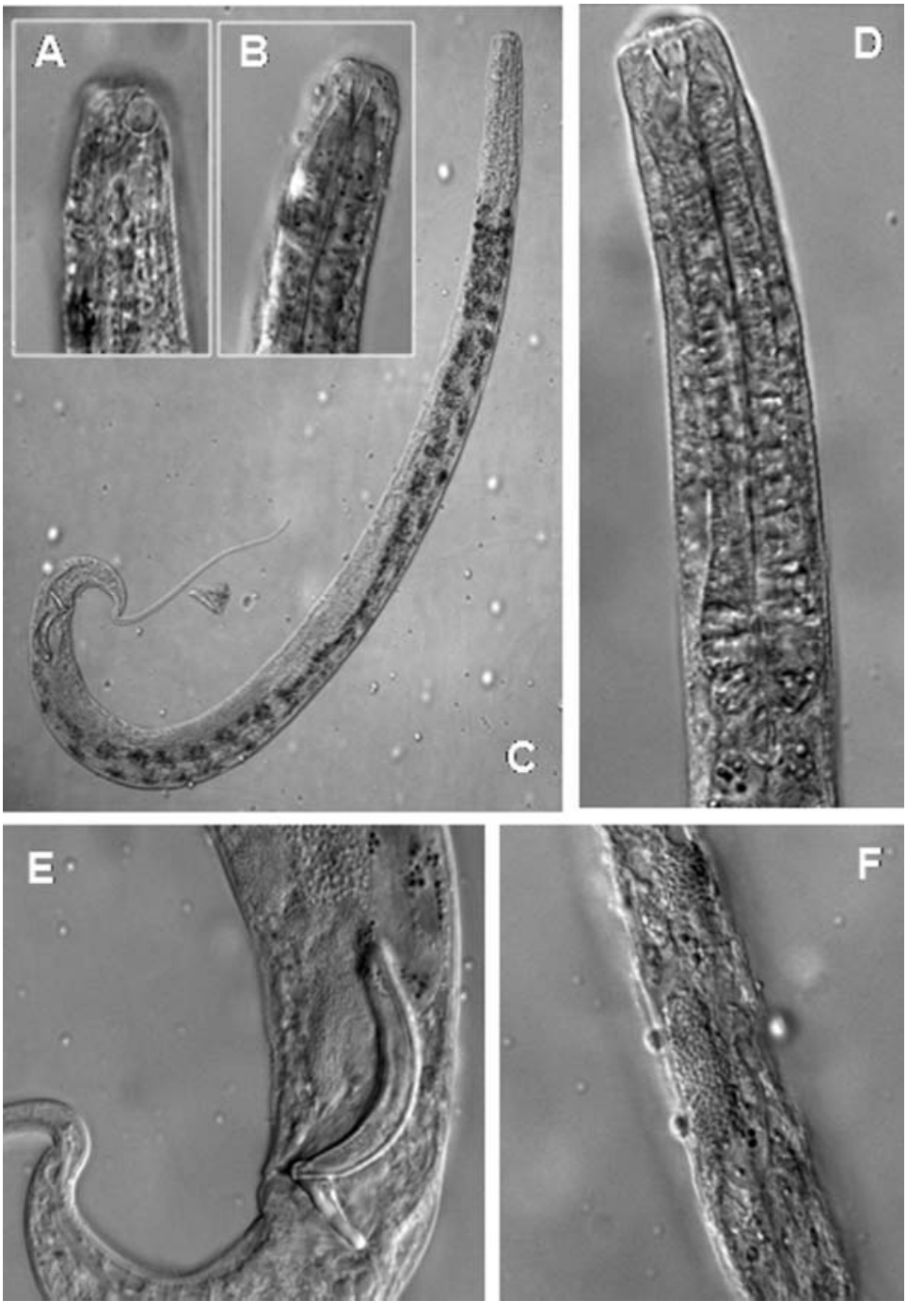

Figure 2. *Cienfuegia cachoi* gen. nov., sp. nov. (A) Amphidial fovea, (B) buccal cavity, (C) habitus, (D) pharynx, (E) spicular apparatus, (F) epidermic glands. All specimens are males.

