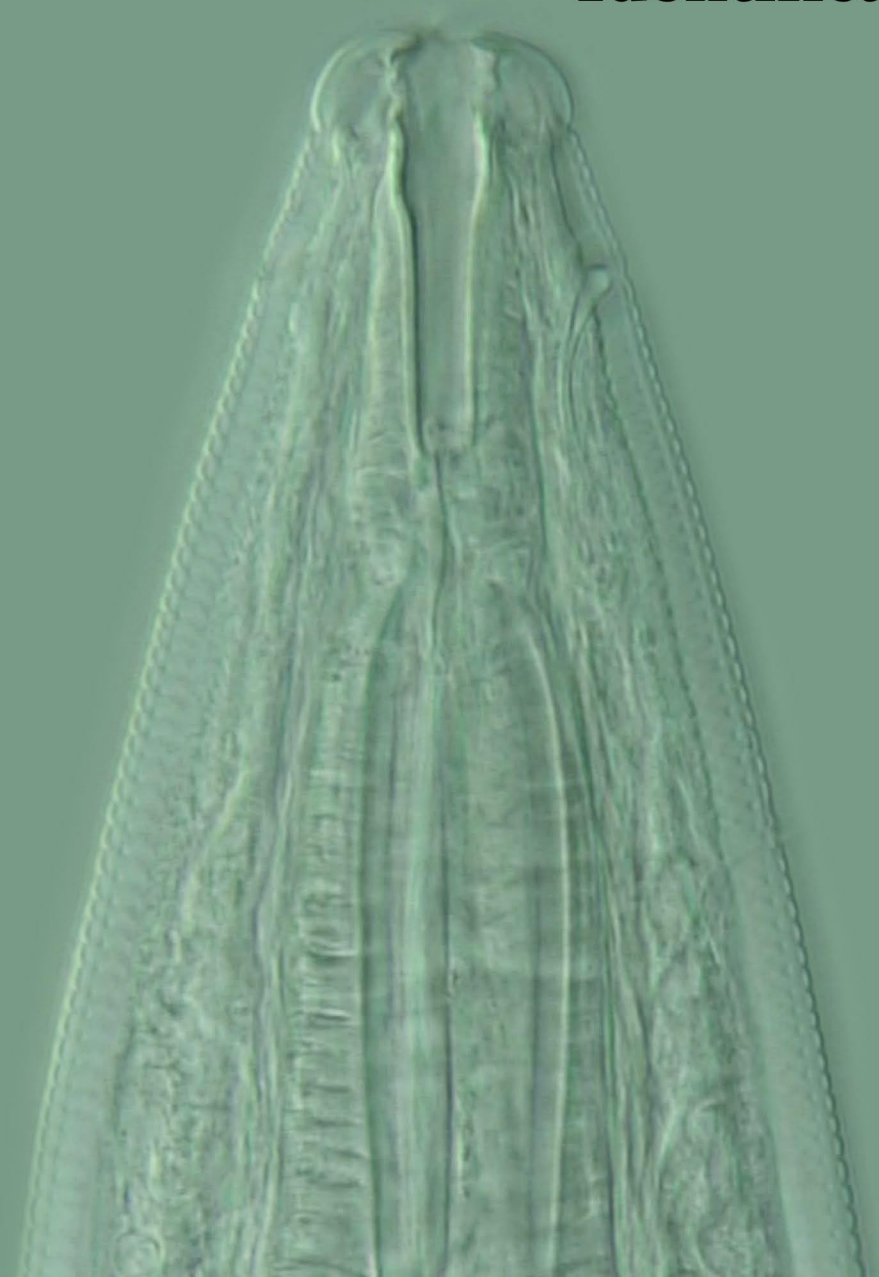
Identification of Plectida (Nematoda)



Manual prepared by

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Identification of Plectida (Nematoda)

Oleksandr Holovachov & Sven Boström

EUMAINE, Gent / Nematology, UC Riverside

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Foreword

This manual is intended to assist students of "European Master of Science in Nematology" (EUMAINE) and every other enthusiastic nematologist in the identification of Plectida – nematodes found in marine sediments, fresh waters, and a variety of terrestrial habitats. It is composed of four parts: classification of Plectida (**page 4**) short introduction to morphology of Plectida (**pages 5-7**), dichotomous key to genera (**pages 8-11**) and standardized descriptions of all 43 valid genera of this order (**pages 12-97**). It is assumed that students already have good knowledge of the nematode morphology before they start to identify plectids and, hence, the introduction into morphology here should be considered as just a reminder. It is focused strictly on the morphological peculiarities of Plectida and specialized terminology. The dichotomous key should be used with care as none of the keys can be perfect. It is recommended that every identified specimen should be compared with the descriptions in the third part of the manual and relevant publications. Each genus description is standardized and fully compatible with every other in this manual. It includes line drawings of one representative species (in many cases it is the type species of the genus), most distinct diagnostic characters are highlighted and also some relevant publications are included: the most recent revisions of the genus, keys to species, references, etc.

Warnings

1) Genera in the manual are not listed alphabetically, but grouped by their phylogenetic affinities, see classification on the next page. Several genera are considered dubious or of uncertain systematic status and are not included in this manual. They are: *Anthonema*, *Neurella*, *Camacolaimoides*, *Donsinemella* and *Prodomorganus*. The families Ceramonematidae, Tarvaiidae, Diplopeltoididae, Tubolaimoididae, Paramicrolaimidae, Haliplectidae and Aulolaimidae are not covered in this manual (see below).
2) In case You find a plectid that does not fit any of the genus descriptions in this manual, please contact O. Holovachov (holovachov@gmail.com) for consultation. You may indeed **find a new genus** which is great, or ... the fixation and preparation of the specimen might have altered morphology to a state that it is no longer recognizable.
3) Juvenile stages of wilsonematids differ significantly from adult morphology, while in other genera diagnostic characters are parts of male or female reproductive systems. This makes identification of developmental stages in plectids difficult in many cases. Therefore, juvenile stages are not considered in this manual.

Acknowledgements

This manual was prepared as a part of an award of an Erasmus Mundus Scholarship to Oleksandr Holovachov for research and teaching within the scope of "Erasmus Mundus Masters Course EUMAINE – European Master of Science in Nematology".

Classification used in this manual

Classification used in this manual is based on the book *Freshwater Nematodes: Ecology and Taxonomy* (Holovachov & De Ley, 2006) with modifications and improvements based on the most current published and unpublished data on the molecular phylogeny of Plectida. Every one of the available publications on molecular phylogeny of nematodes indicate that the order Plectida is a polyphyletic assemblage of distantly related taxa. For example Holterman *et al*. (2006, 2008) showed that both genera *Haliplectus* and *Aulolaimus* are not related to the rest of Plectida analysed so far. Further studies showed also that the genera *Ceramonema* and *Tarvaia* are not related to Plectida (Holovachov *et al*., 2009; unpublished data). Both cases are also supported by morphological observations. Therefore, we limit this manual only to the genera of Plectida *sensu stricto* and follow the classification outlined below:

Uncertain position
- *Alaimella*
- *Setostephanolaimus*
- *Stephanolaimus*

Family Ohridiidae
- *Domorganus*

Family Aphanolaimidae
- *Aphanolaimus*
- *Paraphanolaimus*
- *Aphanonchus*
- *Anonchus*

Family Leptolaimidae
- *Leptolaimus*
- *Anomonema*
- *Antomicron*
- *Leptolaimoides*
- *Leptoplectonema*
- *Manunema*
- *Paraplectonema*

Family Rhadinematidae
- *Cricolaimus*
- *Rhadinema*

Family Camacolaimidae
- *Camacolaimus*
- *Anguinoides*
- *Dagda*
- *Deontolaimus*
- *Diodontolaimus*
- *Ionema*
- *Listia*
- *Onchiolistia*
- *Onchium*
- *Procamacolaimus*
- *Smithsoninema*

Family Chronogastridae
- *Chronogaster*
- *Caribplectus*
- *Cynura*

Family Plectidae
- *Pakira*
- *Hemiplectus*
- *Anaplectus*
- *Arctiplectus*
- *Perioplectus*
- *Plectus*
- *Ereptonema*
- *Neotylocephalus*
- *Wilsonema*
- *Tylocephalus*

Family Metateratocephalidae
- *Metateratocephalus*
- *Euteratocephalus*

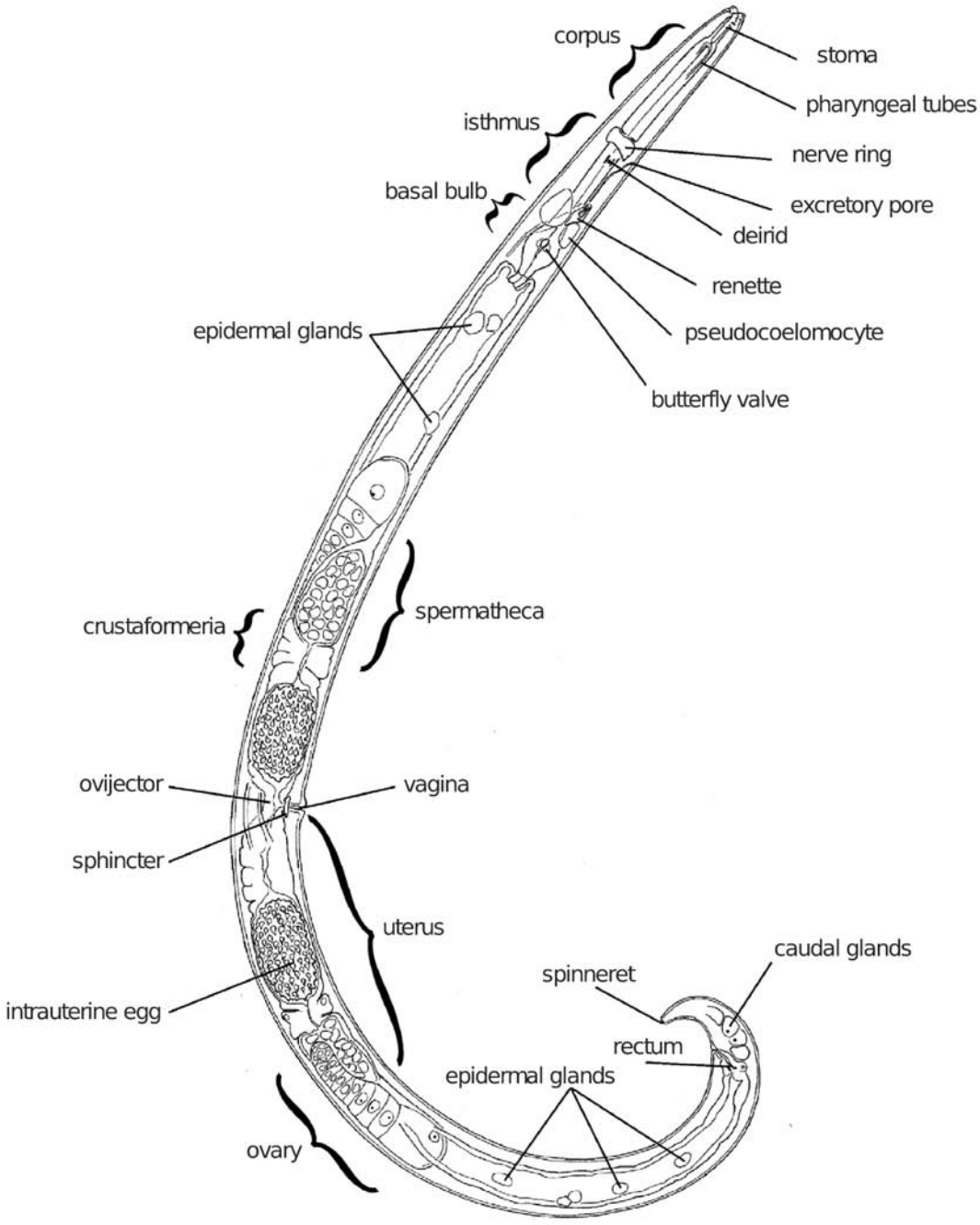
Holovachov, O., Boström, S., Mundo-Ocampo, M., Tandingan De Ley, I., Yoder, M., Burr, A.H.J. & De Ley, P. (2009). Morphology, molecular characterisation and systematic position of *Hemiplectus muscorum* Zell, 1991 (Nematoda: Plectida). *Nematology* 11: 719-737.

Holovachov, O. & De Ley, P. (2006). Order Plectida. In: Abebe, E., Traunspurger, W. & Andrássy, I. (Eds). *Freshwater Nematodes: Ecology and Taxonomy*. CAB International. Wallingford UK. pp. 611-647.

Holterman, M., Holovachov, O., van den Elsen, S., van Megen, H., Bongers, T., Bakker, J. & Helder, J. (2008). Small subunit ribosomal DNA-based phylogeny of basal Chromadoria (Nematoda) suggests that transitions from marine to terrestrial habitats (and vice versa) require relatively simple adaptations. *Molecular Phylogenetics and Evolution* 48: 758-763.

Holterman, M., van der Wurff, A., van den Elsen, S., van Megen, H., Bongers, T., Holovachov, O., Bakker, J. & Helder, J. (2006). Phylum-wide analysis of SSU rDNA reveals deep phylogenetic relationships among nematodes and accelerated evolution towards crown clades. *Molecular Biology and Evolution* 23: 1792-1800.

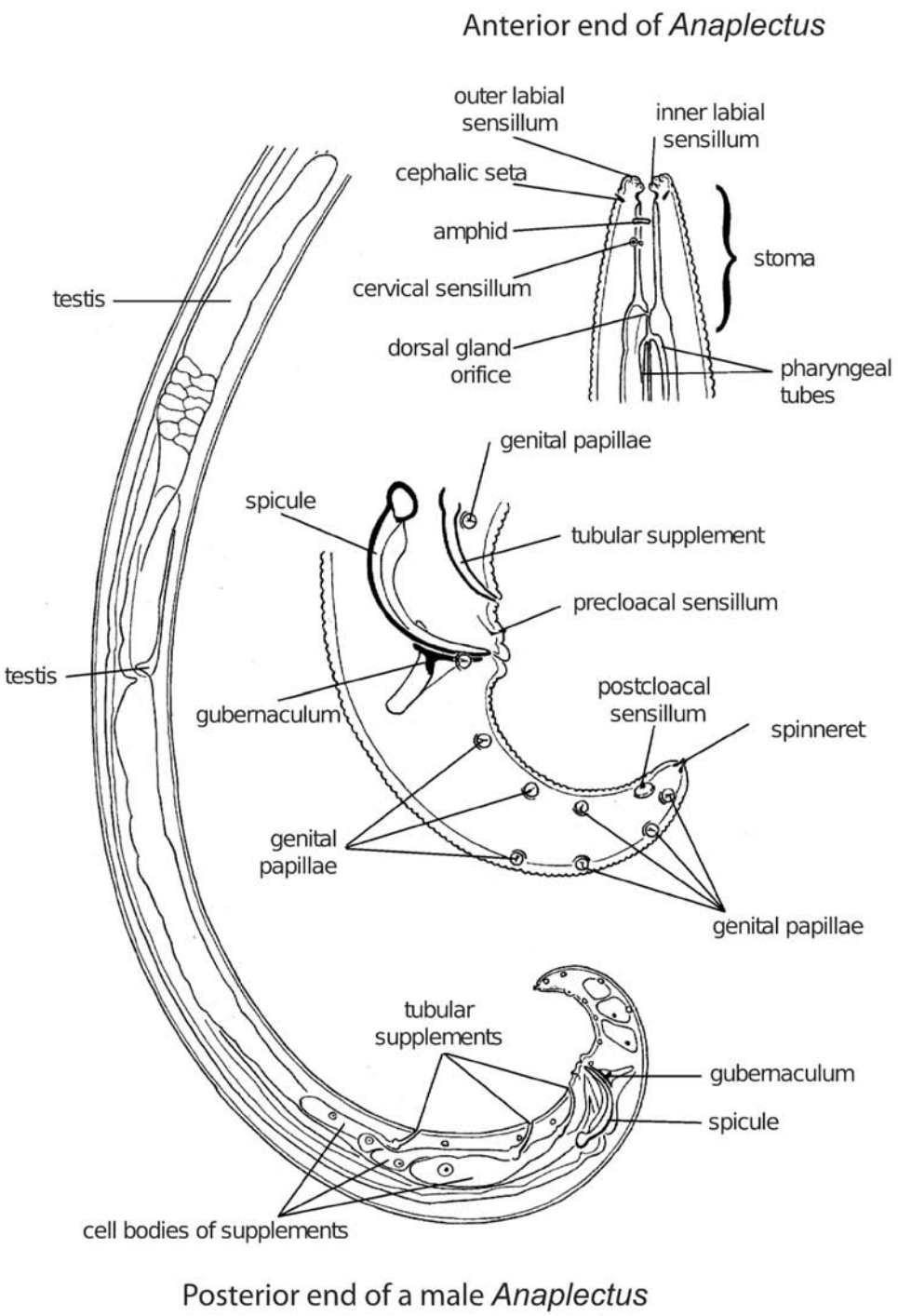
General terminology for the main parts and organs



Female *Anaplectus*

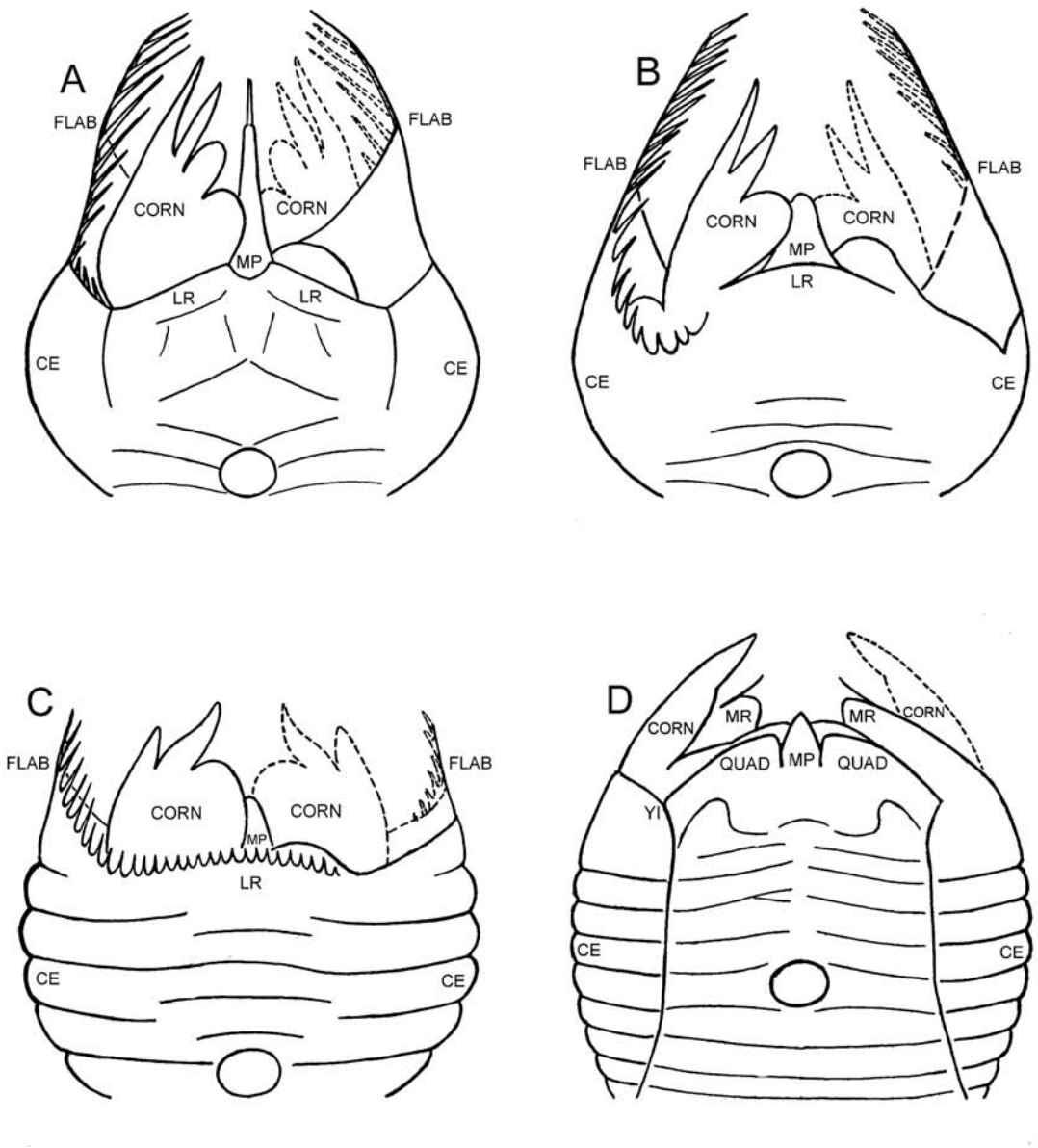
Original image by O. Holovachov

General terminology for the main parts and organs



Original image by O. Holovachov

General terminology for lip region in wilsonematids



Genera: *Wilsonema* (A), *Neotylocephalus* (B), *Ereptonema* (C) and *Tylocephalus* (D)

Cornua and flabellae drawn on the right half of each figure are those on the body side not facing the viewer.