Table 2. Morphometric features of *Cienfuegia cachoi* gen. nov., sp. nov.; mean values (range) are presented.

Feature	Males (n=12)	Females (n=8)	Juveniles (n=5)
Body length (µm)	1207 (1100–1313)	1219 (1100–1375)	1131 (1033–1233)
a	29.4 (22.7–40.3)	27.1 (17.2–38.5)	35.0 (25.2–40.5)
b	9.1 (7.0–10.0)	8.6 (6.8–10.9)	9.3 (8.7–9.5)
c	4.5 (3.9–6.6)	4.3 (3.5–5.5)	3.8 (3.5–4.1)
c′	8.5 (4.4–10.8)	10.5 (6.4–15.2)	12.4 (10.5–15.1)
head Ø (µm)	20 (13–29)	23 (17–31)	17 (13–20)
o.l.s. (µm)	3 (2–4)	3 (2–5)	2 (2–3)
ceph.s. (µm)	6 (4–7)	6 (4–7)	4 (3–5)
buc.cav. ant. (µm)	5 (3–7)	7 (5–10)	5 (3–6)
buc.cav. post. (µm)	3 (2–4)	3 (2–5)	2 (2–3)
cheilostom (µm)	4 (2–8)	5 (3–6)	3 (2–4)
pharyng. (µm)	11 (9–17)	11 (8–16)	10 (8–13)
amp.fov.d. (µm)	2 (0–7)	2 (0–5)	2
amp.fov. Ø (µm)	7 (5–8)	5 (4–6)	6 (5–7)
S-E-pore %	63 (60–66)	64 (60–70)	72 (70–74)
nerv.ring %	54 (43–61)	52 (45–61)	53 (47–58)
body Ø (µm)	43 (28–55)	49 (32–80)	33 (27–41)
V %		54 (50–62)	
gen.branch (µm)	511 (350–633)	251 (75–400)	
spic.arc (µm)	57 (50–94)		
spic.cord (µm)	43 (37–73)		
gubernac. (µm)	8 (7–12)		
apophysis (µm)	15 (12–21)		
abd (µm)	33 (27–45)	29 (23–39)	24 (20–28)
tail (µm)	274 (200–313)	286 (250–350)	298 (263–338)
tail conical %	48 (32–82)	53 (39–75)	39 (33–52)

Abbreviations are listed in the text.

Aquarium, Cuba (ANC). Male paratypes: slides RIT 746 and RIT 747, and female paratypes: slide RIT 748; deposited in the nematode collection of the Royal Belgian Institute of Natural Sciences (RBINS).

Type locality

Cienfuegos Bay, Cuba; 22°9′ N, 80°27′ W.

Type habitat

Muddy bottom, depth 4–12 m.

Etymology

Species named in honour of Raúl Fernández-Garcés "Cacho", senior technician of the Environmental Studies Center of Cienfuegos, Cuba.

Description

Body fusiform and slender, cuticle with coarse, transverse striations approximately 1 μm apart and without lateral differentiation. Six low lips may be retracted resulting in a different relative position of amphidial fovea and shape or anterior profile of head. Anterior sensilla arranged according to pattern 6+(6+4); inner labial sensilla not detectable under light microscope, six outer labial sensilla setiform but shorter than the four submedian cephalic setae; second and third circle of anterior sensilla at same level or very close. Cervical setae arranged in a circle of eight setae (5 μm long) in the anterior neck region of males and females; other somatic setae absent in females apart from a row of 5–10 setae (3–5 μm long) in ventral postanal region. Amphidial fovea rounded and flattened, shape influenced by the degree of retraction of anterior end. Buccal cavity narrow and conical with two chambers separated by a slight constriction. Pharynx muscular, surrounding the buccal cavity; anterior part often slightly swollen and posterior part also widened but without clear set-off bulb. Cardia narrow, enclosed by intestine and without pericardial cells. Three caudal glands, all located within tail and with common outlet and minute spinneret. Tail shape conico-cylindrical, the posterior cylindrical portion of variable length, tip rounded, without terminal setae. Continuous longitudinal bands of epidermic glands lateral, subventral (both sides) and dorsal; the grade of development depends on the specimen. The epidermal glands (where present) are clearly visible in the cardia and tail region, but not visible in the pharyngeal region.