CE – cervical expansion	CORN – cornu	FLAB – flabellum
LR – lateral rim	MP – midlateral projection	MR – median ridge
QUAD – quadrant	RR – radial ridge	YI – Y-shaped incisure

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Key to genera

1. Pharynx with median and basal swellings; excretory pore is located posterior to cardia; male with single precloacal papilliform sensillum …..... ***Domorganus*** (p. 19)
– Pharynx cylindrical or with basal bulb; excretory pore is located near nerve ring level, or between lips, or in cheilostom 2

2. Pharynx uniformly cylindrical, without any subdivisions; uniformly muscular or with glandular basal part 3
– Pharynx subdivided into corpus, isthmus and basal bulb by discontinuities in muscular tissue; basal bulb often with thickened lumen or with valves 20

3. Excretory pore opens at level of nerve ring; both testes equally developed 4
– Excretory pore opens inside the cheilostom; anterior testis non-functional 17

4. Amphid in shape of transverse slit; stoma funnel-shaped, without buccal armament 5
– Amphid unispiral; stoma with buccal armament (projections, teeth or denticles) 6
– Amphid unispiral; stoma undeveloped; only posterior ovary developed ..... ***Alaimella*** (p. 13)

5. Outer labial sensilla papilliform (4 setae on anterior end) ..... ***Stephanolaimus*** (p. 17)
– Outer labial sensilla setiform (6+4 setae on anterior end) ..... ***Setostephanolaimus*** (p. 15)

6. Stoma consist of sclerotized ring with two or six forwardly directed projections 7
– Stoma without sclerotized ring, but with teeth or denticles 8

7. Amphid circular ..... ***Rhadinema*** (p. 45)
– Amphid loop-shaped ..... ***Cricolaimus*** (p. 43)

8. Males without apparent precloacal, ventromedian supplements 9
– Males with tubular, and sometimes alveolar precloacal, ventromedian supplements 12
– Males with only alveolar, precloacal, ventromedian supplements ..... ***Deontolaimus*** (p. 53)

9. Female stout and spindle-shaped, male thin and attenuated ..... ***Smithsoninema*** (p. 67)
Female and male similar in size and proportions 10

10. Ocelli absent, posterior part of pharynx with weak musculature ..... ***Camacolaimus*** (p. 47)
– Ocelli present, pharynx glandular at posterior end and without musculature 11

11. Buccal armament absent ..... ***Ionema*** (p. 57)
– Buccal armament in shape of onchiostyle ..... ***Onchium*** (p. 63)

12. Male with tubular and alveolar precloacal, ventromedian supplements 13
– Male only with tubular precloacal ventromedian supplements 14

13. Buccal armament in shape of dorsal onchiostyle ..... ***Onchiolistia*** (p. 61)
– Buccal armament absent ..... ***Listia*** (p. 59)

14. Labial odontia present 15
– Onchiostyle present 16

15. Single odontium present on dorsal and each subventral labial wall ..... ***Dagda*** (p. 51)
– Single odontium present on each subventral labial wall ..... ***Diodontolaimus*** (p. 55)

16. Lateral alae absent; pharynx uniformly muscular ..... ***Procamacolaimus*** (p. 65)
– Lateral alae present; basal part of pharynx glandular ..... ***Anguinoides*** (p. 49)

17. Amphid unispiral, with or without central elevation; stoma cylindrical, small and narrow 18
– Amphid with oval aperture and larger subcuticular fovea; stoma large and broad;
cheilostom with six digitate projections ..... ***Anonchus*** (p. 27)

18. Cheilostom is surrounded by peristomatal vestibulum;
alveolar supplements usually present in male ..... ***Aphanonchus*** (p. 25)
– Cheilostom narrow undifferentiated, peristomatal vestibulum absent;
alveolar supplements absent 19

19. Gymnostom broad cylindrical, barrel-shaped;
amphid without prominent central elevation ..... ***Paraphanolaimus*** (p. 23)
– Gymnostom short and narrow, with granule-shaped rhabdia; when gymnostom is barrel-shaped
then amphid with prominent central elevation ..... ***Aphanolaimus*** (p. 21)

20. Excretory duct long and cuticularised; basal bulb (when present) often with a valve;
stoma funnel-shaped, subdivided into cheilo-, gymno- and stegostom;
somatic sensilla are separate from epidermal glands;
each genital branch with single axial spermatheca or spermatheca absent 21
– Excretory duct usually short (except *Paraplectonema*); basal bulb without valve,
only with strongly sclerotized cuticular lining; stoma uniformly cylindrical;
somatic sensilla are connected with prominent epidermal glands;
each genital branch with two offset sack-like spermathecae 33

21. Labial region crown-shaped; lips leaf-like with sclerotized edges; outer labial sensilla setiform;
male reproductive system monorchic 22
– Labial region with six equal lips or with biradially arranged cuticular outgrowths;
outer labial sensilla papilliform; male reproductive system diorchic 23

22. Relaxed body and tail generally curved ventrad; labial region flat,
continuous with body contour ..... ***Euteratocephalus*** (p. 97)
– Relaxed body usually straight or curved dorsad, tail curved dorsad;
labial region high, strongly offset from body contour ..... ***Metateratocephalus*** (p. 95)

23. Amphid in shape of transverse slit 24
Amphid unispiral 25

24. Basal bulb and butterfly valve present; caudal glands present ..... ***Anaplectus*** (p. 79)
– Basal bulb and butterfly valve absent; caudal glands absent ..... ***Pakira*** (p. 74)

25. Basal bulb weak or absent; 26
– Basal bulb and valve present 28

26. Male with two precloacal tubular supplements 27
– Male with more than 15 precloacal tubular supplements ..... ***Caribplectus*** (p. 71)

27. Stoma barrel-shaped; spinneret small and weakly sclerotized ..... ***Hemiplectus*** (p. 77)
– Stoma funnel-shaped; spinneret large, strongly sclerotized; ..... ***Cynura*** (p. 73)

28. Basal bulb equipped with longitudinal denticulate ridges; posterior stegostom section long; female reproductive system monoprodelphic ..... ***Chronogaster*** (p. 69)
– Basal bulb equipped with transverse plates that are smooth, denticulate or corrugated; posterior stegostom section short; female reproductive system didelphic 29

29. Labial region with biradially arranged cuticular outgrowths; cervical expansions present; lateral outer labial sensilla elevated on midlateral projections; cephalic sensilla leaf-shaped 30
– Labial region with six equal lips; cuticular outgrowths and cervical expansions absent; outer labial sensilla papilliform or embedded in radial slits; cephalic sensilla setiform 33

30. Cornua with 2-5 tines each; flabella present and carry fimbriae; median ridge absent 31
– Cornua without tines, cylindrical or flat; flabella absent; median ridges present ..... ***Tylocephalus*** (p. 93)

31. Cervical expansions distinctly annulated ..... ***Ereptonema*** (p. 87)
– Cervical expansions visually smooth 32

32. Midlateral projection short; four flabella ..... ***Neotylocephalus*** (p. 89)
– Midlateral projection long, digitate; two flabella ..... ***Wilsonema*** (p. 91)

33. Usually bisexual; spermatheca developed 34
– Usually parthenogenetic (thelytokous); spermatheca absent ..... ***Plectus*** (p. 85)

34. Lips each with three lobes facing towards the oral opening ..... ***Perioplectus*** (p. 83)
– Lips small and simple ..... ***Arctiplectus*** (p. 81)

35. Amphidial fovea a transverse slit, amphid located far posterior to stoma base ..... ***Anomonema*** (p. 31)
– Amphidial fovea different; amphid located at level with stoma 36

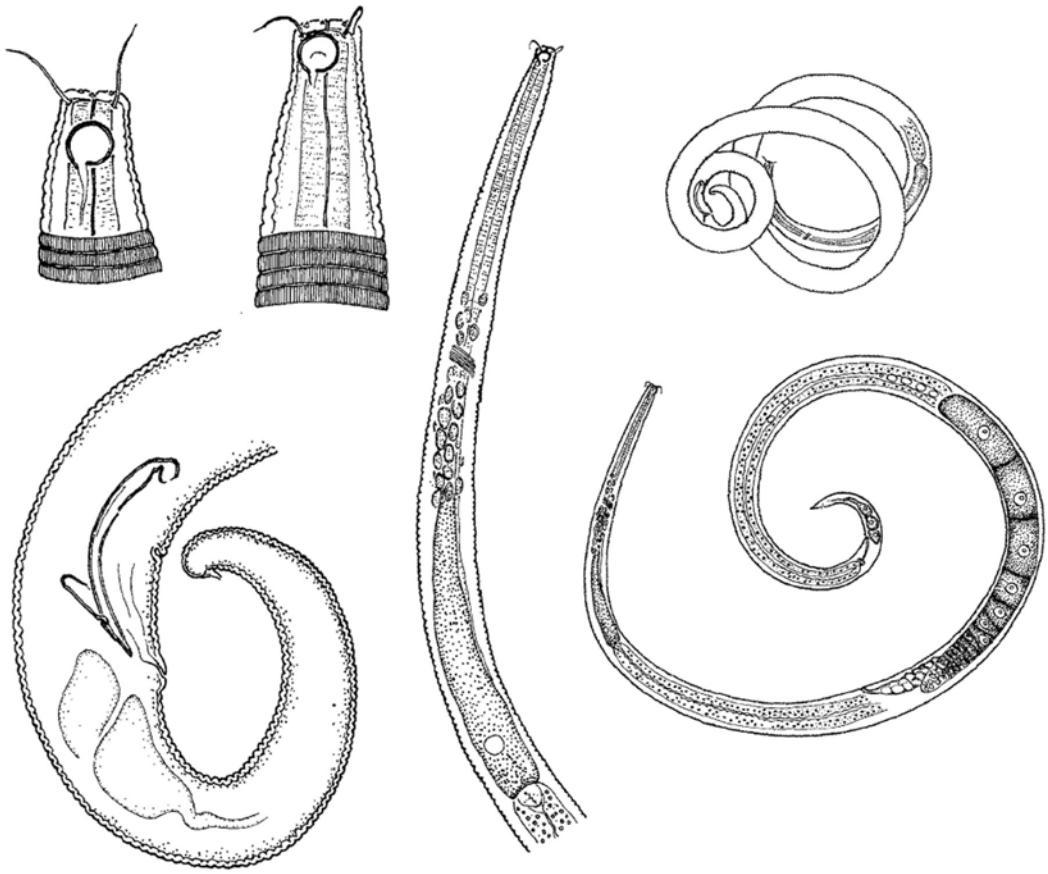
36. Amphidial fovea longitudinally oval; caudal glands often absent ..... ***Leptolaimoides*** (p. 35)
– Amphidial fovea not longitudinally oval; caudal glands usually present 37

37. Amphidial fovea loop-shaped, with or without central shield;
first body annule posterior to cephalic setae basis ..... ***Antomicron*** (p. 33)
– Amphid unispiral; first body annule anterior to cephalic setae basis 38

38. Anterior end narrow; basal part of the pharynx pear- or guitar-shaped ..... ***Manunema*** (p. 39)
– Anterior end "normal"; basal part of the pharynx not pear- or guitar-shaped 38

39. Amphid located at the base of labial region, on the first body annule;
excretory duct long ..... ***Paraplectonema*** (p. 41)
– Amphid located somewhat posteriorly; excretory duct short (when present) 40

40. Organellum ovale present ..... ***Leptoplectonema*** (p. 37)
– Organellum ovale absent ..... ***Leptolaimus*** (p. 29)



Alaimella cincta Cobb, 1920

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Genus *Alaimella* Cobb, 1920

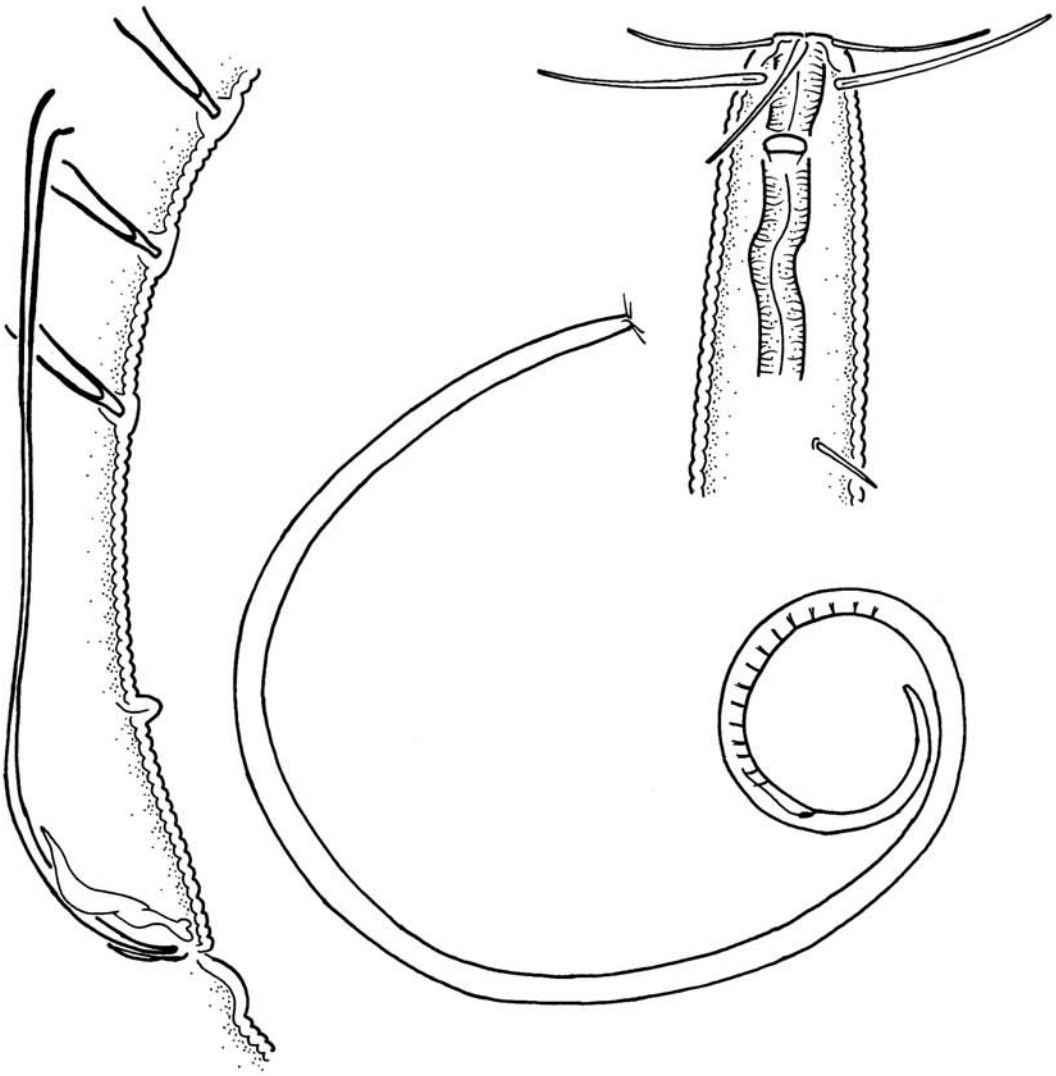
1920 *Alaimella* – Cobb, Contribution to a Science of Nematology 9: 233.

Morphology: Cuticle annulated, annules smooth or with fine longitudinal striation. Lateral alae absent. Epidermal glands and distinct body pores absent. Somatic setae present, not connected to epidermal glands. Deirid absent. Labial region truncate, lips basally fused. First annulus at level of cephalic setae bases (*A. cincta*) or at level of amphid. Inner labial sensilla indiscernible. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located at base of labial region. Subcephalic and cervical sensilla and ocelli absent. Amphidial fovea ventrally-unispiral, with or without central elevation. Secretory-excretory system: renette cell located opposite to intestine; excretory pore located posterior to nerve ring; excretory canal short. Oral opening pore-like. Buccal cavity narrow, undifferentiated: cheilostom without sclerotisations; gymnostom undeveloped; stegostom linear, its lining continuous with that of corpus. Radial tubes absent. Pharynx cylindrical anteriorly, muscularised; gradually widening posteriorly, glandular; with uniformly thickened lumen, lacking valves and bulbs. Cardia embedded in intestine. Female reproductive system monodelphic, opisthodelphic; ovary branch reflexed antidromously; spermatheca undescribed; vulva pre-equatorial; vagina straight; *pars proximalis vaginae* encircled by a single sphincter muscle; epiptygmata absent. Male reproductive system diorchic; testes opposed; spicules arcuate, with ventrally bent manubrium and narrowing shaft; gubernaculum plate-like. Copulatory apparatus: postcloacal setiform sensilla. Tail conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised.

Biology: Amphimictic. Marine, found in sandy sediments and in shells of Foraminifera. Species of this genus were found in marine habitats of USA (Florida, Texas), Brazil, Germany, Norway, Sweden and Russia (White Sea). Unpublished localities include the Californian coast and the Gulf of Mexico as well as the Philippines.

Taxonomy: Type species ***Alaimella truncata*** Cobb, 1920. Three species, plus two species of uncertain taxonomic status that may belong to *Alaimella*.

1. Tchesunov, A.V. & Milyutin, D.M. (2007). Free-living nematodes of the genus *Alaimella* Cobb 1920 (Nematoda: Leptolaimidae): a description of *A. macramphis* sp. n. from the White Sea and a revision of the genus. *Russian Journal of Marine Biology* 33: 92-97.



Setostephanolaimus jayasreei (Platt, 1983) Tchesunov, 1994

Original figure by O. Holovachov,
based on Platt (1983) with modifications

Genus *Setostephanolaimus* Tchesunov, 1994

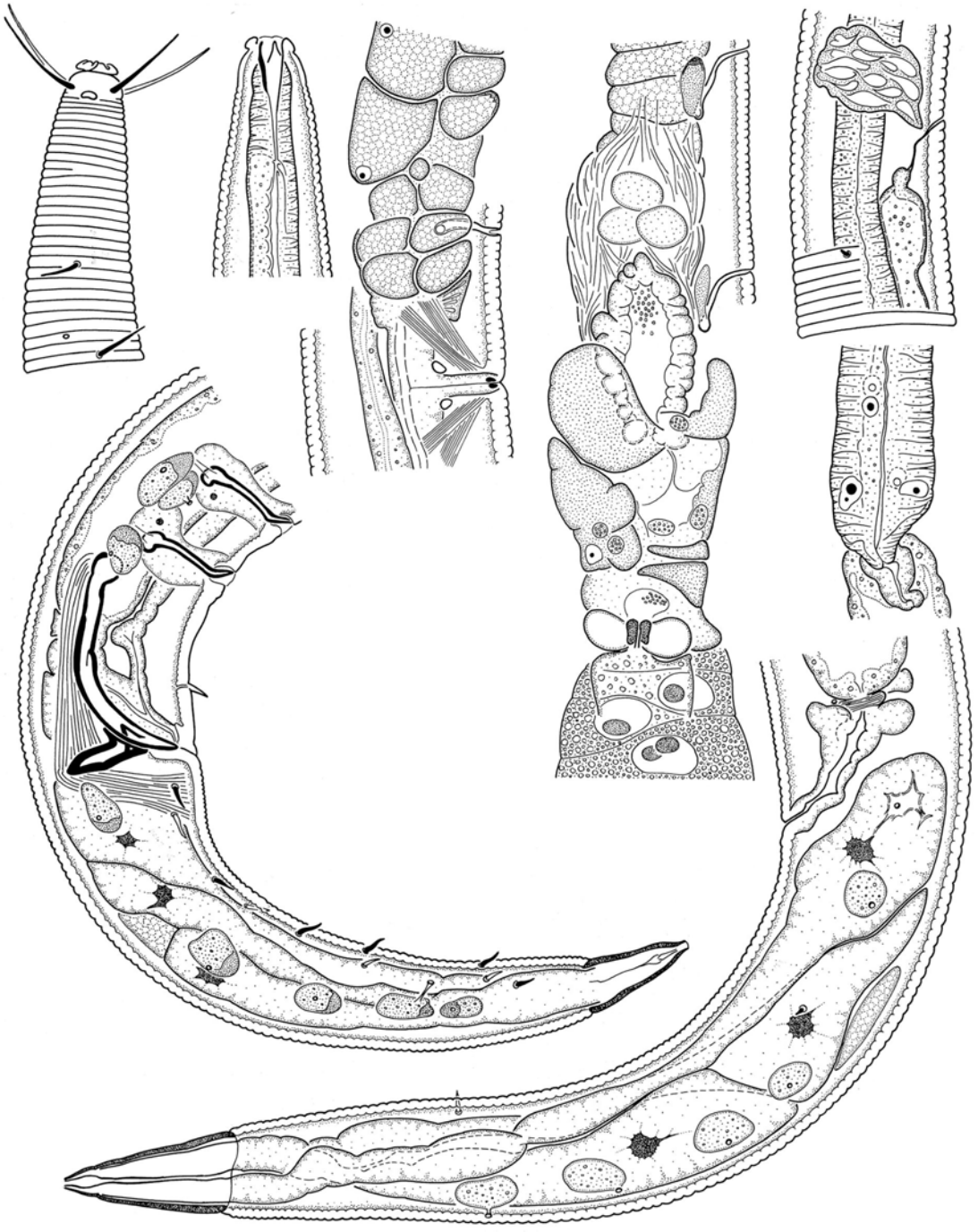
1994 *Setostephanolaimus* – Tchesunov, Russian Journal of Nematology 2: 80.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae absent. Epidermal glands present, undescribed. Somatic setae present, not connected to epidermal glands. Labial region continuous with body contour, lips basally fused. First annulus posterior to cephalic setae bases, sometimes posterior to amphids, weak cephalic capsule present. Inner labial sensilla indistinct. Outer labial sensilla setiform, located on anterior surface of lips. Cephalic sensilla setiform; their bases located anterior to amphids. Subcephalic sensilla present in some species, located anterior to amphid. Cervical sensilla undescribed. Amphidial fovea ventrally unispiral or transverse oval slit, difficult to discern in some species. Secretory-excretory system: renette cell located along ventral side of anterior part of intestine; excretory pore located at nerve ring; excretory canal short, excretory ampulla present. Buccal cavity funnel-shaped: cheilostom undifferentiated; gymnostom undifferentiated; stegostom funnel-shaped, undifferentiated, with strongly sclerotised walls. Radial tubes absent. Dorsal and two subventral gland orifices penetrate pharyngeal lumen posterior to stoma base. Pharynx cylindrical anteriorly, muscularized; gradually widening posteriorly into a glandular "cylindrus" with sometimes irregular shape; dorsal gland sector in strongly developed in some species with uniformly thickened lumen; without valves and bulbs. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic or monodelphic, opisthodelphic (*S. longispiculum*); ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight, *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system diorchic, testes opposed with anterior testis outstretched and posterior one reflexed (single anterior testis according to Tchesunov (1994)); spicules arcuate, with ovoid manubrium and subcylindrical or long cylindrical shaft; gubernaculum plate-like, may have caudal apophysis. Copulatory apparatus: 7-26 tubular supplements; single midventral precloacal sensillum; 2-3 postcloacal sensilla. Tail conoid. Three caudal glands present, their nuclei are incaudal. Single pseudocoelomocyte located dorsally to caudal glands. Spinneret functional, large and strongly cuticularised.