Males monorchic, gonad left of the intestine. Spicules paired, curved, non-cephalated. Gubernaculum with well-developed dorsocaudal apophyses. Large sperm cells with fibrillar appearance present, arranged in a single row. Sperm cells were not considered a diagnostic feature in the cladistic analysis of the family Xyalidae but might appear of taxonomic significance in the future. This feature is present also in other monhysterids (e.g. *Terschellingia glabricutis*).

Females monodelphic, only anterior genital branch developed, at left of intestine and outstretched, vulva at mid-body (54%).

Diagnosis

Six outer labial setae shorter than four cephalic setae at the same level or very close, head profile can change in shape because of retraction/protrusion of labial region, pharynx without posterior set-off bulb, anterior part of the head–neck region with only a circle of eight cervical setae, spicules curved and shorter than 2 abd.

Remarks

Specimens show different degree of invagination of lip region and cheilostome, a feature also reported for *Daptonema invagiferous* Platt 1973. The retraction of the anterior end causes relatively high variability in the distance from the amphidial fovea to the anterior end (e.g. often anterior border of fovea located at level of anterior border of body), and change in shape of fovea and of the anterior profile of the head (e.g. from rounded with six clear low lips to flattened and squarish). Some specimens were observed with filiform tail (more than half of the total tail length filiform) while in others most of the tail is conical [cylindrical portion (filiform) 20%]. Apart from differences in tail shape no other morphological differences were

observed between these morphotypes which occurred sympatrically (i.e. in the same sampling station).

Superfamily **SIPHONOLAIMOIDEA** Filipjev 1918
Family **LINHOMOEIDAE** Filipjev 1922
Subfamily **DESMOLAIMINAE** Schneider 1926
Genus ***Pseudoterschellingia*** gen. nov.

Etymology

The genus closely resembles in morphological features the genera *Terschellingia* de Man 1888 and *Terschellingioides* Timm 1967 and therefore we propose the combination of pseudo (=false) and *Terschellingia*.

Diagnosis

Linhomoeidae. Cuticle transversely striated; amphidial fovea crypto-spiral with one loop, located relatively far anteriorly in the head region, buccal cavity narrow and conical, surrounded by pharyngeal tissue and without teeth or other cuticularized structures; pharynx with rounded muscular posterior bulb, cardia small, narrow triangular, surrounded by intestine and pericardial cells; males monorchic, spicules curved and strongly cuticularized; females monodelphic, ovary outstretched to the left of intestine; tail conico-cylindrical with spinneret and without terminal setae.

Type species

Pseudoterschellingia ibarrae gen. nov., sp. nov.

Discussion and relationships

Within the order Monhysterida, Lorenzen (1994) did not find any holapomorphy for the superfamily Siphonolaimoidea. Several features suggest that *P. ibarrae* belongs to this superfamily: (1) the monodelphic–prodelphic condition for females and the monorchic condition for males, (2) the existence of pharyngeal glands (visible in some specimens), (3) the presence of pharyngeal posterior bulb (difference with Monhysteroidea and Axonolaimoidea) , (4) intestinal turgent cells, (5) second and third circle of cephalic sensilla clearly separated (difference from most Monhysteroidea), and (6) absence of preanal papillae (difference from most Axonolaimoidea). The superfamily Siphonolaimoidea is composed of the families Siphonolaimidae and Linhomoeidae.