Biology: Amphimictic. Marine, found in sediments. Species of this genus were found in marine habitats of the Mediterranean Sea, Irish Sea, North Sea (Germany, GB, Belgium) and Russian coast of Okhotsk Sea. Unpublished localities include the Californian coast and the Gulf of Mexico as well as the Philippines.

Taxonomy: Type species ***Setostephanolaimus gandavensis*** (Jensen, 1976) Tchesunov, 1994. Seven valid species.

1. Platt, H.M. (1983). New species of *Metadesmolaimus* and *Stephanolaimus* (Nematoda: Chromadoria) from Northern Ireland with reviews of the genera. *Zoological Journal of the Linnean Society* 78: 363-373.
2. Tchesunov, A.V. (1994). Description of a marine free-living nematode *Stephanolaimus graciosus* sp. n. and erection of *Setostephanolaimus* gen. n. (Chromadoria: Leptolaimidae). *Russian Journal of Nematology* 2: 79-82.



Stephanolaimus elegans Ditlevsen, 1918

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Genus *Stephanolaimus* Ditlevsen, 1918

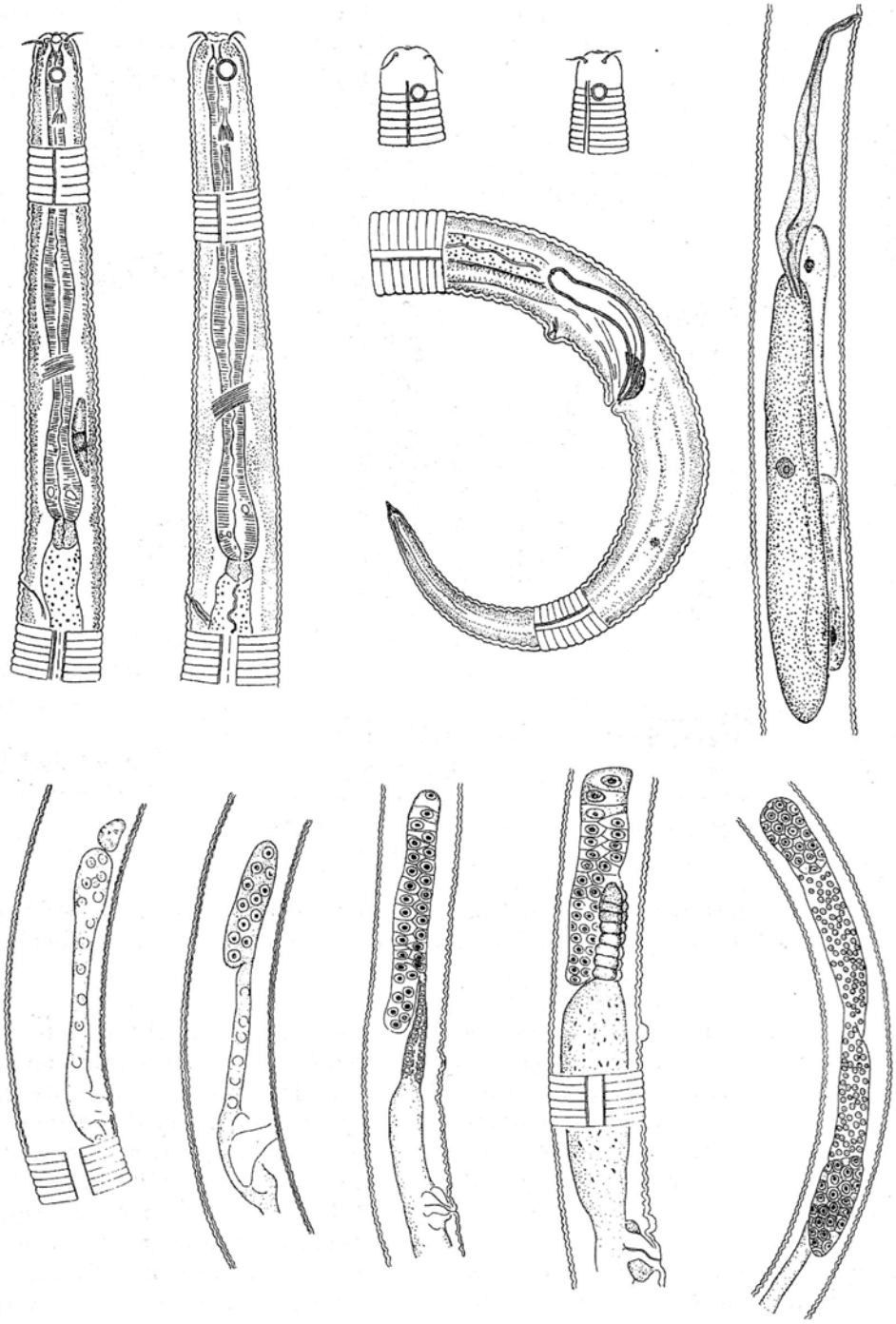
1918 *Stephanolaimus* – Ditlevsen, Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening 70: 184.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae absent. Epidermal glands present, opening via body pores in two sublateral rows on each side of the body. Somatic setae present, not connected to epidermal glands. Pair of lateral setae just posterior to or level with nerve ring (one on each body side), shorter and plumper than somatic setae elsewhere (on tail) and may be homologous to deirids (in *S. elegans*). Labial region offset, lips basally fused. First annulus posterior to cephalic setae bases and amphids, cephalic capsule present. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on anterior surface of lips. Cephalic sensilla setiform; their bases located anterior to amphids. Subcephalic sensilla absent. Cervical sensilla present: two sublateral pairs located at level of anterior one-fourth of pharynx. Ocelli absent. Amphidial fovea a transverse oval slit. Secretory-excretory system: renette cell located along ventral side of anterior part of intestine; excretory pore located at nerve ring; excretory canal short, excretory ampulla present. Buccal cavity funnel-shaped: cheilostom undifferentiated; gymnostom with three "odontia-like" sclerotisations (one dorsal and two ventrosublateral) pointing forward; stegostom funnel-shaped, undifferentiated, with strongly sclerotised walls. Radial tubes absent. Dorsal and two subventral gland orifices penetrate pharyngeal lumen posterior to stoma base. Pharynx cylindrical anteriorly, gradually widening posteriorly; muscularized; with uniformly thickened lumen; without valves and bulbs. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight, *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* in shape of rod-like sclerotisations (*S. elegans*). Tubular supplements present in females of *S. elegans* along the ventral line: 9-18 anterior to vulva, extending to cardia level; and 10-18 posterior to vulva, extending almost to rectum. Male reproductive system diorchic, testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate, with ovoid manubrium and subcylindrical shaft; gubernaculum plate-like with caudal apophysis. Copulatory apparatus: 9-43 tubular supplements; single midventral precloacal sensillum (in *S. elegans*) or one (*S. graciosus*) or two (*S. costatus*) postcloacal sensilla. Tail conoid. Three caudal glands present, their nuclei are incaudal. Single pseudocoelomocyte located dorsally to caudal glands. Spinneret functional, large and strongly cuticularised.

Biology: Amphimictic. Marine.

Taxonomy: Type species ***Stephanolaimus elegans*** Ditlevsen, 1918. Three valid species.

1. Holovachov, O. & Boström, S. (2004). Morphology and systematics of the superfamilies Leptolaimoidea Örley, 1880 and Camacolaimoidea Micoletzky, 1924 (Nematoda: Plectida). *Journal of Nematode Morphology and Systematics* 7: 1-49.



***Domorganus macronephriticus* T.** Goodey, 1947

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Genus *Domorganus* T. Goodey, 1947

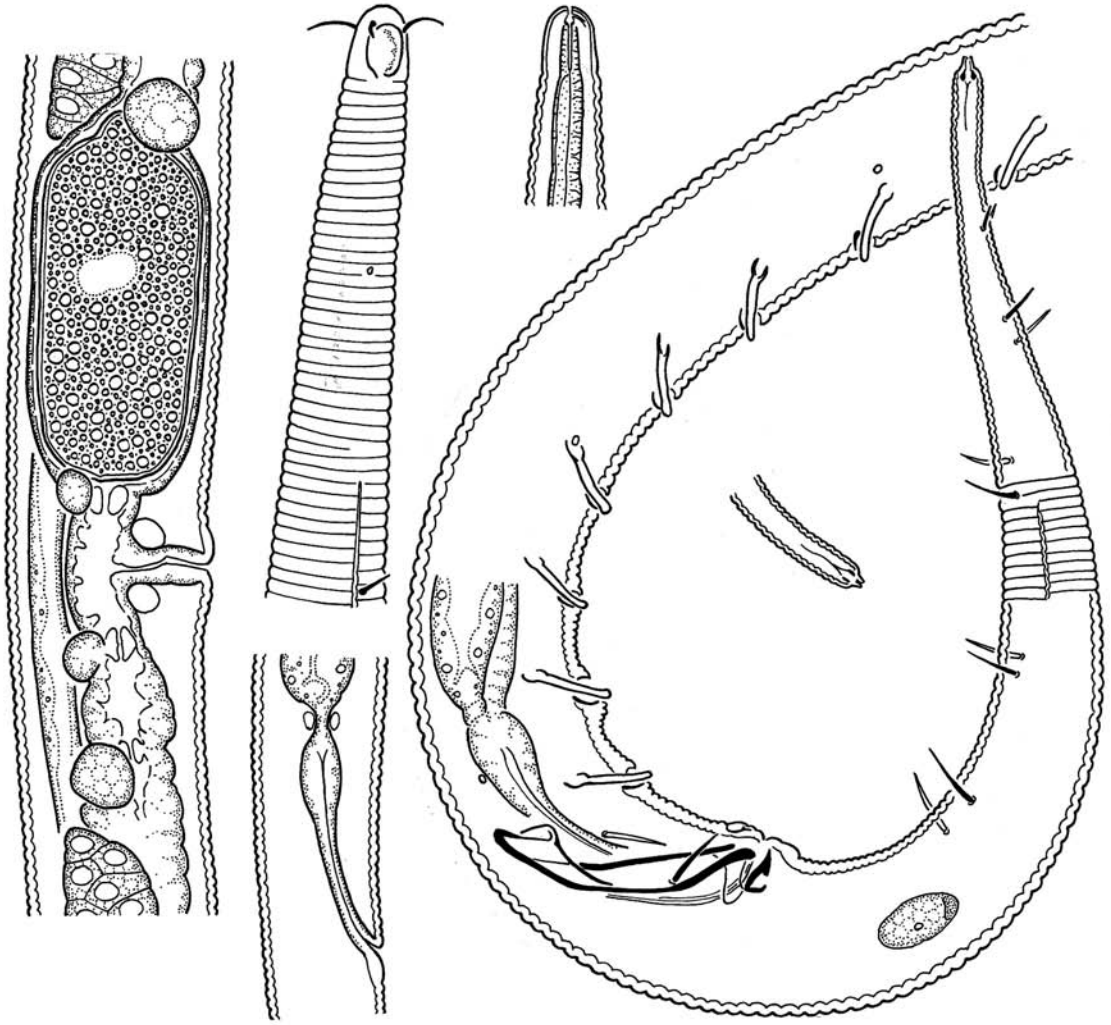
1943 *Ohridia* – Schneider, Posebna Izdanja Srpska Akademija Nauka prirod mat. Spisi 136: 171.
1947 *Domorganus* – T. Goodey, Journal of Helminthology 21: 175-180.
1973 *Ohridius* – Gerlach & Riemann. Bremerhaven Checklist of Aquatic Nematodes, 1: 217.
1977 *Leoberginema* – Tsalolikhin, Zoologicheskii Zhurnal 56: 994.
1978 *Mikinema* – Tchesunov, Zoologicheskii Zhurnal 57: 1627.

Morphology: Cuticle annulated, annules smooth or with fine longitudinal striation. Lateral alae consist of one to several smooth bands, extending posteriorly from the amphid level. Epidermal glands, body pores, somatic sensilla and deirids absent. Labial region rounded, modified into cephalic capsule. First annulus at level of amphid. Inner and outer labial sensilla indiscernible. Cephalic sensilla setiform, their bases located on cephalic capsule, anterior to amphid. Subcephalic and cervical sensilla and ocelli absent. Amphidial fovea ventrally-unispiral. Secretory-excretory system: renette cell located sublaterally opposite to intestine; excretory pore posterior to cardia; excretory ampulla absent, excretory canal cuticularised. Oral opening oval, with two lateral liplets. Buccal cavity barrel-shaped: cheilostom without sclerotisations; gymnostom barrel-shaped, with parallel, sclerotised walls; stegostom undeveloped. Radial tubes absent. Pharynx with two swellings: anterior one at midpharynx and posterior one at basal portion; muscularised with uniformly thickened lumen throughout, lacking valves. Pharyngeal gland nuclei and orifices indistinct. Cardia embedded in intestine. Two pseudocoelomocytes present posterior to pharynx base. Female reproductive system didelphic, amphidelphic, ovary branches reflexed antidromously; spermathecae absent; vulva equatorial; vagina straight or bent posteriorly; epiptygmata present in *D. macronephriticus*. Prevulval midventral papilla present in *D. macronephriticus*. Male reproductive system diorchic, testes opposed with anterior testis outstretched and posterior one reflexed, terminal part of anterior testis is also reflexed posteriad; spicules arcuate, with ovoid manubrium and narrowing shaft; gubernaculum with or without apophysis. Copulatory apparatus: single precloacal midventral papilliform sensillum located about one corresponding body diameter anterior to cloaca. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised.

Biology: Amphimictic or thelytokous. *D. macronephriticus* was found in soil or associated with Lumbricidae across Europe (Tchesunov & Sturhan, 2004). *D. oligochaetophilus* and *D. beklemishevi* were found in the intestine of the littoral enchytraeid oligochaetes *Lumbricillus lineatus*, *L. pagenstecheri* and *Enchytraeus albidus*, in the Baltic and White seas. Other species were recorded as freeliving in soil in Spain, in sediments from Lake Baikal, Lake Ohrid, and the Caspian Sea. According to personal communication with A. Shoshin, several undescribed species of this genus inhabit Lake Baikal. Two unidentified females were found in Costa Rica, Isla del Caco. Secondary sexual dimorphism (in measurements) and adult growth was noted in *D. oligochaetophilus*, adult growth in *D. beklemishevi* (Valovaya, 1989).

Taxonomy: Type species ***Domorganus macronephriticus*** Goodey, 1947. Eight valid species.

1. Tchesunov, A.V. & Sturhan, D. (2004). Studies on *Domorganus macronephriticus* Goodey, 1947 (Nematoda: Ochridiidae). *Journal of Nematode Morphology and Systematics* 6 (2003), 139-150.
2. Valovaya, M.A. (1989). [*Domorganus oligochaetophilus* and *D. beklemishevi* sp. n. from *Enchytraeus albidu*s worms of the White Sea's supralitoral.] *Zoologicheskii Zhurnal* 68: 5-12.



Aphanolaimus aquaticus Daday, 1894

Original figure by O. Holovachov

Genus *Aphanolaimus* de Man, 1880

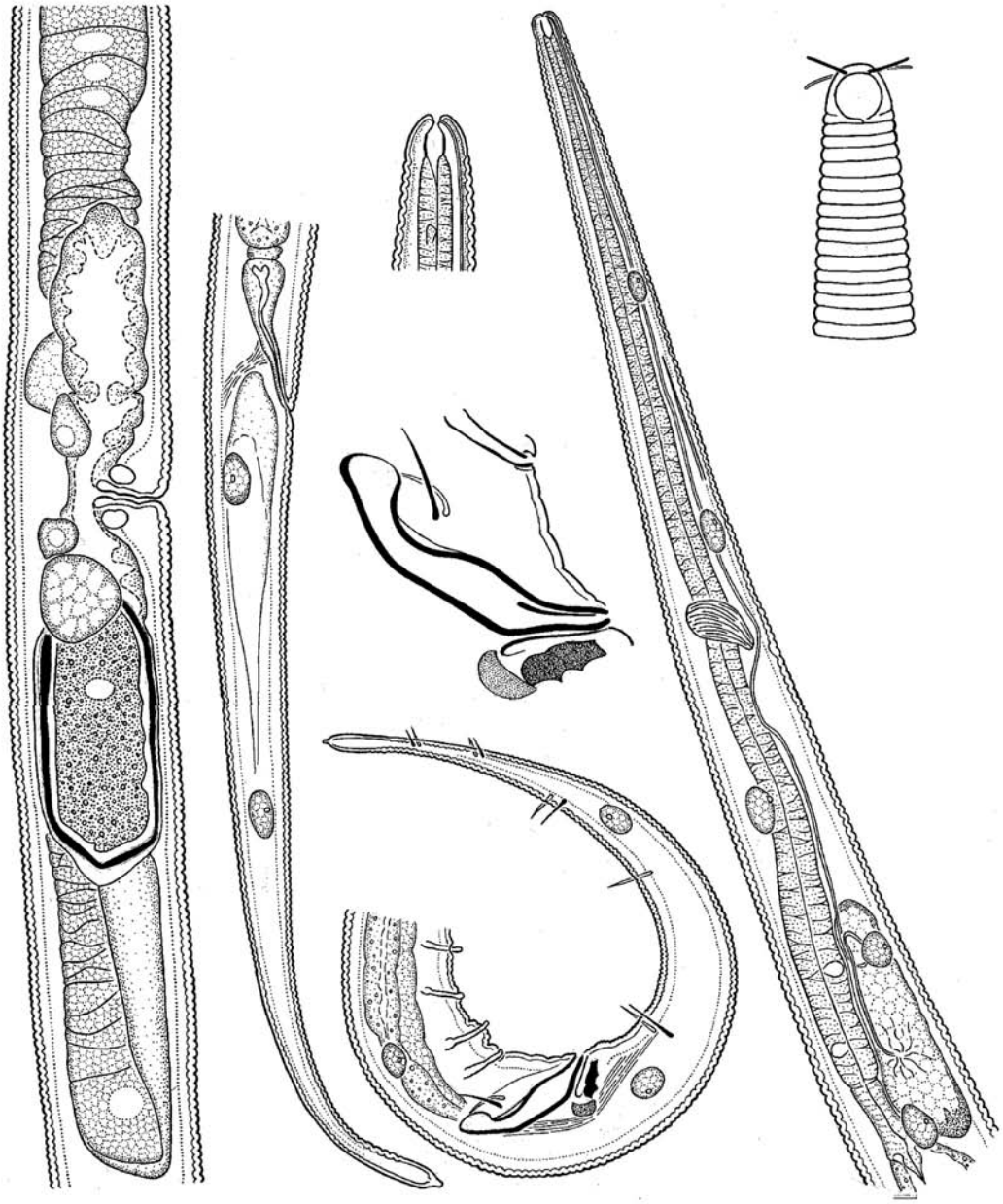
1880 *Aphanolaimus* – de Man, Tijdschrift Nederlandsche dierkundige Vereeniging 5: 5.

Morphology: Cuticule annulated, annulation smooth or with longitudinal incisures. Lateral alae present, in two species sublateral rows of dots are also present. Epidermal glands present, opening via body pores in two sublateral rows on each body side. Somatic sensilla present in males of some species only, connected to epidermal glands along the pharyngeal region of the body, their number is species-specific. Labial region rounded, lips absent. First annulus posterior to cephalic setae bases and amphids, cephalic capsule present. Inner and outer labial sensilla indistinct. Cephalic sensilla setiform; their bases located anterior to amphids; tips of cephalic sensilla rounded or bifurcate. Subcephalic sensilla absent. Cervical sensilla absent. Ocelli and deirid absent. Amphidial fovea ventrally unispiral, with or without central elevation, or reniform. Secretory-excretory system: renette cell oval or bilobed, located along ventral side of cardia and anterior part of intestine; excretory pore opens into cheilostom; excretory canal long, excretory ampulla absent. Oral opening pore-like. Buccal cavity tubular or barrel-shaped: cheilostom undifferentiated; gymnostom undifferentiated or cylindrical, heavily sclerotised with granule-shaped rhabdia; stegostom undifferentiated. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen posterior to stoma base. Pharynx cylindrical; weakly muscularized; with uniformly thickened lumen; without valves and bulbs. Cardia embedded in intestine in posterior part only. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermathecae paired (four in total) and offset, sac-like, located on each side of each (anterior and posterior) gonoduct (undeveloped in presumably parthenogenetic *A. aymarae*); uterus short in oviparous species and long in ovoviviparous species; vulva equatorial; vagina straight or inverted V-shaped, *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system functionally monorchic: posterior testis reflexed and outstretched glandular anterior part lacks a testis; spicules arcuate or with manubrium twisted along their axis; gubernaculum rectangular or plate-like. Copulatory apparatus: 2-13 midventral tubular supplements; single midventral precloacal papilliform sensillum (located on the anal lip); a pair of precloacal setae (absent in *A. aberrans, A. costatus* and *A. camerunensis*) and 2-3 pairs of subventral and 1-2 pairs of subdorsal caudal setae (only three setae in *A. aberrans*, subdorsal setae absent in *A. costatus* and *A. camerunensis*). Supplements in *A. aberrans* are short, "reduced". The first (in *A. camerunensis* and *A. aymarae*) or the second (other species) supplement from cloaca is located on a cuticular elevation. Tail conoid, elongate, subcylindrical. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised.

Biology: Most species amphimictic. Three species (*A. aymarae*, *A. spiriferus* and *A. viviparus*) are ovoviviparous. Found on all continents except Antarctica. Inhabit freshwater sediments, moist soil, moss and moist litter.

Taxonomy: Type species ***Aphanolaimus attentus*** de Man, 1880. Twenty eight valid species and one species of uncertain taxonomic status.

1. Holovachov, O. & De Ley, P. (2006). Order Plectida. In: Eyualem, A., Andrássy, I. & Traunspurger, W. (eds.) *Freshwater nematodes: ecology and taxonomy.* CAB International: 611-647.



Paraphanolaimus anisitsi (Daday, 1905) Andrássy, 1968

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Genus *Paraphanolaimus* Micoletzky, 1923

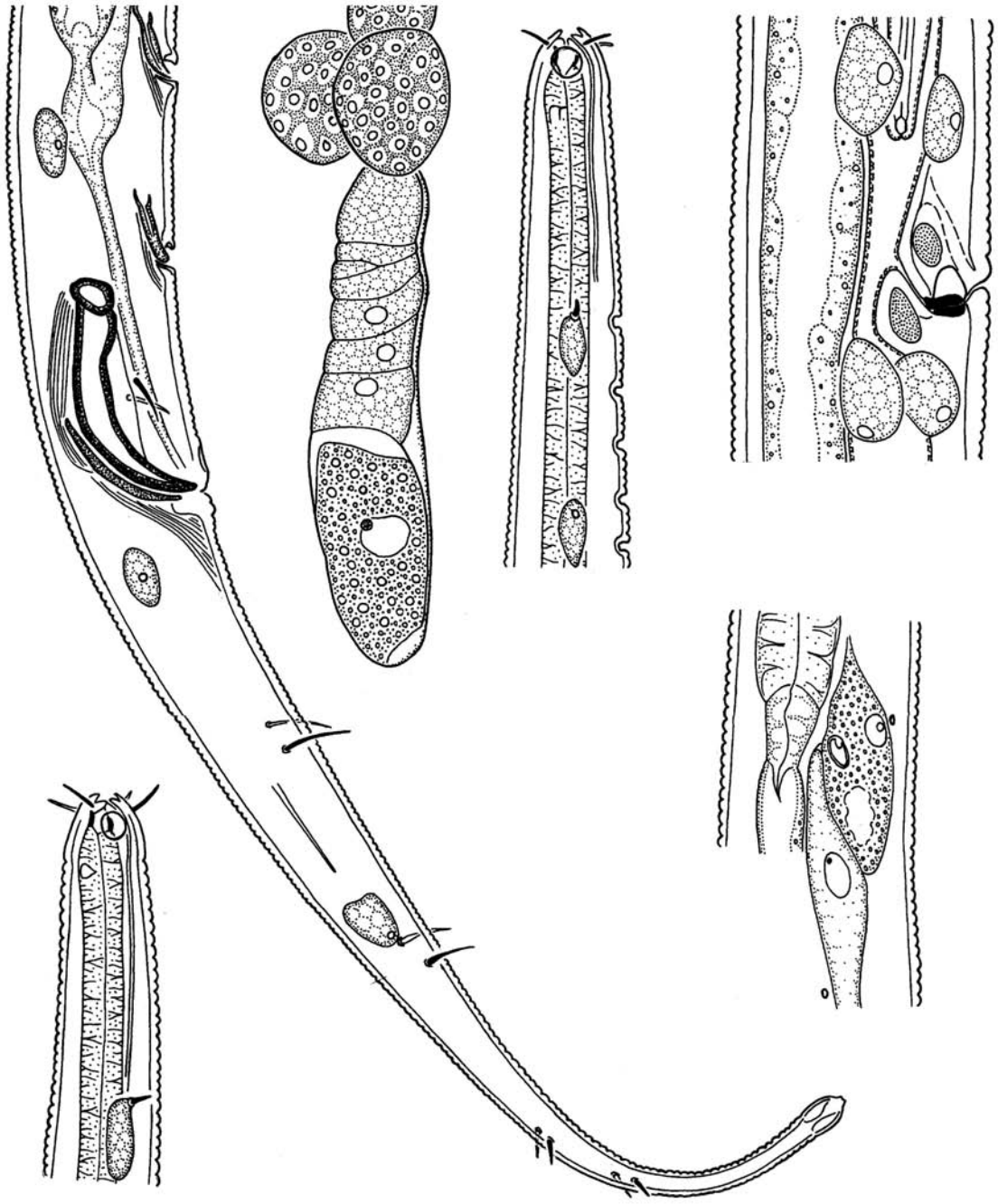
1923 *Paraphanolaimus* – Micoletzky, Raboty Volzhskoi Biologicheskoi Stantsii 7: 25.
1936 *Bathyonchus* – Kreis, Revue Suisse de Zoologie 43: 644

Morphology: Cuticule annulated, annulation smooth. Lateral alae present. Epidermal glands present, opening via body pores in two sublateral rows on each body side. Somatic sensilla present in males, connected to epidermal glands along the pharyngeal region of the body, their number is species-specific. Labial region rounded, lips absent. First annulus posterior to cephalic setae bases and amphids, cephalic capsule present. Inner and outer labial sensilla indistinct. Cephalic sensilla setiform; their bases located anterior to amphids; tips of cephalic sensilla rounded or bifurcate. Subcephalic sensilla absent. Cervical sensilla absent. Ocelli and deirid absent. Amphidial fovea ventrally unispiral, without central elevation. Secretory-excretory system: renette cell oval or bilobed, located along ventral side of cardia and anterior part of intestine; excretory pore opens into cheilostom; excretory canal long, excretory ampulla absent. Oral opening pore-like. Buccal cavity barrel-shaped: cheilostom undifferentiated; gymnostom heavily sclerotised barrel-shaped; stegostom undifferentiated. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen posterior to stoma base. Pharynx cylindrical; weakly muscularized; with uniformly thickened lumen; without valves and bulbs. Cardia embedded in intestine in posterior part only. Female reproductive system didelphic, amphidelphic (posterior gonad reduced, non-functional in *P. asiaticus*); ovary branches reflexed antidromously; spermathecae paired (four in total) and offset, sac-like, located on each side of each (anterior and posterior) gonoduct (non-functional in *P. behningi* and *P. terrestris*); uterus short in oviparous species and long in ovoviviparous species; vulva equatorial; vagina straight or bent anteriorly, *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system functionally monorchic: posterior testis reflexed and outstretched glandular anterior part lacks a testis; spicules arcuate or with manubrium twisted along their axis; gubernaculum rectangular or plate-like. Copulatory apparatus: 8-19 midventral tubular supplements; single midventral precloacal papilliform sensillum (located on the anal lip); a pair of precloacal setae and two to three pairs of subventral and one-two pairs of subdorsal caudal setae. The second supplement from cloaca is located on a cuticular elevation. Tail elongate conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised.

Biology: Most species amphimictic. Two species *P. behningi* and *P. asiaticus* are ovoviviparous. Found on all continents except Antarctica. Inhabit fresh-water sediments and moist soil. Different populations of *P. behningi* were thelytokous (Holovachov & Sturhan, 2004) or amphimictic (Eyualem, 1996).

Taxonomy: Type species ***Paraphanolaimus behningi*** Micoletzky, 1923. Eight valid species and four species of uncertain taxonomic status.

1. Holovachov, O. & Sturhan, D. (2004). Studies on the genus *Paraphanolaimus* Micoletzky, 1923 (Nematoda: Aphanolaimidae) with description of *P. paraguayensis* sp. n. *Nematology* 5 (2003): 793-807.
2. Holovachov, O. & De Ley, P. (2006). Order Plectida. In: Eyualem, A., Andrássy, I. & Traunspurger, W. (eds.) *Freshwater nematodes: ecology and taxonomy.* CAB International: 611-647.
3. Eyualem, A. (1996). Aquatic nematodes from Ethiopia IV. *Hydrobiologia* 332: 1-26.



Aphanonchus bayensis (Keppner, 1988) Holovachov & Sturhan, 2004

Reproduced with modifications from Holovachov & Sturhan (2004) with kind permission from *Nematology* and Brill Academic Publishers

Genus *Aphanonchus* Coomans & Raski, 1991

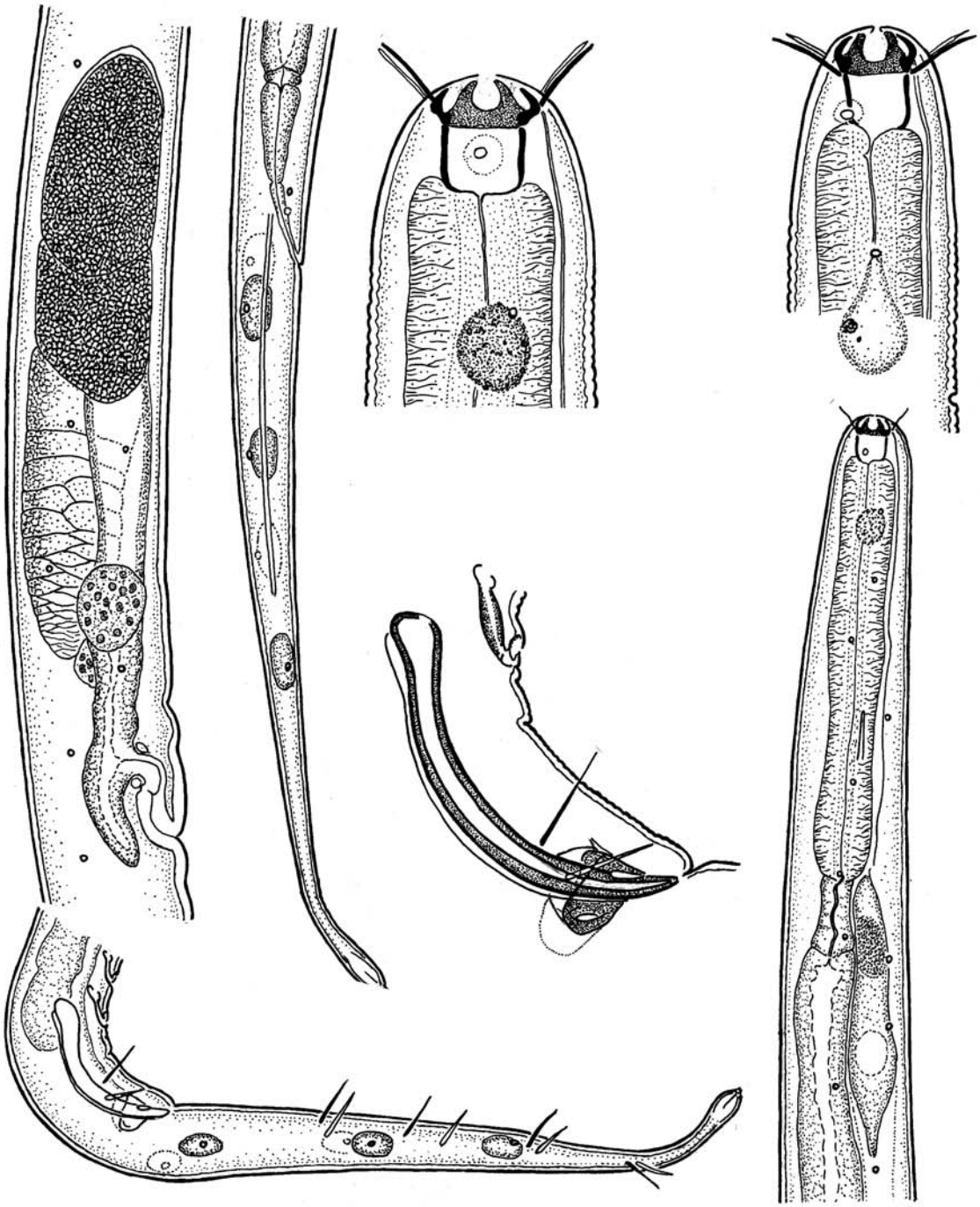
1991 *Aphanonchus* – Coomans & Raski, Nematologica, 37: 8-9.

Morphology: Cuticule annulated, annulation smooth. Lateral alae present. Epidermal glands present, opening via body pores in two sublateral rows on each body side. Somatic sensilla present in both sexes or in males only, connected to epidermal glands along the pharyngeal region of the body, their number is species-specific. Labial region rounded, lips absent First annulus posterior to cephalic setae bases and amphids, cephalic capsule present. Inner and outer labial sensilla indistinct. Cephalic sensilla setiform; their bases located anterior to amphids; tips of cephalic sensilla rounded. Subcephalic sensilla absent. Cervical sensilla absent. Ocelli and deirid absent. Amphidial fovea ventrally unispiral, without central elevation. Secretory-excretory system: renette cell oval or bilobed, located along ventral side of cardia and anterior part of intestine; excretory pore opens into peristomatal vestibulum; excretory canal long, excretory ampulla absent. Oral opening pore-like. Buccal cavity barrel-shaped: cheilostom undifferentiated, surrounded by peristomatal vestibulum; gymnostom heavily sclerotised, barrel-shaped; stegostom undifferentiated. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen posterior to stoma base. Pharynx cylindrical; weakly muscularized; with uniformly thickened lumen; without valves and bulbs. Cardia embedded in intestine in posterior part only. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermathecae paired (four in total) and offset, sac-like, located on each side of each (anterior and posterior) gonoduct (non-functional in *A. europaeus*); uterus long; vulva equatorial; vagina straight or sigmoid, *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent or present. Male reproductive system functionally monorchic: posterior testis reflexed and outstretched glandular anterior part lacks a testis; spicules arcuate; gubernaculum arch-like. Copulatory apparatus: 20-108 alveolar (none in *A. longiceras*) and 10-20 midventral tubular supplements; single midventral precloacal papilliform sensillum (located on the anal lip); a pair of precloacal setae and two pairs of subventral and two pairs of subdorsal caudal setae. The second supplement from cloaca is located on a cuticular elevation. Tail elongate conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised.

Biology: Most species amphimictic. All but one species (*A. longiceras*) are ovoviviparous. Hitherto recorded from Germany in Europe; from China, Vietnam and Japan in Asia; Tanzania and Ivory Coast in Africa; from USA, Costa Rica, Colombia, Suriname and Paraguay in the Americas. Inhabit sediments in freshwater and brackish habitats.

Taxonomy: Type species ***Aphanonchus intermedius*** Coomans & Raski, 1991. Eight valid species.

1. Holovachov, O. & Sturhan, D. (2004). Two new species of the genus *Aphanonchus* Coomans & Raski, 1991 (Nematoda: Aphanolaimidae) and a revised taxonomy of the genus. *Nematology* 6: 357-373
2. Holovachov, O. & De Ley, P. (2006). Order Plectida. In: Eyualem, A., Andrássy, I. & Traunspurger, W. (eds.) *Freshwater nematodes: ecology and taxonomy.* CAB International: 611-647.



Anonchus maculatus (Daday, 1905) Goodey, 1951

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Genus *Anonchus* Cobb, 1913

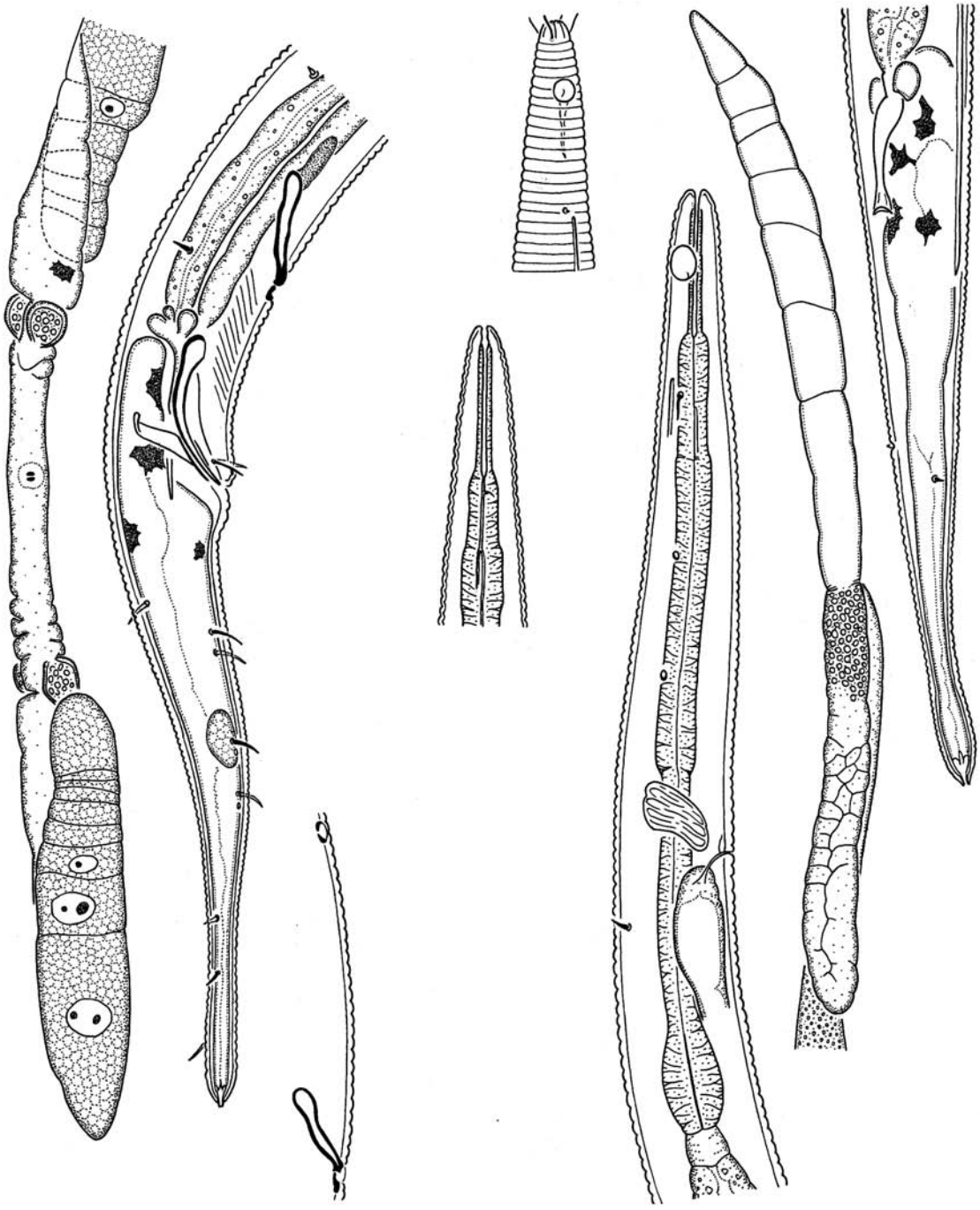
1905 *Bathylaimus* – Daday, Zoologica (Stuttgart) 18: 59-60.
1913 *Anonchus* – Cobb, Journal of the Washington Academy of Sciences 3: 444.
1918 *Pseudobathylaimus* – Filipjev, Trudy osoboi zoologicheskoi laboratorii i sevastopol'skoi biologicheskoi stantsii Rissiiskoi Akademii Nauk 2: 347.
1922 *Dadayia* – Micoletzky, Archivum für Naturgeschichte 87: 328.
1957 *Assia* – Gerlach, Mitteilungen aus dem Zoologischen Museum in Berlin 33: 450.
1973 *Haconnus* – Andrássy, Acta Zoologica Academiae Scientarum Hungaricae 19: 239.

Morphology: Cuticule annulated, annulation smooth. Lateral alae present. Epidermal glands present, opening via body pores in two sublateral rows on each body side. Somatic sensilla present in male of *A. mirabilis* only, connected to epidermal glands along the pharyngeal region of the body. Labial region truncate, lips triangular, dorsal pair of lips fused. First annulus posterior to cephalic setae bases and amphids, cephalic capsule present. Inner and outer labial sensilla indistinct. Cephalic sensilla setiform; their bases located anterior to amphids; tips of cephalic sensilla rounded or bifurcate. Four subcephalic setae present in male of *A. venezolanus*. Cervical sensilla absent. Ocelli and deirid absent. Amphidial aperture rounded, amphidial fovea ventrally unispiral, larger than the aperture (subcuticular). Secretory-excretory system: renette cell oval or bilobed, located along ventral side of cardia and anterior part of intestine; excretory pore opens into cheilostom; excretory canal long, excretory ampulla absent. Oral opening star-shaped (pentagram). Buccal cavity barrel-shaped: cheilostom supported by six digitate projections; gymnostom heavily sclerotised, short or long cylindrical, stegostom shallow. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen posterior to stoma base. Pharynx cylindrical; muscularized; with uniformly thickened lumen; without valves and bulbs. Cardia embedded in intestine in posterior part only. Female reproductive system didelphic, amphidelphic or monodelphic, prodelphic; ovary branches reflexed antidromously; spermathecae paired (four in total) and offset, sac-like, located on each side of each (anterior and posterior) gonoduct (absent in *A. millelacunatus* and *A. venezolanus*); uterus short; vulva equatorial; vagina straight or bent anteriorly, *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system functionally monorchic: posterior testis reflexed and outstretched glandular anterior part lacks a testis; spicules arcuate or with manubrium twisted along their axis; gubernaculum rectangular. Copulatory apparatus: 51-816 alveolar (none in *A. venezolanus* and *A. mirabilis*) and 1-72 midventral tubular supplements; single midventral precloacal papilliform sensillum; a pair of precloacal setae and two pairs of subventral and two pairs of subdorsal caudal setae. Copulatory apparatus: 8-19 midventral tubular supplements; single midventral precloacal papilliform sensillum (located on the anal lip); a pair of precloacal setae (except in *A. venezolanus* which has ten sublateral pairs) and multiple pairs of subventral and subdorsal caudal setae. The second supplement from cloaca is located on a cuticular elevation. Tail elongate conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised.

Biology: Amphimictic. Three species were found in mountainous or deep lakes and river estuaries of Europe, Asia and Africa; other species inhabit brackish and freshwater sediments in South and Central America, with only *A. maculatus* being distributed in the whole New World.

Taxonomy: Type species ***Anonchus maculatus*** (Daday, 1905) Goodey, 1951. Ten valid species.

1. Holovachov, O., Zullini, A., Loof, P.A.A. & Bongers, T. (2002). Morphology and systematics of the genus *Anonchus* Cobb, 1913 (Nematoda: Leptolaimina) and reappraisal of the family Aphanolaimidae Chitwood, 1936 n. rank. *Nematology* 4, 725-757.
2. Holovachov, O. & De Ley, P. (2006). Order Plectida. In: Eyualem, A., Andrássy, I. & Traunspurger, W. (eds.) *Freshwater nematodes: ecology and taxonomy.* CAB International: 611-647.