Pseudoterschellingia gen. nov. can be clearly differentiated from most genera within the Linhomoeidae by buccal cavity narrow and unarmed compared with a wider buccal cavity with the presence of some kind of sclerotized structures like teeth or arches; the crypto-spiral shape of amphidial fovea vs. circular; and the size and shape of cardia: small and triangular vs. well-developed and elongated . From the 22

valid genera within Linhomoeidae, *Pseudoterschellingia* gen. nov. shows the highest affinities with the genera *Terschellingia* de Man 1888 and *Terschellingioides* Timm 1967; shared and differentiating features are presented in Table 3.

Species ***Pseudoterschellingia ibarrae*** gen. nov., sp. nov.
(Figures 3, 4; measurements in Table 4)

Material

One male holotype, 7 male paratypes, 11 female paratypes, 6 juveniles. Holotype: male, 319.I.4, deposited in ANC. Paratypes: male, slide RIT 749; female, slide RIT 750; deposited in RBINS.

Type locality

Cienfuegos Bay, Cuba; 22°9′ N, 80°27′ W.

Type habitat

Muddy bottom, depth 4–14 m.

Etymology

In honour of Prof. Dr María Elena Ibarra, Emeritus Professor of University of Havana, and tireless driving force of marine research in Cuba.

Table 3. Main shared and differentiating features between the genera *Pseudoterschellingia* gen. nov., *Terschellingia* de Man 1888 and *Terschellingioides* Timm 1967.

Feature	*Pseudoterschellingia*	*Terschellingia*	*Terschellingioides*
Position of the amphidial fovea	forward	forward	forward
Gubernaculum	cuticularized with dorsocaudal apophysis	cuticularized with dorsocaudal apophysis	cuticularized with dorsocaudal apophysis
Buccal cavity shape	small and conical	very small and narrow or absent	relatively large and cylindrical walls
Pharyngostome	present	present or absent	absent
Shape of amphidial fovea	crypto-spiral	circular	crypto-spiral
Posterior pharyngeal bulb	enlarged	almost rounded or absent	almost rounded
Ventral gland position	far and posterior to cardia	immediately posterior to cardia	immediately posterior to cardia