Leptolaimus mixtus Lorenzen, 1982

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Genus *Leptolaimus* de Man, 1876

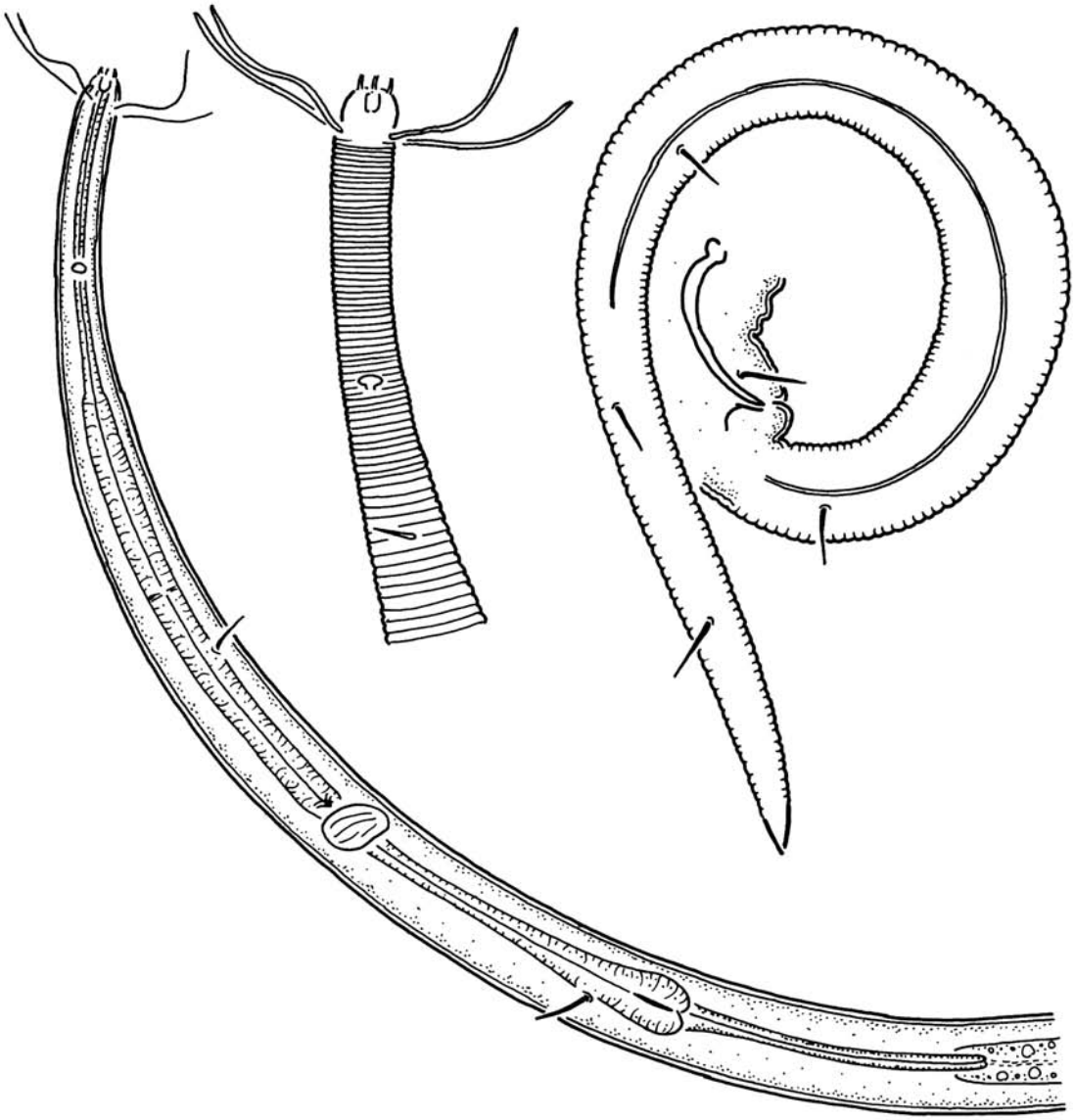
1876 *Leptolaimus* – de Man, Tijdschrift Nederlandsche dierkundige Vereeniging 2: 169.
1914 *Halaphanolaimus* – Southern, Proceedings of the Royal Irish Academy 31: 11.
1914 *Aplectus* – Cobb, Contributions to a Science of Nematology 1: 12-14.
1916 *Dermatolaimus* – Steiner, Zoologische Jahrbücher, Abteilung für Systematik 39: 604-606.
1920 *Polylaimium* – Cobb, Contributions to a Science of Nematology 9: 274.
1977 *Alveolaimus* – Alekseev & Rassadnikova, Zoologicheskii Zhurnal 56: 1771.
1977 *Boveelaimus* – Alekseev & Rassadnikova, Zoologicheskii Zhurnal 56: 1771.
1977 *Tubulaimus* – Alekseev & Rassadnikova, Zoologicheskii Zhurnal 56: 1771.

Morphology: Cuticule annulated, annulation smooth. Lateral alae present. Epidermal glands present, opening via body pores in two sublateral rows on each body side. Somatic sensilla present, connected to epidermal glands along the body, their number is species-specific. Labial region rounded, lips separate. First annulus anterior to cephalic setae bases and amphids, cephalic capsule absent. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on anterior surface of lips. Cephalic sensilla papilliform or setiform; their bases located anterior to amphids. Subcephalic sensilla absent. Ocelli and deirid absent. Amphidial fovea ventrally unispiral, without central elevation. Secretory-excretory system: renette cell oval, located along ventral side of cardia and anterior part of intestine; excretory pore opens posterior to nerve ring; excretory canal short, excretory ampulla present. Oral opening hexagonal. Buccal cavity tubular: cheilostom undifferentiated; gymnostom undifferentiated or short barrel-shaped; stegostom tubular. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen posterior to stoma base. Pharynx subdivided by breaks in muscular pharyngeal tissue into a narrow procorpus, a somewhat wider metacorpus, a narrow isthmus and basal bulb; muscularized; pharyngeal lumen often thickened in the basal bulb; without valves. Cardia free. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermathecae paired (four in total) and offset, sac-like, located on each side of each gonoduct; uterus short in oviparous species and long in ovoviviparous species; vulva equatorial; vagina straight, *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent or present. Alveolar or tubular supplements present in females of some species, either in pharyngeal or preanal regions, or in both positions. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate; gubernaculum rectangular or plate-like, with apophysis. Copulatory apparatus: 0-40 alveolar supplements (present or absent), 0-112 midventral tubular supplements (present or absent); single midventral precloacal papilliform sensillum (located on the anal lip); a pair of precloacal setae and several pairs of subventral and subdorsal caudal setae, unpaired setae may be present. The second supplement from cloaca is located on a cuticular elevation. Tail conoid, elongate or subcylindrical. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised or absent.

Biology: Marine or brackish waters. Most species amphimictic. Distributed worldwide.

Taxonomy: Type species ***Leptolaimus papilliger*** de Man, 1876. Fourty three valid species and eight species of uncertain taxonomic status.

1. Fadeeva, N.P. & Mordukhovich, V.V. (2007). New and known Leptolaimidae (Nematoda, Chromadoria) species in the Sea of Okhotsk and the Sea of Japan. *Zoologicheskii Zhurnal* 86: 3-15.
2. Holovachov, O. & Boström, S. (2004). Morphology and systematics of the superfamilies Leptolaimoidea Örley, 1880 and Camacolaimoidea Micoletzky, 1924 (Nematoda: Plectida). *Journal of Nematode Morphology and Systematics* 7: 1-49.



Anomonema deconincki Jensen, 1976

Original figure by O. Holovachov,
based on Jensen (1963) with modifications

Genus *Anomonema* Hopper, 1963

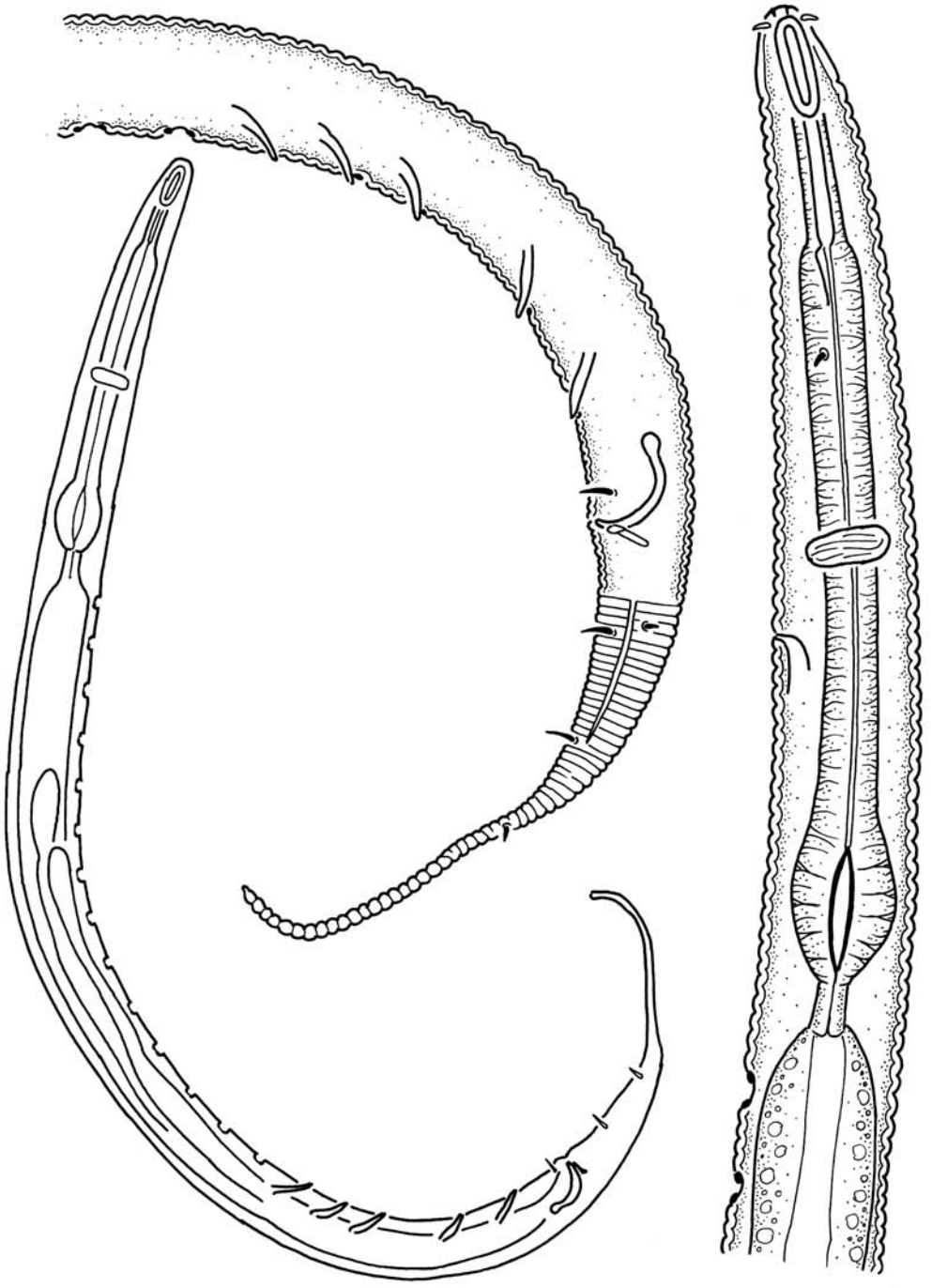
1963 *Anomonema* – Hopper, Canadian Journal of Zoology 41: 852.

Morphology: Cuticule annulated, annulation smooth. Lateral alae present. Epidermal glands undescribed. Somatic sensilla present. Labial region rounded, lips undescribed. First annulus anterior to cephalic setae bases and amphids, cephalic capsule absent. Inner labial sensilla indistinct. Outer labial sensilla setiform, located on anterior surface of lips. Cephalic sensilla setiform; their bases located anterior to amphids. Subcephalic sensilla absent. Ocelli and deirid absent. Amphidial fovea transversely oval. Secretory-excretory system undescribed. Oral opening undescribed. Buccal cavity barrel-shaped: cheilostom undifferentiated; gymnostom short barrel-shaped; stegostom undeveloped. Radial tubes undescribed. Dorsal gland orifice undescribed. Pharynx subdivided by breaks in muscular pharyngeal tissue into a narrow procorpus, a somewhat wider metacorpus, a narrow isthmus and basal bulb; muscularized; pharyngeal lumen thickened in the basal bulb; without valves. Cardia enveloped by intestine in its posterior part. Females unknown. Male reproductive system monorchic; single anterior testis outstretched; spicules arcuate; gubernaculum rectangular or plate-like, with apophysis. Copulatory apparatus: 3 midventral tubular supplements; single midventral precloacal papilliform sensillum (located on the anal lip); a pair of precloacal setae (in *A. deconincki*) and several pairs of subventral and subdorsal caudal setae, unpaired setae may be present. Tail elongate. Three caudal glands present, their nuclei are incaudal. Spinneret functional, strongly cuticularised.

Biology: Both known species are marine, *A. haplostoma* was found in the Gulf of Mexico and *A. deconincki* along the Belgian coast of the North Sea. Both species are known on the base of one male each. No information about females, development, feeding habitat, etc.

Taxonomy: Type species ***Anomonema haplostoma*** Hopper, 1963. Two valid species.

1. Hopper, B.E. (1963). Marine nematodes from the coast line of the Gulf of Mexico. III. Additional species from gulf shores, Alabama. *Canadian Journal of Zoology* 41: 841-863.
2. Jensen, P. (1976). Free-living marine nematodes from a sublittoral station in the North Sea off the Belgian coast. *Biologisch Jaarboek Dodonaea* 44: 231-255.



Antomicron profundum Vitiello, 1971

Original figure by O. Holovachov,
based on Vitiello (1971) with modifications

Genus *Antomicron* Cobb, 1920

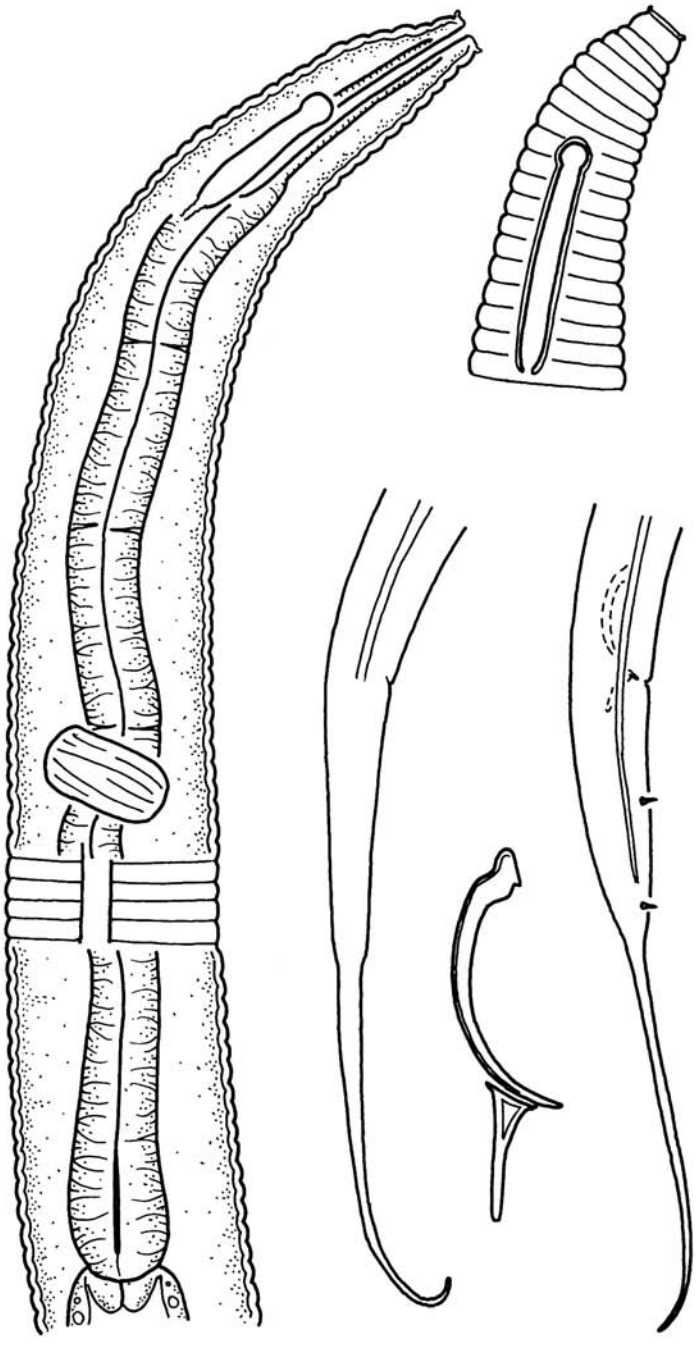
1920 *Antomicron* – Cobb, Contribution to a Science of Nematology 9: 241.
1922 *Eutelolaimus* – de Man, Tijdschrift Nederlandsche dierkundige Vereeniging 18: 127.

Morphology: Cuticule annulated, annulation smooth. Lateral alae present, single band of smooth cuticle. Epidermal glands present, opening via body pores in two sublateral rows on each body side. Somatic sensilla present, connected to epidermal glands along the body, their number is species-specific. Labial region rounded, lips undescribed. First annulus posterior to cephalic setae bases, at level of or posterior to amphids, cephalic capsule absent. Inner labial sensilla indistinct. Outer labial sensilla indistinct, located on anterior surface of lips. Cephalic sensilla papilliform (described as absent) or setiform; their bases located anterior to amphids. Subcephalic sensilla absent. Ocelli and deirid absent. Amphidial fovea loop-shaped (derived from ventrally unispiral), with or without central shield. Secretory-excretory system: renette cell oval, located along ventral side of cardia and anterior part of intestine; excretory pore opens posterior to nerve ring; excretory canal short, excretory ampulla present. Oral opening not described. Buccal cavity tubular: cheilostom undifferentiated; gymnostom undifferentiated or short barrel-shaped; stegostom tubular. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen posterior to stoma base. Pharynx subdivided by breaks in muscular pharyngeal tissue into a narrow procorpus, a somewhat wider metacorpus, a narrow isthmus and basal bulb; muscularized; pharyngeal lumen within bulbus is thicker and more cuticularised than elsewhere along the pharynx; without valves and bulbs. Cardia enveloped by the intestine in its posterior part. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermathecae paired (four in total) and offset, sac-like, located on each side of each gonoduct; uterus short in oviparous species and long in ovoviviparous species; vulva equatorial; vagina straight, *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate; gubernaculum rectangular or plate-like, with apophysis. Copulatory apparatus: 8-14 alveolar supplements (present or absent), 2-10 midventral tubular supplements (present or absent); single midventral precloacal papilliform sensillum (located on the anal lip); a pair of precloacal setae and several pairs of subventral and subdorsal caudal setae, unpaired setae may be present. Tail conoid, elongate or subcylindrical. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised.

Biology: All known species are marine, found in the North Sea coast of the Netherlands and Germany, Pacific coast of Costa Rica (and California – O.H., unpublished), Atlantic coast of Brasil (and Gulf of Mexico – O.H., unpublished), South China Sea of Vietnam. No information about development.

Taxonomy: Type species ***Antomicron pellucidum*** Cobb, 1920. Five valid species plus two species of uncertain taxonomic status that may belong to *Antomicron*.

1. Gagarin, V.G. & Nguyen, V.T. (2005). New species of free-living nematodes of the family Leptolaimidae from the Cam river, Vietnam. *Zoologicheskii Zhurnal* 84: 771-777.
2. Vitiello, P. (1971). Espèces nouvelles de Leptolaimidae (Nematoda) et description du genre *Leptolaimoides* n. gen. *Cahiers de Biologie Marine* 12: 429-432.



Leptolaimoides thermastris (Lorenzen, 1966) Vitiello, 1971

Original figure by O. Holovachov,
based on Lorenzen (1966) with modifications

Genus *Leptolaimoides* Vitiello, 1971

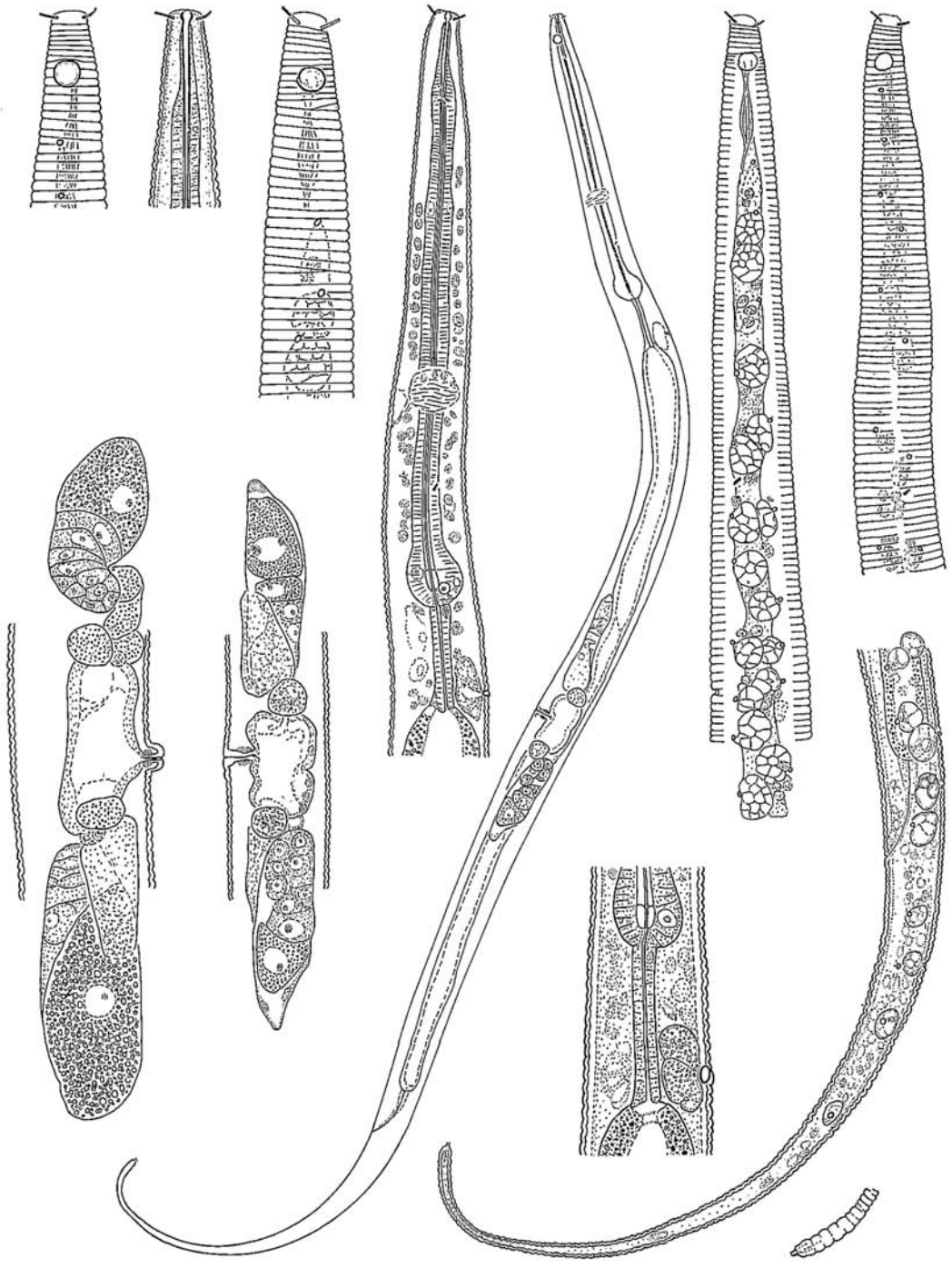
1971 *Leptolaimoides* – Vitiello, Cahiers de Biologie Marine 12: 429-431.

Morphology: Cuticule annulated, annulation smooth. Lateral alae present, in three species (*L. haploopis, L. punctatus* and *L. hexatubulosus*) rims of the lateral alae are in shape of dots or rods. Epidermal glands present, opening via body pores in two sublateral rows on each body side. Somatic sensilla present, connected to epidermal glands along the body, their number is species-specific. Labial region rounded, lips undescribed. First annulus anterior to cephalic setae bases and amphids, cephalic capsule absent. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on anterior surface of lips. Cephalic sensilla papilliform or setiform; their bases located anterior to amphids. Subcephalic sensilla absent. Ocelli and deirid absent. Amphidial fovea longitudinally oval. Secretory-excretory system (not described for all species): renette cell oval, located along ventral side of cardia and anterior part of intestine; excretory pore opens posterior to nerve ring; excretory canal short, excretory ampulla present. Oral opening undescribed. Buccal cavity tubular: cheilostom undifferentiated; gymnostom undifferentiated or short barrel-shaped; stegostom tubular. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen posterior to stoma base. Pharynx subdivided by breaks in muscular pharyngeal tissue into a narrow procorpus, a somewhat wider metacorpus, a narrow isthmus and basal expansion ("true" basal bulb not developed); muscularized; pharyngeal lumen uniformly thickened; without valves and bulbs. Cardia enveloped by the intestine in its posterior part. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermathecae paired (four in total) and offset, sac-like, located on each side of each gonoduct; uterus short; vulva equatorial; vagina straight, *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate; gubernaculum rectangular or plate-like, with apophysis. Copulatory apparatus: 0-6 midventral tubular supplements (present or absent); single midventral precloacal papilliform sensillum (located on the anal lip); a pair of precloacal setae and 2-3 pairs of subventral caudal setae. Tail conoid with subcylindrical terminal part , elongate or subcylindrical. Three caudal glands present or absent, their nuclei are incaudal. Spinneret functional, weakly cuticularised or absent.

Biology: All species occur in marine or brackish habitats. Most species are known from the North Sea around Denmark and Germany, Okhotsk Sea of Far East and South China Sea of Vietnam. No information about development, feeding habitat, etc. One population found in the Gulf of Mexico (O.H., unpublished)

Taxonomy: Type species ***Leptolaimoides thermastris*** (Lorenzen, 1966) Vitiello, 1971. Eleven valid species.

1. Fadeeva, N.P. & Mordukhovich, V.V. (2007). New and known Leptolaimidae (Nematoda, Chromadoria) species in the Sea of Okhotsk and the Sea of Japan. *Zoologicheskii Zhurnal* 86: 3-15.
2. Hoang, L.P., Blome, D., Nguyen, V.T. & Saint-Paul, U. (2009). Five new species of the genus *Leptolaimoides* Vitiello, 1971 (Nematoda: Leptolaimidae) from Can Gio mangrove biosphere reserve, Vietnam. *Russian Journal of Nematology* 17: 17-30.



Leptoplectonema fuegoense Coomans & Raski, 1991

Reproduced with modifications from Coomans & Raski (1991) with kind permission
from *Revue de Nématologie* (ORSTOM)

Genus *Leptoplectonema* Coomans & Raski, 1991

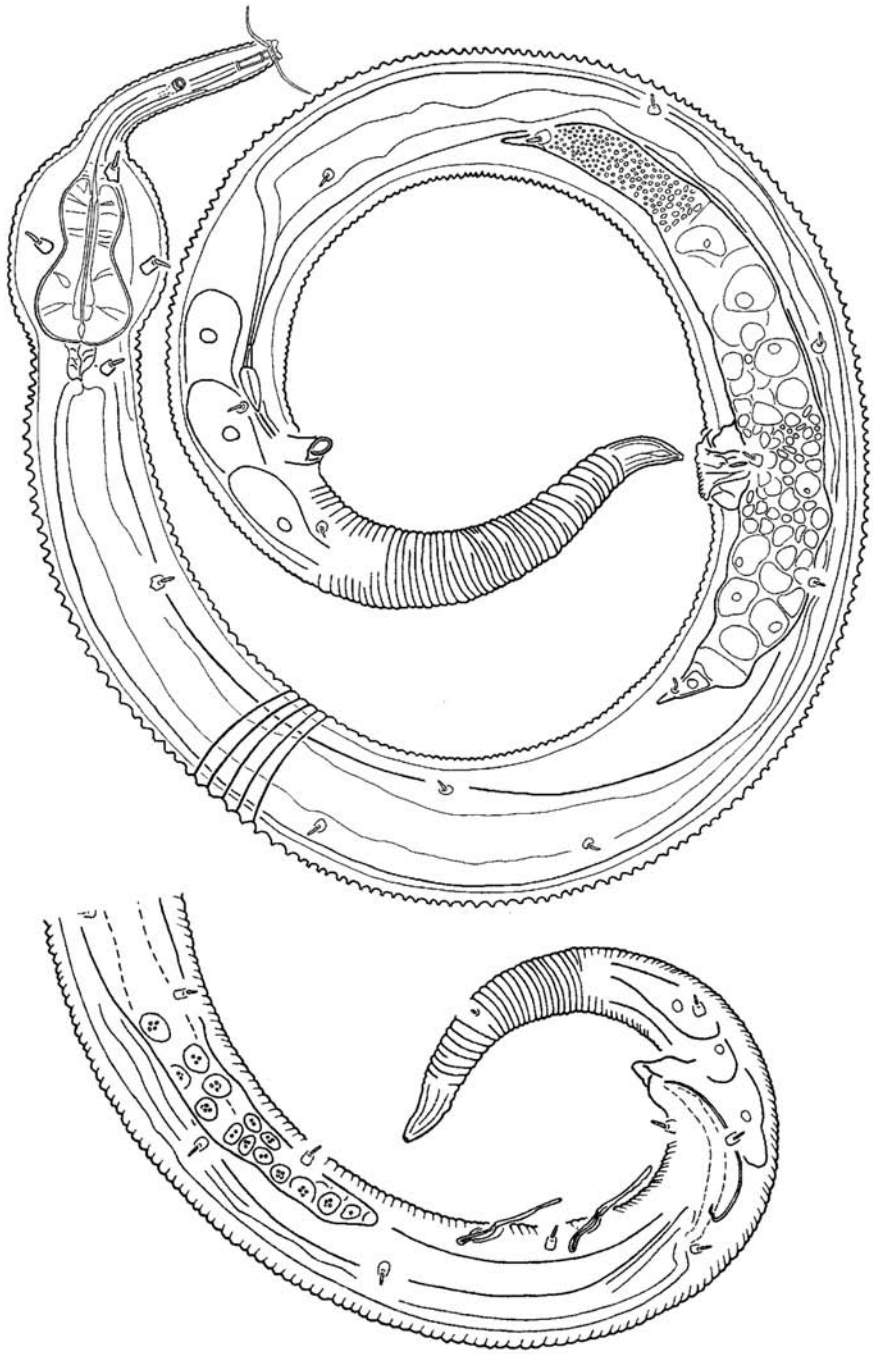
1991 *Leptoplectonema* – Coomans & Raski, Revue de Nématologie 14: 201-205.

Morphology: Cuticule annulated, annulation smooth. Lateral alae absent, there is a band of smooth cuticle in its place (annules are interrupted). Epidermal glands present, opening via body pores in two sublateral rows on each body side. Somatic sensilla absent. Labial region rounded, lips basally fused. First annulus anterior to cephalic setae bases and amphids, cephalic capsule absent. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on anterior surface of lips. Cephalic sensilla setiform; their bases located anterior to amphids. Subcephalic sensilla absent. Ocelli absent. Pair of lateral setae just posterior to or level with nerve ring (one on each body side) and may be homologous to deirids. Amphidial fovea ventrally unispiral, without central elevation. Secretory-excretory system absent. *Organellum ovale* present, located opposite to cardia. Oral opening undescribed. Buccal cavity tubular: cheilostom undifferentiated; gymnostom short barrel-shaped; stegostom tubular. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen posterior to stoma base. Pharynx subdivided by breaks in muscular pharyngeal tissue into a narrow procorpus, a somewhat wider metacorpus, a narrow isthmus and basal bulb; muscularized; pharyngeal lumen within bulbus is thicker and more cuticularised than elsewhere along the pharynx; without valves and bulbs. Cardia free (enveloped by the intestine in its posterior part). Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermathecae paired (four in total) and offset, sac-like, located on each side of each gonoduct, reduced/empty; uterus short; vulva equatorial; vagina straight, *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male unknown. Tail subcylindrical. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised or absent.

Biology: The type species was found in Hoste Island and Isla Navarino off southern Chile. No information about mode of reproduction, development, feeding habitat.

Taxonomy: Type species ***Leptoplectonema fuegoense*** Coomans & Raski, 1991. Single species.

1. Coomans, A. & Raski, D.J. (1991). Observations on *Paraplectonema* Strand, 1934 and description of *Leptoplectonema fuegoense* n. g., n. sp. (Nematoda: Leptolaimidae). *Revue de Nématologie* 14: 197-205.



Manunema kithara Barnes & Ferrero, 2009

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with kind permission from *Zootaxa*

Genus *Manunema* Gerlach, 1957

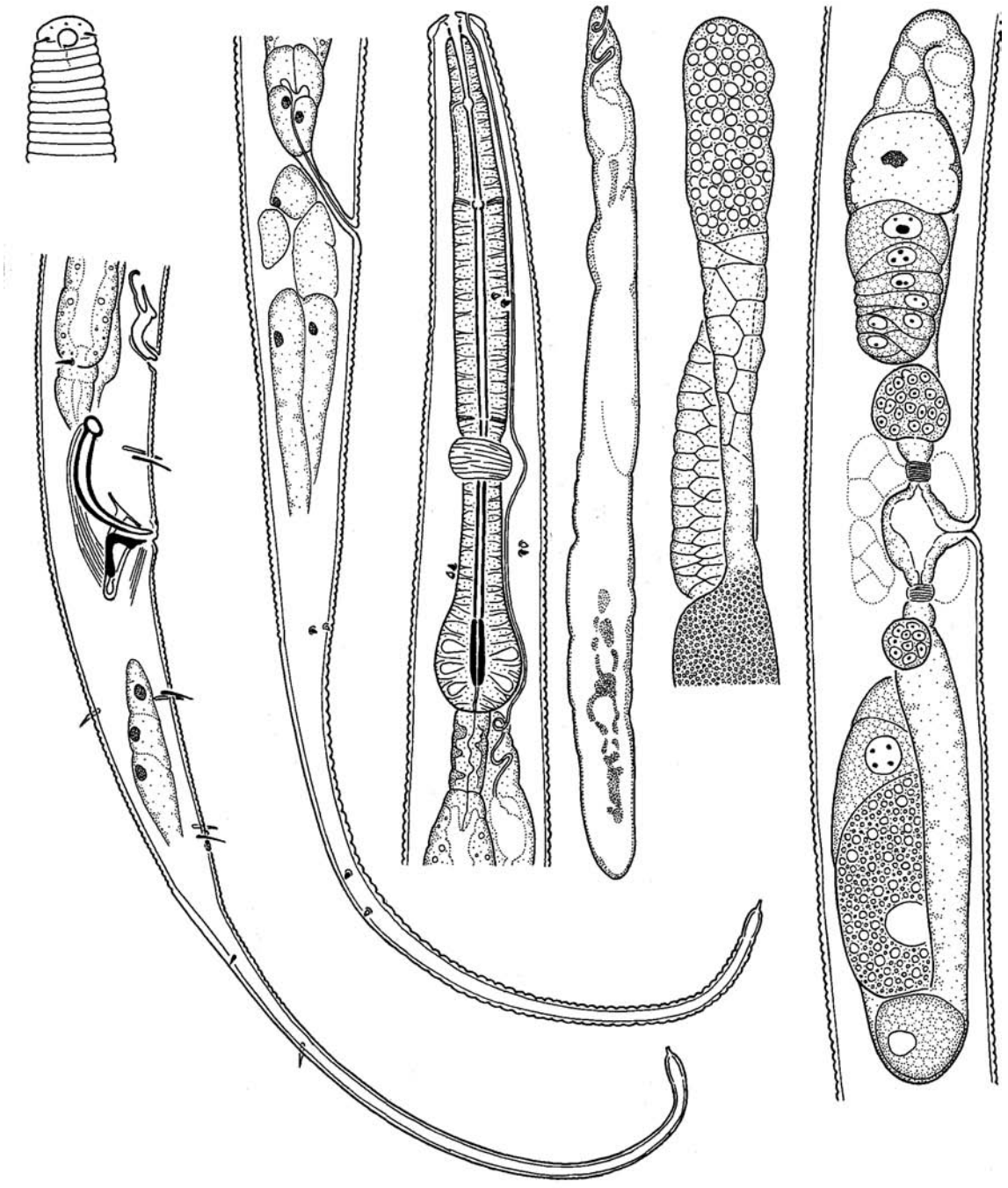
1957 *Manunema* – Gerlach, Mitteilungen aus dem Zoologischen Museum in Berlin 33: 451.
1968 *Peresiana* – Vitiello & De Coninck, Rapport et Procès-Verbaux des Réunions de la Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée 19: 201.

Morphology: Cuticule annulated, annulation smooth. Lateral alae present. Epidermal glands present, opening via body pores in two sublateral rows on each body side. Somatic sensilla present, connected to epidermal glands along the body, their number is species-specific. Labial region rounded, lips separate. First annulus anterior to cephalic setae bases and amphids, cephalic capsule absent. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on anterior surface of lips. Cephalic sensilla papilliform or setiform; their bases located anterior to amphids. Subcephalic sensilla absent. Ocelli and deirid absent. Amphidial fovea ventrally unispiral, without central elevation. Secretory-excretory system incompletely described. Oral opening undescribed. Buccal cavity tubular: cheilostom undifferentiated; gymnostom short barrel-shaped; stegostom tubular. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen posterior to stoma base. Pharynx subdivided by breaks in muscular pharyngeal tissue into a narrow procorpus, a wide cylindrical metacorpus fused with isthmus and basal bulb into a cylindrical or guitar-shaped “cylindrus”; muscularized; pharyngeal lumen thickened more in basal part of the pharynx; without valves and bulbs. Cardia free. Female reproductive system didelphic, amphidelphic; ovary branches outstretched; spermathecae paired (four in total) and offset, sac-like, located on each side of each gonoduct; uterus short in oviparous species and long in ovoviviparous species; vulva equatorial; vagina straight, *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system monorchic; testis either outstretched or reflexed; spicules arcuate; gubernaculum plate-like, with apophysis. Copulatory apparatus: 1-3 midventral tubular supplements (present or absent); single midventral precloacal setiform sensillum; and several caudal setae (not arranged in clear pairs) in subdorsal and subventral position. Distal part of the supplements may be comb-shaped (*M. pectenophora*) or transversely-ridged. Tail conoid, elongate or subcylindrical. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised.

Biology: Amphimictic. Marine, found in salt and brackish-water environments along the European coast (Netherlands, Denmark, Germany, southern France), Brazil, Australia and the Arabian Gulf. Unpublished records in Pacific coast of California and the Philippines. No information about development, feeding habitat.

Taxonomy: Type species ***Manunema proboscidis*** Gerlach, 1957. Five valid species.

1. Barnes, N. & Ferrero, T.J. (2009). Two new species of *Manunema* (Plectida: Peresianidae) from the Arabian Gulf, with notes on the phylogeny of the genus. *Zootaxa* 2053: 43-58.



Paraplectonema loofi Holovachov & Boström, 2004

Reproduced with modifications from Holovachov & Boström (2004) with kind permission from *Journal of Nematode Morphology and Systematics*

Genus *Paraplectonema* Strand, 1934

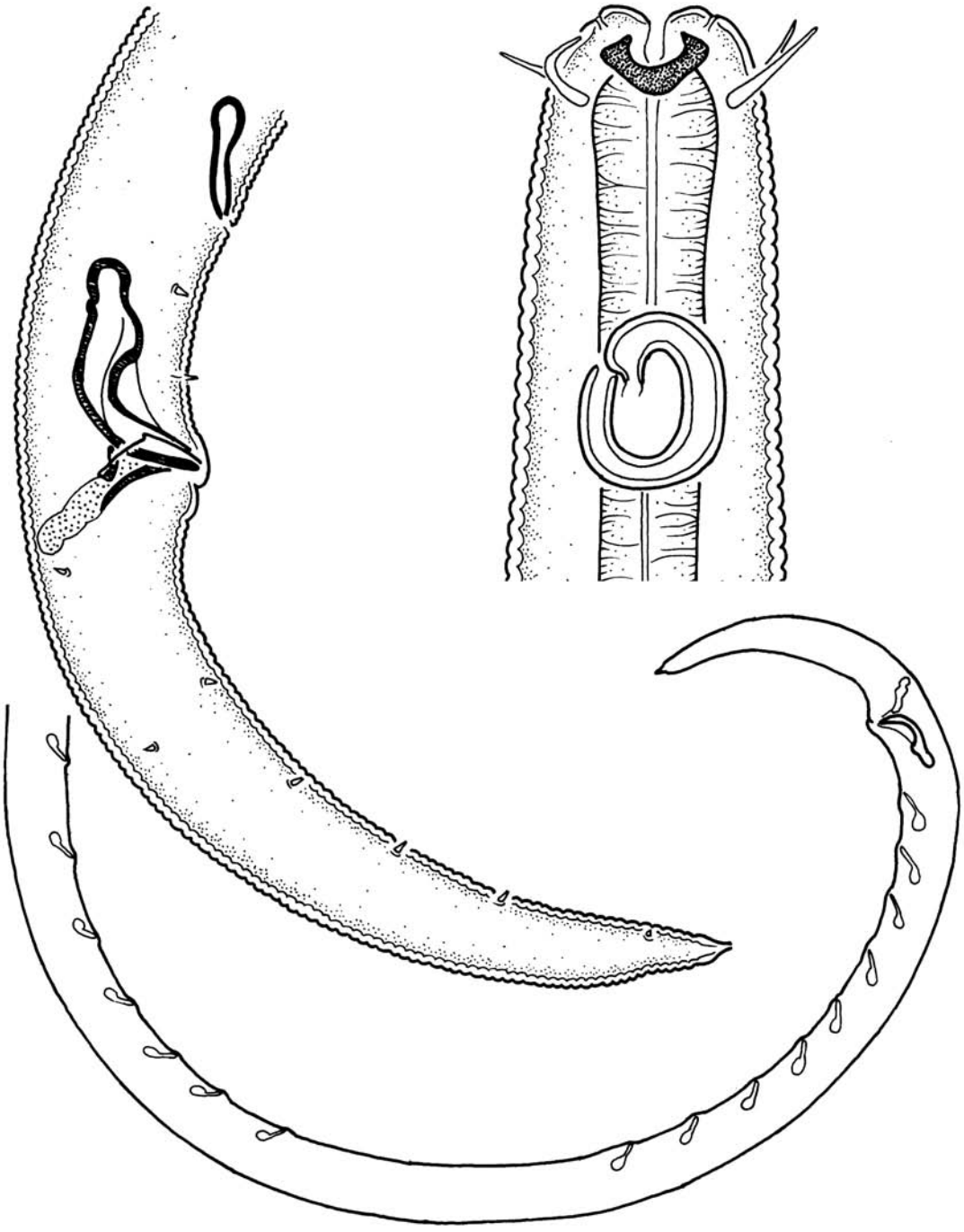
1930 *Paraplectus* – Filipjev, Archiv für Hydrobiologie 21: 12-13.
1934 *Paraplectonema* – Strand, Folia Zoologica et Hydrobiologica 6: 271.

Morphology: Cuticule annulated, annulation smooth. Lateral alae present, single band of smooth cuticle. Epidermal glands present, opening via body pores in two sublateral rows on each body side. Somatic sensilla present, connected to epidermal glands along the body, their number is species-specific. Labial region rounded, lips fused. First annulus anterior to cephalic setae bases and amphids, cephalic capsule absent. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on anterior surface of lips. Cephalic sensilla setiform; their bases located anterior to amphids. Subcephalic sensilla absent. Ocelli and deirid absent. Amphidial fovea ventrally unispiral, without central elevation, located on the first body annule. Secretory-excretory system: renette cell oval, located along ventral side of cardia and anterior part of intestine; excretory pore opens posterior to nerve ring or between subventral lips (*P. loofi*); excretory canal long, excretory ampulla absent. Oral opening pore-like. Buccal cavity tubular: cheilostom undifferentiated; gymnostom short, barrel-shaped; stegostom tubular. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen at stoma base. Pharynx subdivided by breaks in muscular pharyngeal tissue into a narrow procorpus, a somewhat wider metacorpus, a narrow isthmus and basal bulb; muscularized; pharyngeal lumen within bulbus is thicker and more cuticularised than elsewhere along the pharynx; without valves and bulbs. Cardia free, with posterior part surronded by intestinal tissue. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermathecae paired (four in total) and offset, sac-like, located on each side of each gonoduct; uterus short in oviparous species and long in ovoviviparous species; vulva equatorial; vagina straight, *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate; gubernaculum plate-like, with apophysis. Copulatory apparatus: 9-11 midventral tubular supplements (sigmoid in shape, often protruding above cuticle level); single midventral precloacal papilliform sensillum (located on the anal lip); a pair of precloacal setae, and 2 pairs of subventral and 1 pair of subdorsal caudal setae, unpaired setae may be present. In *P. loofi* two subventral postcloacal sensilla are present at the middle of tail. Tail conoid, elongate or subcylindrical. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised.