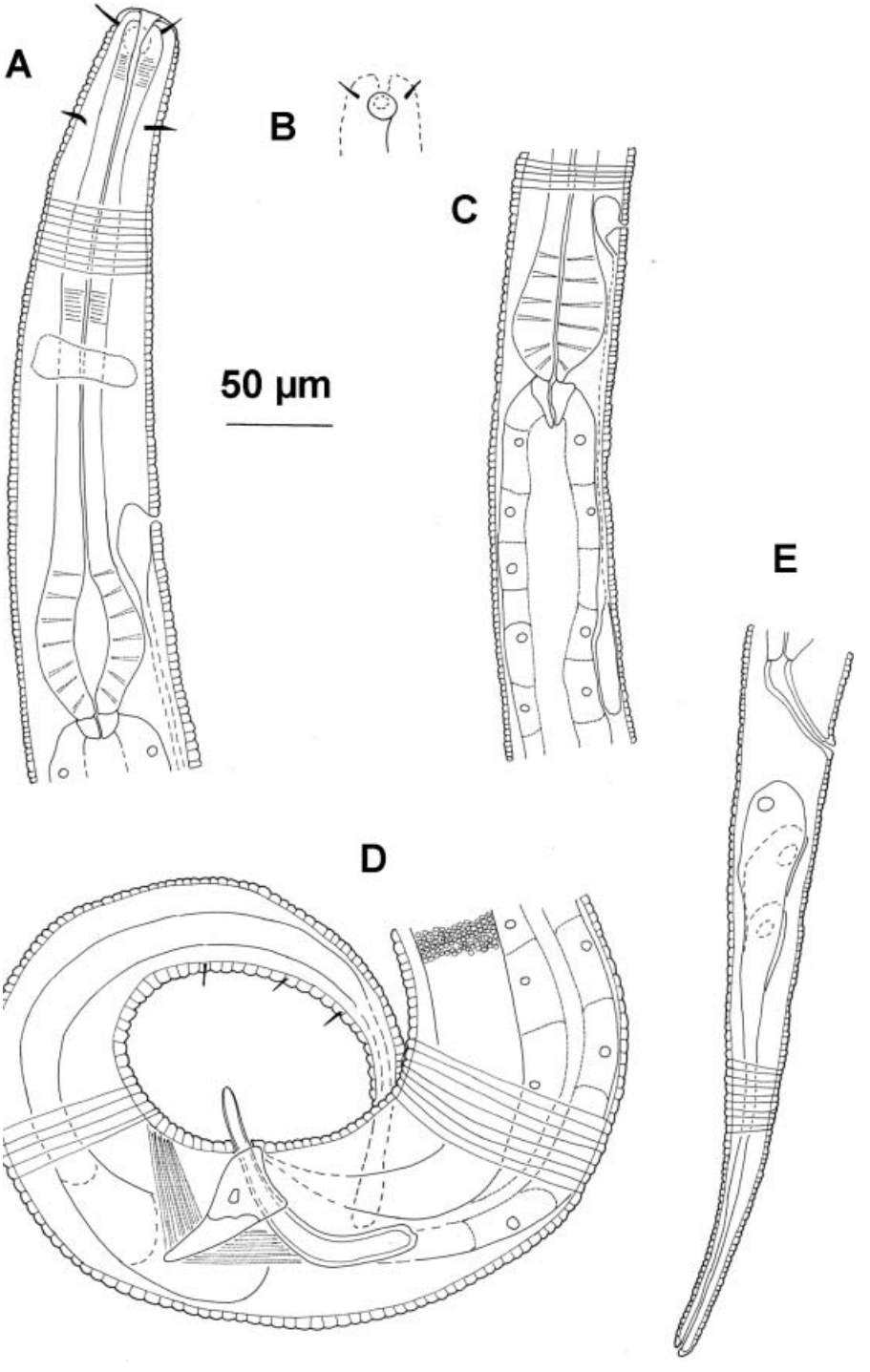

Figure 3. *Pseudoterschellingia ibarrae* gen. nov., sp. nov. (A) Pharynx, holotype, (B) detail of amphidial fovea, (C) pharyngeal bulb, ampulla and ventral gland, (D) spicular apparatus, (E) tail of a female.