Biology: Amphimictic except for *P. pedunculatum* (thelytokous). No data on development available. All species inhabit fresh or brackish water sediments. Recorded from many countries in Europe; from China, Vietnam, Japan, Far East and Caspian Sea in Asia; from Ethiopia in Africa, from USA and Costa Rica in the Americas.

Taxonomy: Type species ***Paraplectonema pedunculatum*** (Hofmänner, 1913) Strand, 1934. Seven valid species.

1. Holovachov O. & Boström S. (2004). Morphology and systematics of the superfamilies Leptolaimoidea Örley, 1880 and Camacolaimoidea Micoletzky, 1924 (Nematoda: Plectida). *Journal of Nematode Morphology and Systematics* 7: 1-49.



Cricolaimus elongatus Southern, 1914

Original figure by O. Holovachov,
based on Keppner (1992) with modifications

Genus *Cricolaimus* Southern, 1914

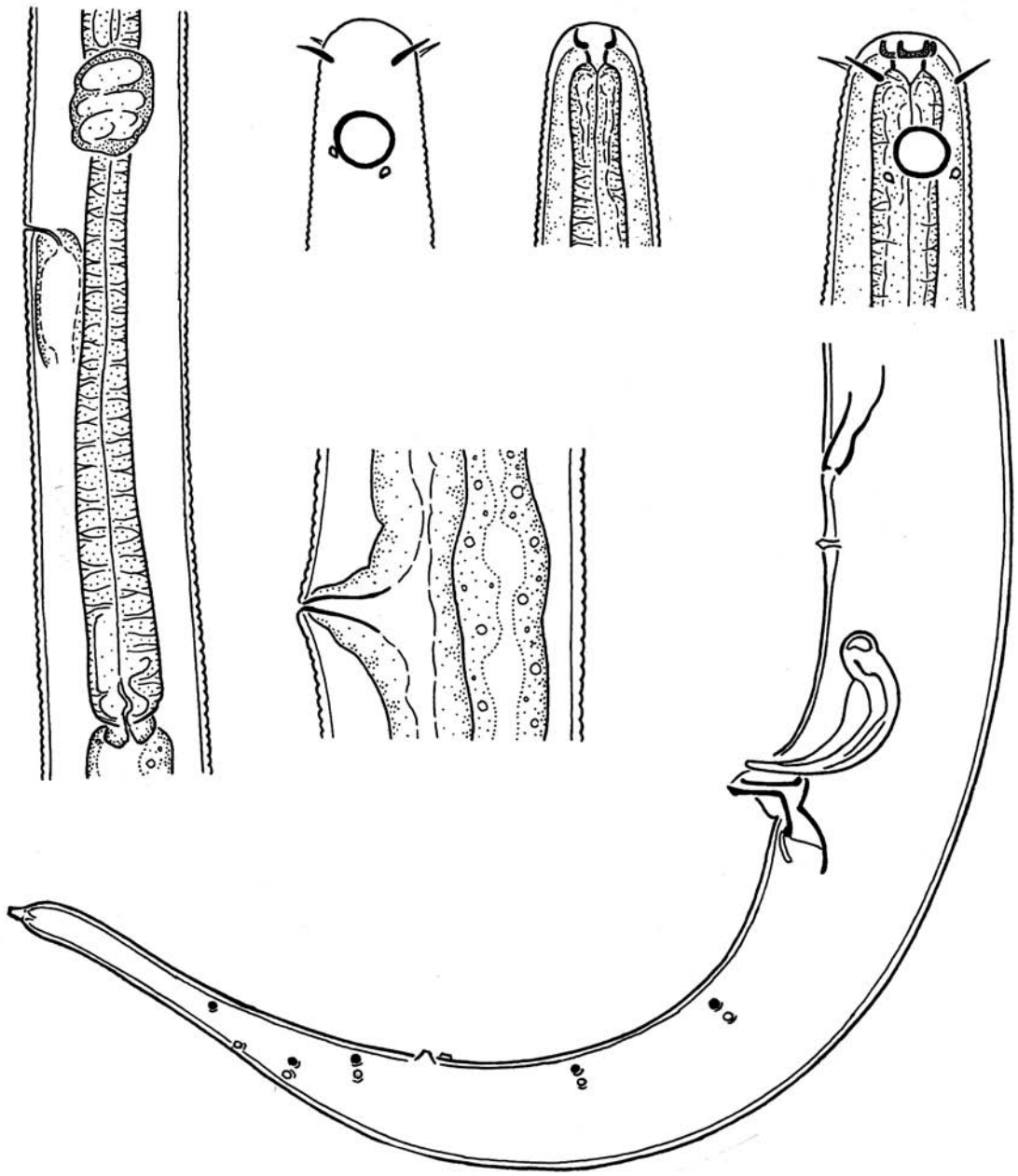
1914 *Cricolaimus* – Southern, Proceedings of the Royal Irish Academy 31: 20.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae absent. Epidermal glands and body pores undescribed. Somatic setae present, not connected to epidermal glands. Labial region rounded, continuous with body contour, lips fused. First annulus at level of cephalic setae bases, cephalic capsule absent. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located at base of labial region. Subcephalic and cervical sensilla, deirid and ocelli absent. Amphidial fovea loop-shaped, ventrally-unispiral. Secretory-excretory system: renette cell located along the ventral side of intestine; excretory pore strongly cuticularised, located posterior to nerve ring; excretory canal weakly cuticularised, extending from pore for a short distance to the excretory ampulla. Oral opening undescribed. Buccal cavity funnel-shaped: cheilostom or gymnostom (exact morphology unclear) consists of a sclerotised ring with two (single dorsal and single ventral) or six (one dorsal, one ventral and four sublateral in position) forwardly directed projections; stegostom conoid, undifferentiated. Radial tubes absent. Pharyngeal gland orifices undescribed. Pharynx cylindrical anteriorly, gradually widening posteriorly into a basal bulb; muscularised with uniformly thickened lumen throughout, lacking valves. Cardia embedded in intestine. Female reproductive system unknown. Male reproductive system diorchic; testes undescribed; spicules arcuate, with rectangular manubrium, conoid shaft; gubernaculum plate-like with caudal apophysis. Copulatory apparatus: 13-17 tubular supplements in two groups, precloacal sensillum present; postcloacal sensilla not described; caudal setae arranged in subventral and dorsosublateral rows. Tail conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, not cuticularised.

Biology: Both species known from males only. Marine.

Taxonomy: Type species ***Cricolaimus elongatus*** Southern, 1914. Two valid species.

1. Keppner, E.J. (1992). Some free-living marine nematodes from Northwest Florida, U.S.A. with descriptions of three new species (Nematoda: Chromadorida, Trefusiida). *Transactions of the American Microscopical Society* 111: 199-210.



Rhadinema flexile Cobb, 1920

Reproduced with modifications from Holovachov & Boström (2004) with kind permission from *Journal of Nematode Morphology and Systematics*

Genus *Rhadinema* Cobb, 1920

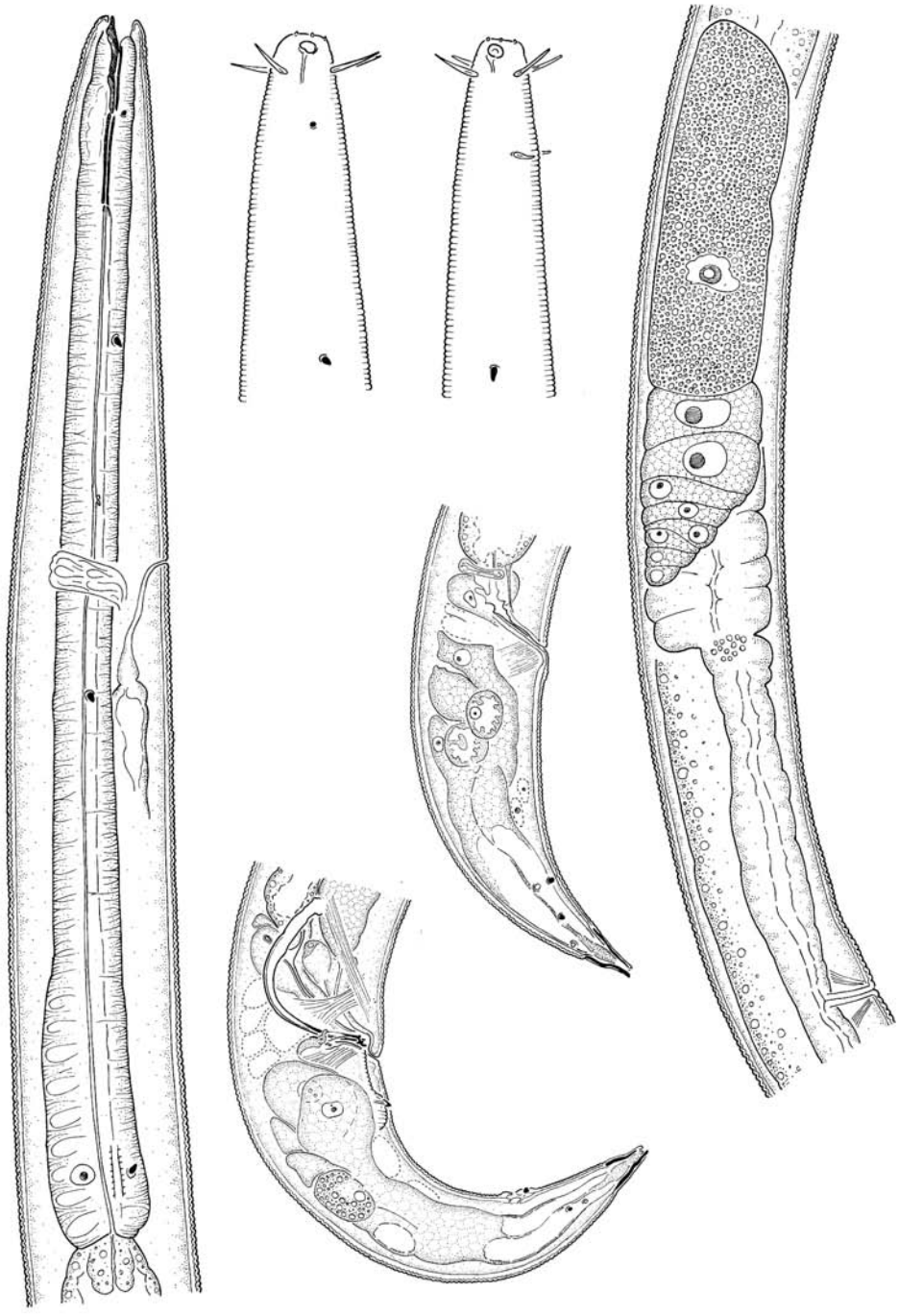
1920 *Rhadinema* – Cobb, Contribution to a Science of Nematology 9: 256.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae absent. Epidermal glands present, opening through the distinct body pores. Somatic setae present only on tail, not connected to epidermal glands. Labial region rounded, continuous with body contour, lips fused. First annulus at level of cephalic setae bases, cephalic capsule absent. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located at base of labial region. Subcephalic and cervical sensilla, deirid and ocelli absent. Amphidial fovea ventrally-unispiral. Secretory-excretory system: renette cell located along the ventral side of intestine; excretory pore located posterior to nerve ring; excretory canal weakly cuticularised, extending from pore for a short distance to the excretory ampulla. Oral opening undescribed. Buccal cavity funnel-shaped: cheilostom consists of a sclerotised ring with six forwardly directed projections: one dorsal, one ventral and four sublateral in position; gymnostom barrel-shaped, with parallel, short walls; stegostom conoid, undifferentiated. Radial tubes absent. Dorsal and two subventral gland orifices penetrate pharyngeal lumen at the base of the stoma. Pharynx cylindrical anteriorly, gradually widening posteriorly; muscularised with uniformly thickened lumen throughout, lacking valves and bulbs. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system diorchic; testes outstretched; spicules arcuate, with ovoid manubrium, conoid shaft; gubernaculum plate-like with caudal apophysis. Copulatory apparatus: 7-10 tubular supplements, precloacal sensillum present; two postcloacal sensilla; ten caudal setae arranged in three subventral and two dorsosublateral pairs. Tail conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, not cuticularised.

Biology: Amphimictic. Marine.

Taxonomy: Type and only species ***Rhadinema flexile*** Cobb, 1920.

1. Holovachov O. & Boström S. (2004). Morphology and systematics of the superfamilies Leptolaimoidea Örley, 1880 and Camacolaimoidea Micoletzky, 1924 (Nematoda: Plectida). *Journal of Nematode Morphology and Systematics* 7: 1-49.



Camacolaimus prytherchi Chitwood, 1935

Original figure by O. Holovachov

Genus *Camacolaimus* de Man, 1889

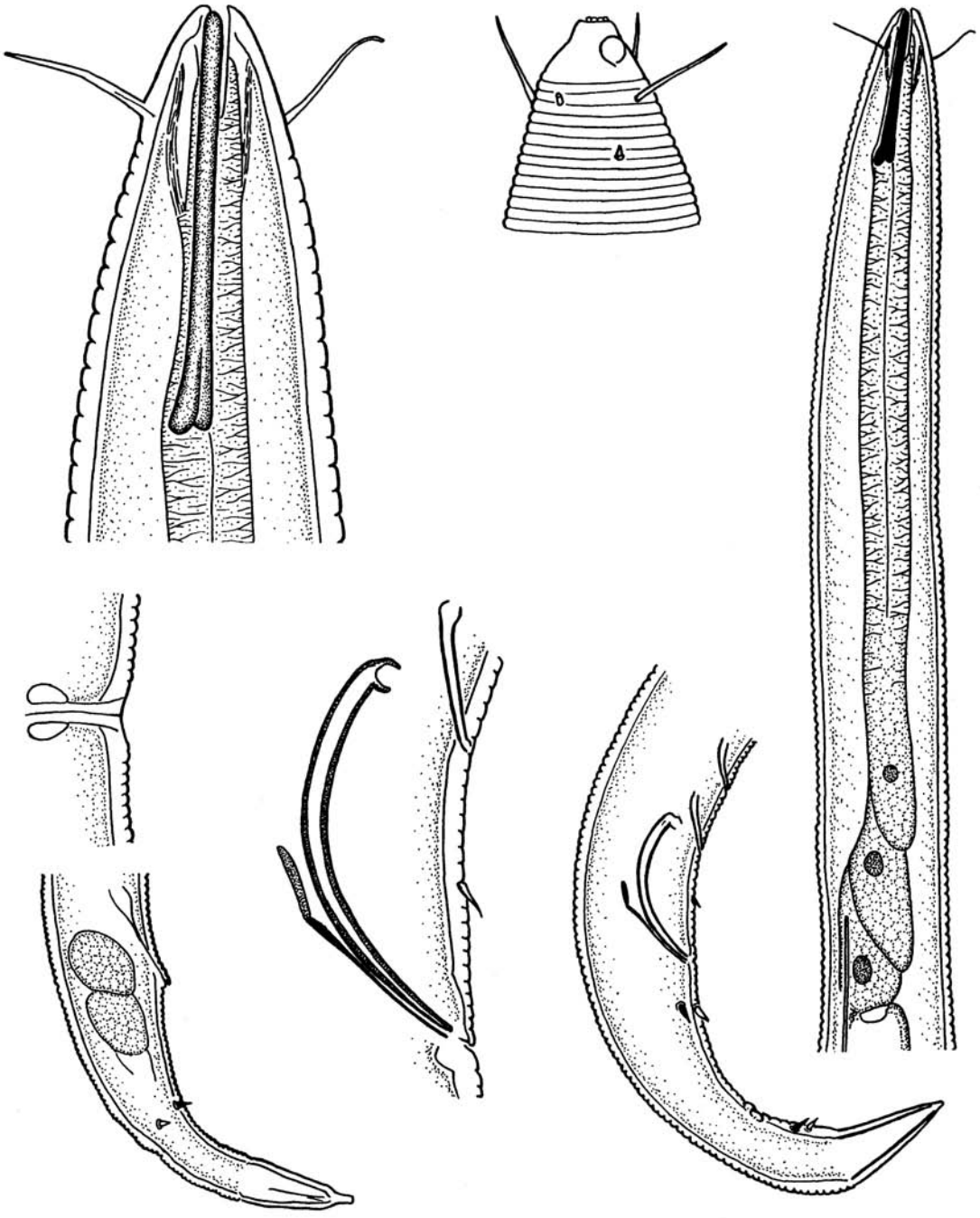
1889 *Camacolaimus* – de Man, Mémoires de la Société zoolgique de France 2: 3-4.
1918 *Acontiolaimus* – Filipjev, Trudy osoboi zoologicheskoi laboratorii i sevastopol'skoi biologicheskoi stantsii Rissiiskoi Akademii Nauk 2: 187.
1920 *Digitonchus* – Cobb, Contribution to a Science of Nematology 9: 314.
1920 *Ypsilon* – Cobb, Contribution to a Science of Nematology 9: 314-315.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae present, single band of smooth cuticle. Epidermal glands absent. Somatic setae present, not connected to epidermal glands. Labial region rounded, continuous with body contour, lips basally fused. First annulus posterior to amphids and cephalic setae bases, weak cephalic capsule present. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located posterior to amphids. Subcephalic and cervical sensilla, deirid and ocelli absent. Amphidial fovea ventrally-unispiral. Secretory-excretory system: renette cell located opposite to ventral side of intestine; excretory canal short, extending from pore along ventral region of pharynx towards excretory ampulla. Oral opening undescribed. Buccal cavity narrow, with dorsal armament: cheilostom undifferentiated; gymnostom with a single dorsal odontium pointing forward; stegostom funnel-shaped, with dorsal onchiostyle; odontium and odontostyle joined together. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen at stoma base. Subventral gland orifices not seen. Pharynx cylindrical anteriorly, gradually widening posteriorly; muscularised with uniformly thickened lumen throughout, lacking valves and bulbs. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic or monodelphic, opisthodelphic (*C. monhystera*); ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system diorchic; testes directed forward (outstretched); spicules arcuate, with ovoid ventrally inclined manubrium, narrowing shaft and thin velum; gubernaculum plate-like with. Copulatory apparatus: two postcloacal sensilla. Tail elongate-conoid. Three caudal glands present, their nuclei are incaudal. Single pseudocoelomocyte located anterior to caudal glands. Spinneret functional, weakly cuticularised, often long conoid or arcuate dorsad.

Biology: Most known species are amphimictic and marine. Found in marine habitats from all over the world, including Antarctica (unpublished).

Taxonomy: Type species ***Camacolaimus tardus*** de Man, 1889. Thirteen valid species and fifteen species of uncertain taxonomic status.

This genus is in need of revision. No recent references and keys are available.



Anguinoides stylosum Chitwood, 1936

Reproduced with modifications from Holovachov (2003) with kind permission from *Russian Journal of Nematology*

Genus *Anguinoides* Chitwood, 1936

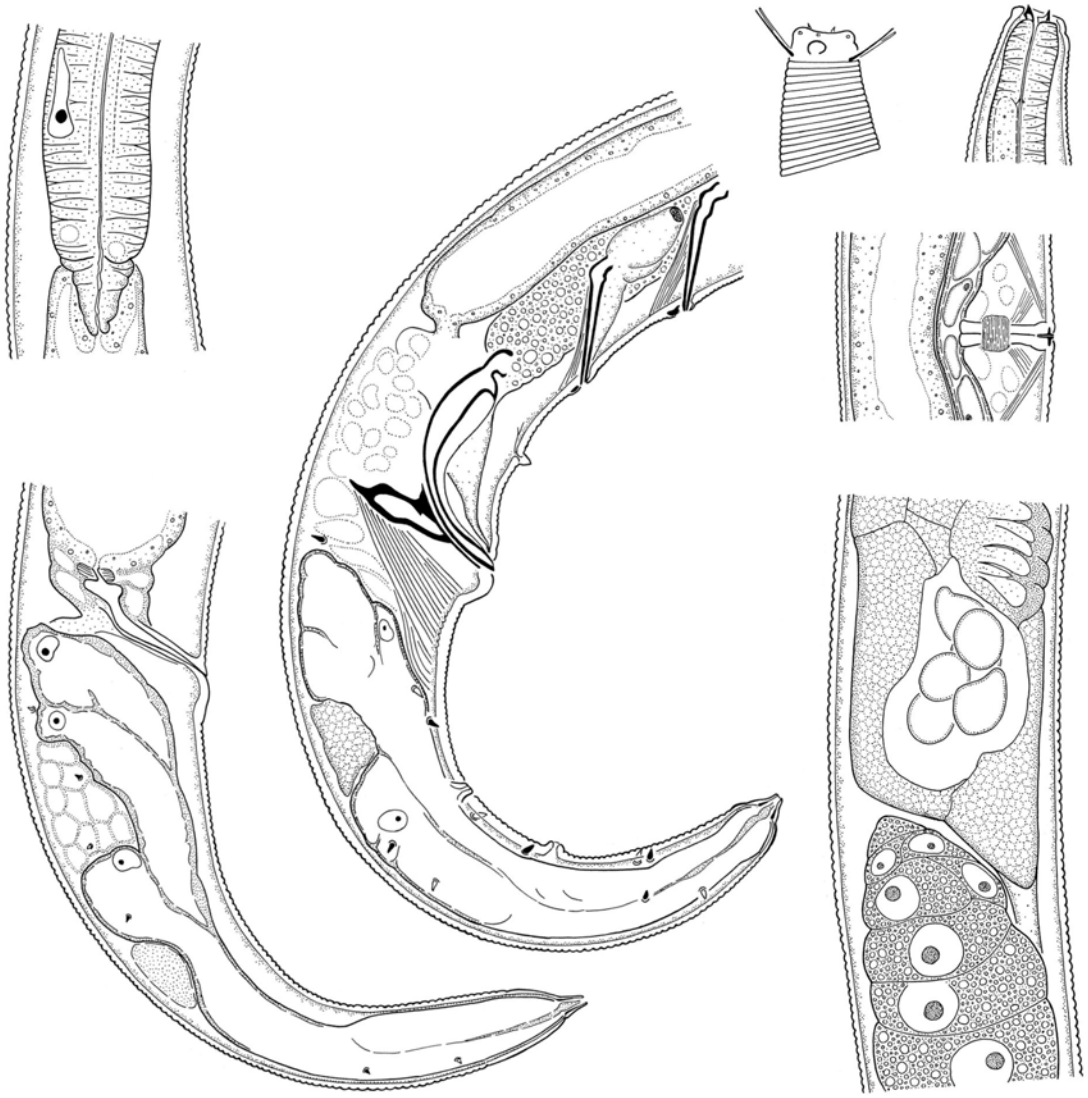
1936 *Anguinoides* – Chitwood, Proceedings of the Helminthological Society of Washington 3: 11.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae present, single band of smooth cuticle. Epidermal glands and body pores absent. Somatic setae present, not connected to epidermal glands. Labial region truncate-conoid, continuous with body contour, lips fused. First annulus anterior to cephalic setae bases but posterior to amphid, cephalic capsule moderately developed. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located posterior to amphids. Subcephalic and cervical sensilla, deirid and ocelli absent. Amphidial fovea ventrally-unispiral, located anterior to cephalic setae bases, on the cephalic capsule. Secretory-excretory system absent. Oral opening undescribed. Buccal cavity narrow, with dorsal armament: cheilostom undifferentiated; gymnostom undifferentiated; stegostom funnel-shaped, with dorsal onchiostyle protruding anteriorly into the cheilo- and gymnostom; odontostyle base is bluntly rounded or bilobed, odontostyle tip is acute or bluntly rounded. Radial tubes absent. Dorsal gland orifice not seen. Subventral gland orifices not seen. Pharynx cylindrical anteriorly, muscularised, gradually widening posteriorly into a glandular "cylindrus"; with uniformly thickened lumen throughout, lacking valves and bulbs. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca undescribed; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system undescribed; spicules arcuate, with ovoid ventrally inclined manubrium, conoid shaft; gubernaculum plate-like. Copulatory apparatus: 5-7 tubular supplements; precloacal sensillum papilliform; postcloacal sensilla papilliform; 2-3 pairs of caudal setae. Tail elongate-conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, large and strongly cuticularised.