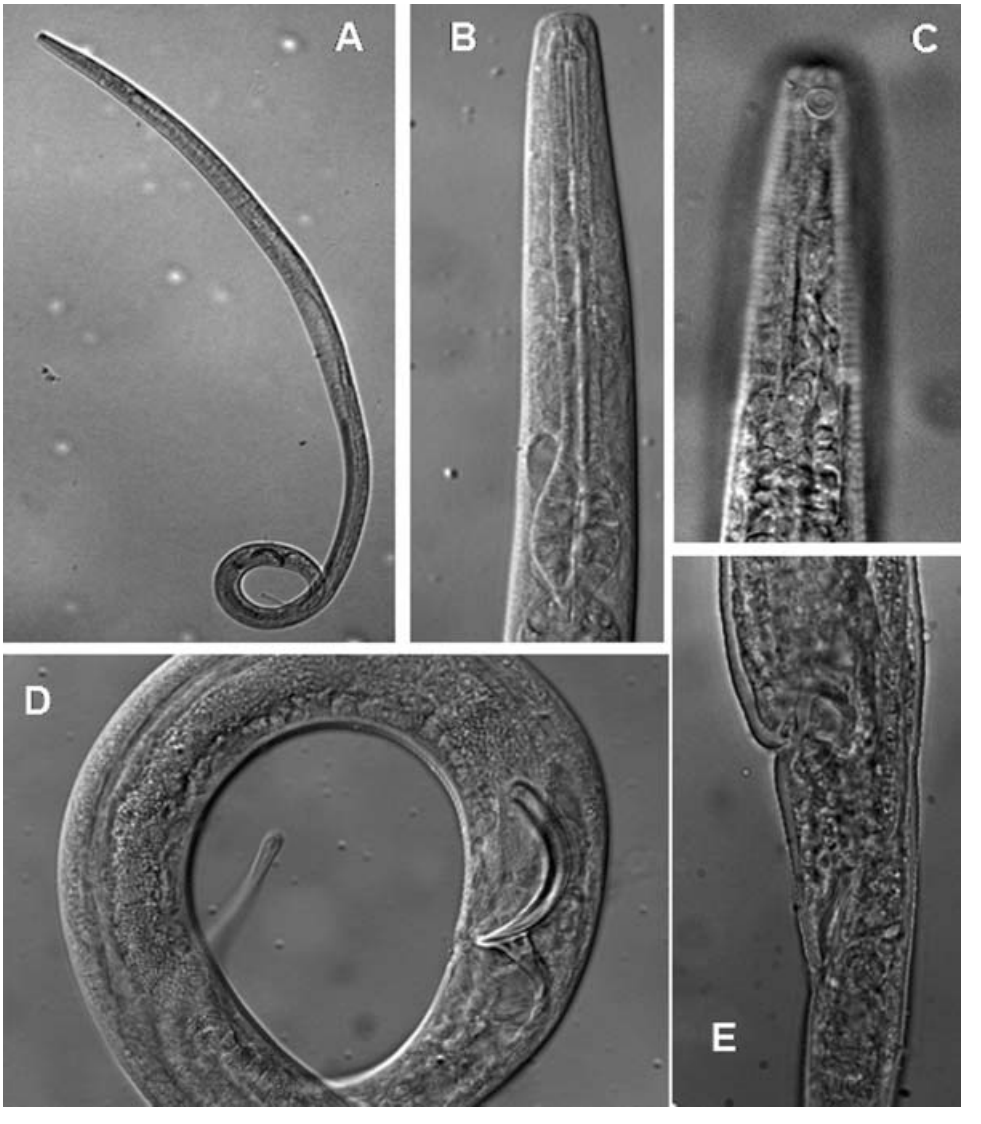

Figure 4. *Pseudoterschellingia ibarrae* gen. nov., sp. nov. (A) Habitus, (B) buccal cavity and pharynx, (C) amphidial fovea and cephalic setae, (D) spicular apparatus and tail, (E) vulva and anus. All specimens are males except in (E).

Description

Shape of body fusiform and slender; cuticle transversely striated; in some specimens transverse striae difficult to observe at mid-body region. Profile of head squarish; labial sensilla not observed in light microscopy, four submedian cephalic setae; four small submedian cervical setae far behind the amphidial fovea. A row of three to six ventral postanal somatic setae (3–6 μm) present; no other somatic setae could be detected. Amphidial fovea crypto-spiral (0.3–0.4 cbd), with one and a half turns; anterior border of fovea located to 0.6–1.0 fovea diameters from anterior body end.

Table 4. Morphometric features of *Pseudoterschellingia ibarrae* gen. nov., sp. nov.; mean values (range) are presented.

Feature	Males (n=8)	Females (n=11)	Juveniles (n=6)
Body length (μm)	1433 (1313–1625)	1323 (1125–1500)	1116 (933–1500)
a	48.1 (42.4–52.9)	39.2 (30.5–52.6)	44.2 (31.0–57.6)
b	11.3 (10.4–13.0)	10.7 (9.9–11.9)	9.1 (6.5–12.0)
c	8.7 (7.5–10.0)	9.5 (8.5–10.9)	8.8 (6–12)
c′	6.6 (5.1–8.8)	8.2 (6.6–9.4)	7.1 (6.2–7.8)
head Ø (μm)	12 (11–13)	11 (9–13)	11 (10–13)
ceph.s. (μm)	3 (2–4)	3 (2–4)	4 (3–4)
amp.fov.d. (μm)	4 (3–5)	4 (2–5)	3 (2–4)
amp.fov. Ø (μm)	4 (4–5)	4 (4–4)	4 (4–4)
S-E-pore %	76 (70–81)	74 (70–77)	76 (70–79)
nerv.ring %	52 (43–58)	44 (40–53)	53 (46–59)
body Ø (μm)	31 (26–38)	34 (26–43)	26 (22–30)
V %		86 (83–95)	
gen.branch (μm)	814 (688–938)	738 (500–875)	
spic.arc (μm)	51 (50–56)		
spic.cord (μm)	38 (37–41)		
gubernac. (μm)	12 (10–14)		
apophysis (μm)	19 (14–258)		
abd (μm)	27 (23–32)	17 (16–19)	16 (11–21)
tail (μm)	162 (151–183)	139 (125–151)	116 (69–123)

Abbreviations are listed in the text.

Cheilostome small (2 μm length), buccal cavity funnel-shaped, weakly cuticularized, without teeth or ring and surrounded by pharyngeal tissue. Small pigmented areas present on both sides of the body (ocelli?) in some specimens at level of cervical region (19–25 μm from anterior end). Pharynx relatively long and muscular; posterior pharyngeal bulb with widened lumen clearly set-off and enlarged. Small triangular cardia surrounded by intestinal tissue; no pericardial cells. Nerve ring at level of mid-portion of pharynx. Secretory–excretory pore just anterior to pharyngeal bulb. Ventral gland cell along anterior part of intestine, relatively far from cardia. Tail conical over more than two-thirds of its length; the last portion relatively cylindrical and "clavated", with small spinneret. Three caudal glands with a common duct restricted to the tail.

Males monorchic; spicules paired, curved, non-cephalated and relatively simple in structure, Gubernaculum with strongly cuticularized dorsocaudal apophyses.

Females monodelphic–didelphic with ovary outstretched. Vulva notably rear in the body and conspicuous, very close to the anus.

Diagnosis

In addition to generic features, the features that characterized the new species are the following: only four submedian cephalic setae visible in light microscopy, four submedian cervical short setae, absence of precloacal supplements, the relatively simple and curved spicules and largest portion of the tail conical.

Remarks

Pseudoterschellingia ibarrae is the type species of the monospecific genus *Pseudoterschellingia*. Like other genera of monhysterids (including *Terschellingia* and *Terschellingioides*) the new species appears to be characteristic of muddy hypoxic substrates. The coiling of the posterior part of the body and the presence of the green intestinal globules were common in the specimens studied; globules were reported also for *Terschellingioides filiforme* Timm 1967 and found by us in several putative deposit-feeding species from Cienfuegos Bay.

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References

Gerlach SA. 1963. Über freilebende meeresnematoden revision der Linhomoheidae. Zool Jb Syst Bd. 90:599–658.

Lorenzen S. 1977. Revision der Xyalidae (freilebende Nematoden) auf der Grundlage einer kritischen Analyse von 56 Arten aus Nord - und Ostsse. Veröff Inst Meeresforsch Bremerh. 16:197–261.

Lorenzen S. 1994. The phylogenetic systematics of freeliving nematodes. London (UK): The Ray Society. 383 p.

Nicholas LW, Trueman JWH. 2002. The taxonomy of the family Xyalidae Chitwood, 1951 (Monhysterida: Nematoda): a cladistic analysis. Nematology. 4(4):453–470.

Warwick RM, Platt HM, Somerfield PJ. 1998. Free-living marine nematodes. Part III. Monhysterids. Shrewsbury (UK): The Linnean Society of London and The Estuarine and Coastal Sciences Association. 296 p.

Wieser W. 1956. Free living marine nematodes. III. Axonolaimoidea and Monhysteroidea. Reports of the Lund University Chile Expedition 1948–49. Acta Univ Lund (N F 2) 52:1–115.