Biology: Both known species are marine, found in the North Atlantic off North Carolina (*A. stylosum*) and the Mediterranean Sea (*A. profundus*).

Taxonomy: Type species ***Anguinoides stylosum*** Chitwood, 1936. Two valid species.

1. Holovachov O. (2003). Redescription of *Anguinoides stylosum* Chitwood, 1936 (Nematoda: Leptolaimidae). *Russian Journal of Nematology* 11: 23-25.



Dagda bipapillata Southern, 1914

Reproduced with modifications from Holovachov & Boström (2004) with kind permission from *Journal of Nematode Morphology and Systematics*

Genus *Dagda* Southern, 1914

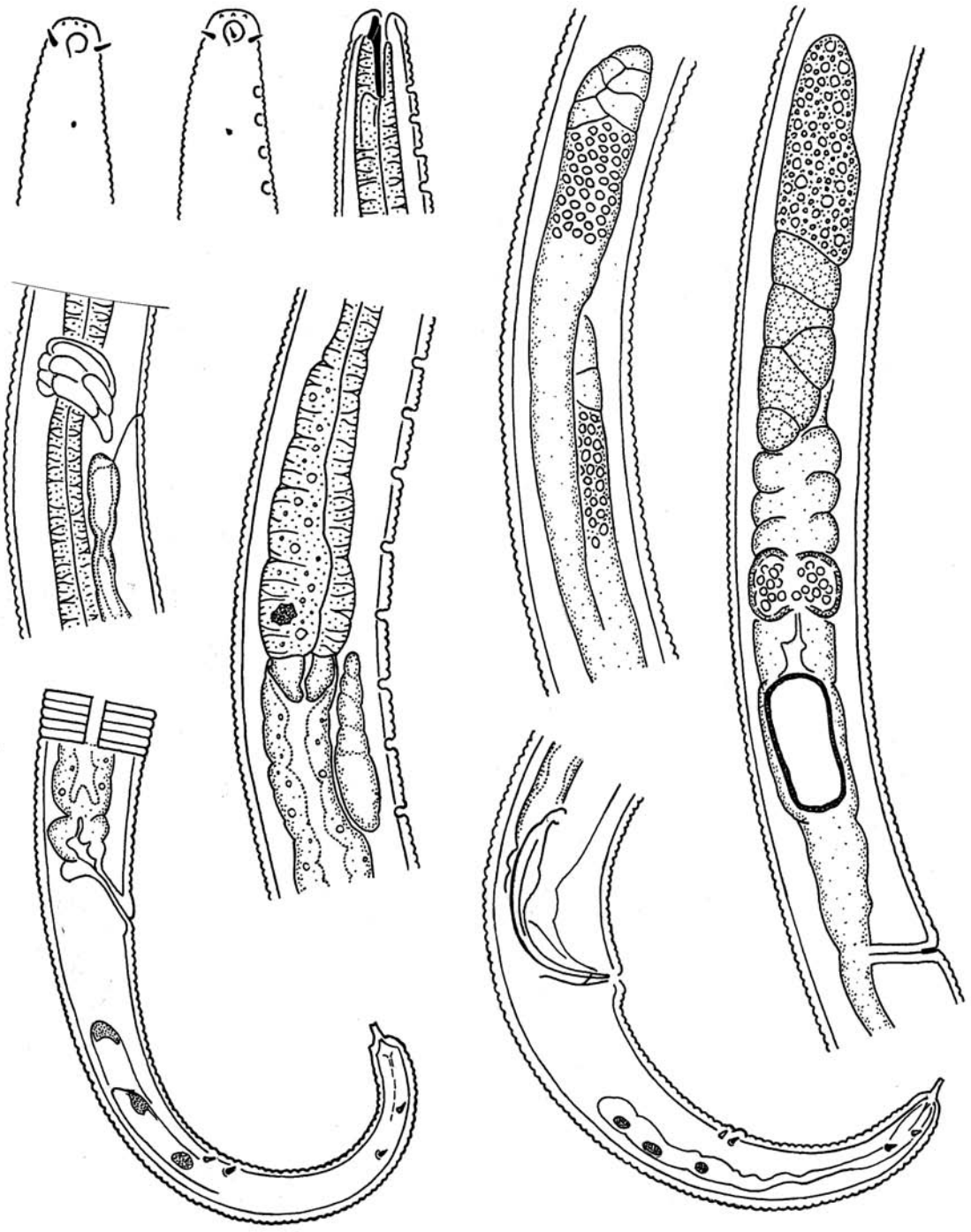
1914 *Dagda* – Proceedings of the Royal Irish Academy 31: 29.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Distinct cuticular ridge is present in the pharyngeal region along the ventral side of the body. Lateral alae absent. Epidermal glands and body pores absent. Somatic setae present, not connected to epidermal glands. Labial region truncate, slightly separated from rest of body by a wide depression, lips fused. Anterior part of the body spirally curved due to presence of strong muscle cells directed obliquely from ventral side posteriorly to dorsal side. First annulus posterior to amphids and cephalic setae bases, weak cephalic capsule present. Inner labial sensilla papilliform, located on outer surface of lips. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located posterior to amphids. Subcephalic and cervical sensilla, deirid and ocelli absent. Amphidial fovea ventrally-unispiral, located anterior to cephalic setae bases, on the cephalic capsule. Secretory-excretory system: renette cell located opposite to ventral side of intestine; excretory canal short, extending from pore along ventral region of pharynx towards excretory ampulla. Oral opening triangular. Buccal cavity wide, with dorsal armament: cheilostom undifferentiated; gymnostom with three (one dorsal and two ventrosublateral) odontia pointing forward; stegostom funnel-shaped, undifferentiated. Radial tubes absent. Dorsal and subventral gland orifices penetrate pharyngeal lumen somewhat posterior to stoma base. Pharynx cylindrical anteriorly, gradually widening posteriorly; muscularised with uniformly thickened lumen throughout, lacking valves and bulbs. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* with T-shaped sclerotisations. Male reproductive system diorchic; testes directed forward (outstretched); spicules arcuate, with ovoid inclined manubrium, narrowing shaft and thin velum; fenestra pointing ventrad; gubernaculum plate-like with dorsal apophysis. Copulatory apparatus: 9-12 tubular supplements; precloacal papilliform sensillum; postcloacal papilliform sensilla; 3 subventral and 3 subdorsal pairs of caudal setae. Tail elongate-conoid. Three caudal glands present, their nuclei are incaudal. Single pseudocoelomocyte located anterior to caudal glands. Spinneret functional, weakly cuticularised.

Biology: The single known species is marine and widely distributed in seas of northern Europe.

Taxonomy: Type and only species ***Dagda bipapillata*** Southern, 1914.

1. Holovachov O. & Boström S. (2004). Morphology and systematics of the superfamilies Leptolaimoidea Örley, 1880 and Camacolaimoidea Micoletzky, 1924 (Nematoda: Plectida). *Journal of Nematode Morphology and Systematics* 7: 1-49.



Deontolaimus papillatus de Man, 1880

Reproduced with modifications from Holovachov & Boström (2004) with kind permission from *Journal of Nematode Morphology and Systematics*

Genus *Deontolaimus* de Man, 1880

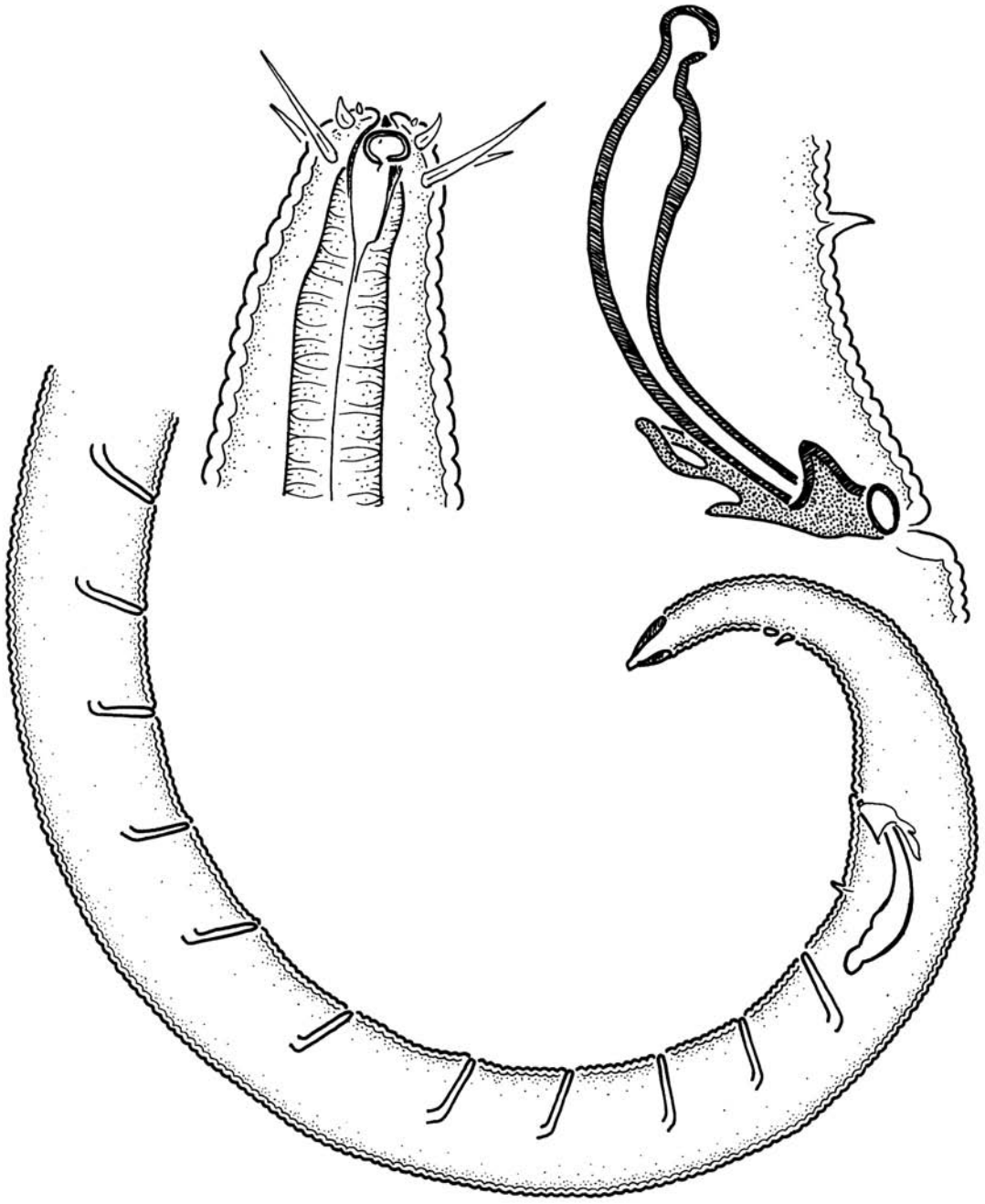
1880 *Deontolaimus* – de Man, Tijdschrift Nederlandsche dierkundige Vereeniging 5: 3-4.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae present, single band of smooth cuticle. Epidermal glands absent. Somatic setae present, not connected to epidermal glands. Labial region rounded, continuous with body contour, lips basally fused. First annulus posterior to amphids and cephalic setae bases, weak cephalic capsule present. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located posterior to amphids. Subcephalic and cervical sensilla, deirid and ocelli absent. Amphidial fovea ventrally-unispiral. Secretory-excretory system: renette cell located opposite to ventral side of intestine; excretory canal short, extending from pore along ventral region of pharynx towards excretory ampulla. Oral opening undescribed. Buccal cavity narrow, with dorsal armament: cheilostom undifferentiated; gymnostom with a single dorsal odontium pointing forward; stegostom funnel-shaped, with dorsal onchiostyle; odontium and odontostyle joined together. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen at stoma base. Subventral gland orifices not seen. Pharynx cylindrical anteriorly, gradually widening posteriorly; muscularised with uniformly thickened lumen throughout, lacking valves and bulbs. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system diorchic; testes directed forward (outstretched); spicules arcuate, with ovoid ventrally inclined manubrium, narrowing shaft and thin velum; gubernaculum plate-like. Copulatory apparatus: 22-35 alveolar supplements along the midventral body line of the anterior part of the body, two postcloacal sensilla. Tail elongate-conoid. Three caudal glands present, their nuclei are incaudal. Single pseudocoelomocyte located anterior to caudal glands. Spinneret functional, weakly cuticularised.

Biology: Amphimictic. So far recorded in marine and brackish habitats in Europe and the Far East. Undescribed populations are known from New Zealand and the Pacific coast of the US (California).

Taxonomy: Type species ***Deontolaimus papillatus*** de Man, 1880. One valid species and one species of uncertain taxonomic status.

1. Holovachov O. & Boström S. (2004). Morphology and systematics of the superfamilies Leptolaimoidea Örley, 1880 and Camacolaimoidea Micoletzky, 1924 (Nematoda: Plectida). *Journal of Nematode Morphology and Systematics* 7: 1-49.



Diodontolaimus parasabulosus Keppner, 1992

Original figure by O. Holovachov,
based on Keppner (1992) with modifications

Genus *Diodontolaimus* Southern, 1914

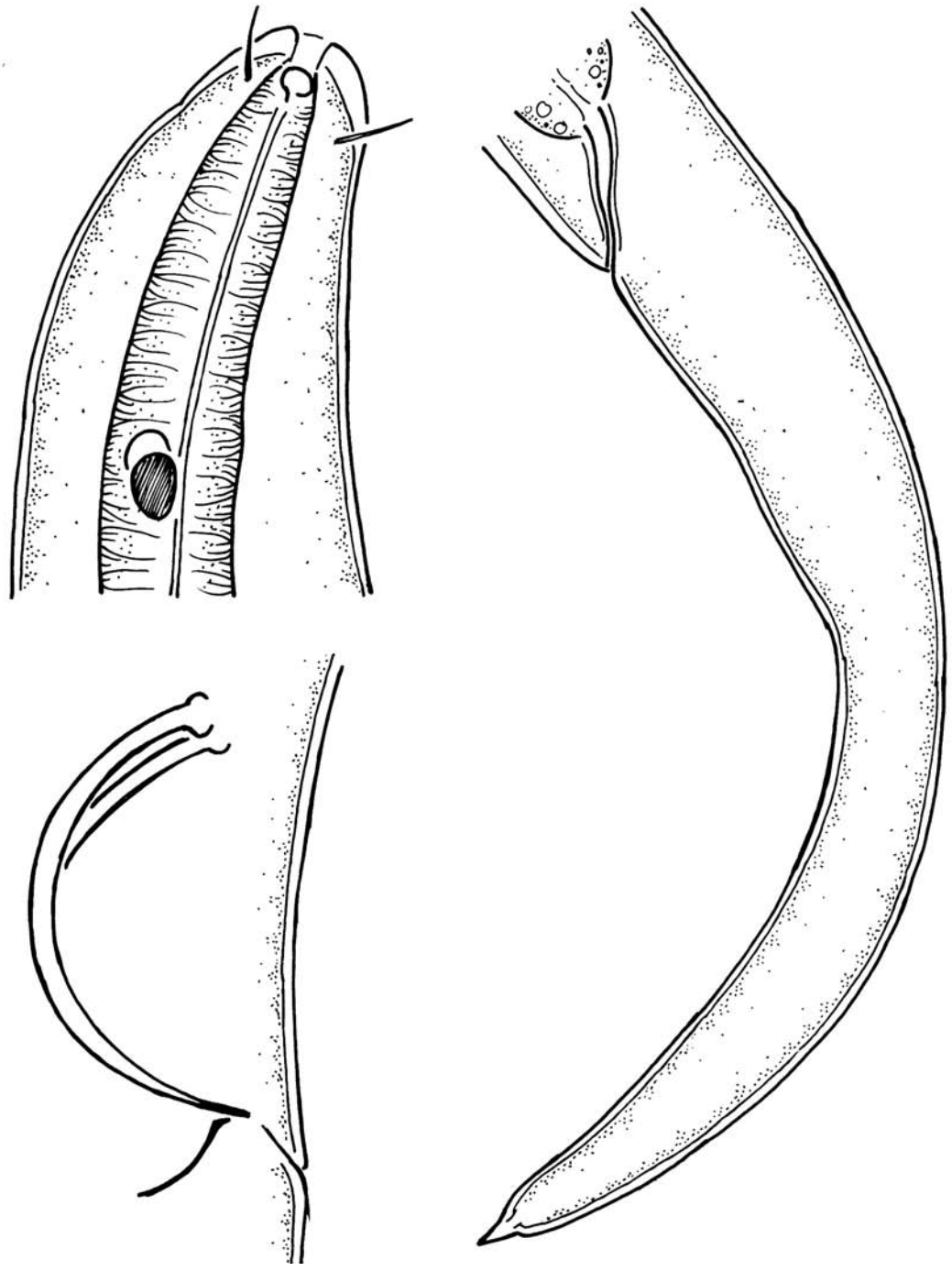
1914 *Diodontolaimus* – Southern, Proceedings of the Royal Irish Academy 31: 31.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae present, single band of smooth cuticle. Epidermal glands and body pores absent. Somatic setae present, not connected to epidermal glands. Labial region truncate, slightly separated from rest of body by wide depression, lips fused. First annulus posterior to amphids and cephalic setae bases, weak cephalic capsule present. Inner labial sensilla papilliform, located on outer surface of lips. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located posterior to amphids. Subcephalic sensilla, deirid and ocelli absent. Cervical sensilla present in lateral sectors of the body in some species. Amphidial fovea ventrally-unispiral, located anterior to cephalic setae bases, on the cephalic capsule. Secretory-excretory system: renette cell located opposite to ventral side of intestine; excretory canal short, extending from pore along ventral region of pharynx towards excretory ampulla. Oral opening undescribed. Buccal cavity wide, with dorsal armament: cheilostom undifferentiated; gymnostom with two ventrosublateral odontia pointing forward; stegostom funnel-shaped, undifferentiated. Radial tubes absent. Dorsal and subventral gland orifices penetrate pharyngeal lumen somewhat posterior to stoma base. Pharynx cylindrical anteriorly, gradually widening posteriorly; muscularised with uniformly thickened lumen throughout, lacking valves and bulbs. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system diorchic; testes directed forward (outstretched); spicules arcuate, with ovoid manubrium, narrowing shaft and thin velum; fenestra pointing ventrad; gubernaculum plate-like with dorsal or caudal apophysis. Copulatory apparatus: 9-12 tubular supplements; precloacal papilliform sensillum; postcloacal papilliform sensilla; 3 subventral and 3 subdorsal pairs of caudal setae. Tail elongate-conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, large and strongly cuticularised.

Biology: Amphimictic. All three known species are marine, distributed in European seas, Gulf of Mexico and Arabian Sea. An undescribed new species was found in the Philippines.

Taxonomy: Type species ***Diodontolaimus sabulosus*** Southern, 1914. Three valid species.

1. Nasira, K., Shahina, F. & Kamran, M. (2005). Description of *Diodontolaimus karachiensis* n. sp. (Chromadorida: Leptolaimidae) from Arabian Sea of Pakistan. *Pakistan Journal of Nematology* 23: 115-118.
2. Keppner, E.J. (1992). Some free-living marine nematodes from Northwest Florida, U.S.A. with descriptions of three new species (Nematoda: Chromadorida, Trefusiida). *Transactions of the American Microscopical Society* 111: 199-210.



Ionema borealis Kreis, 1961 and ***Ionema coecum*** Kreis, 1961

Original figure by O. Holovachov,
based on Kreis (1961) with modifications

Genus *Ionema* Cobb, 1920

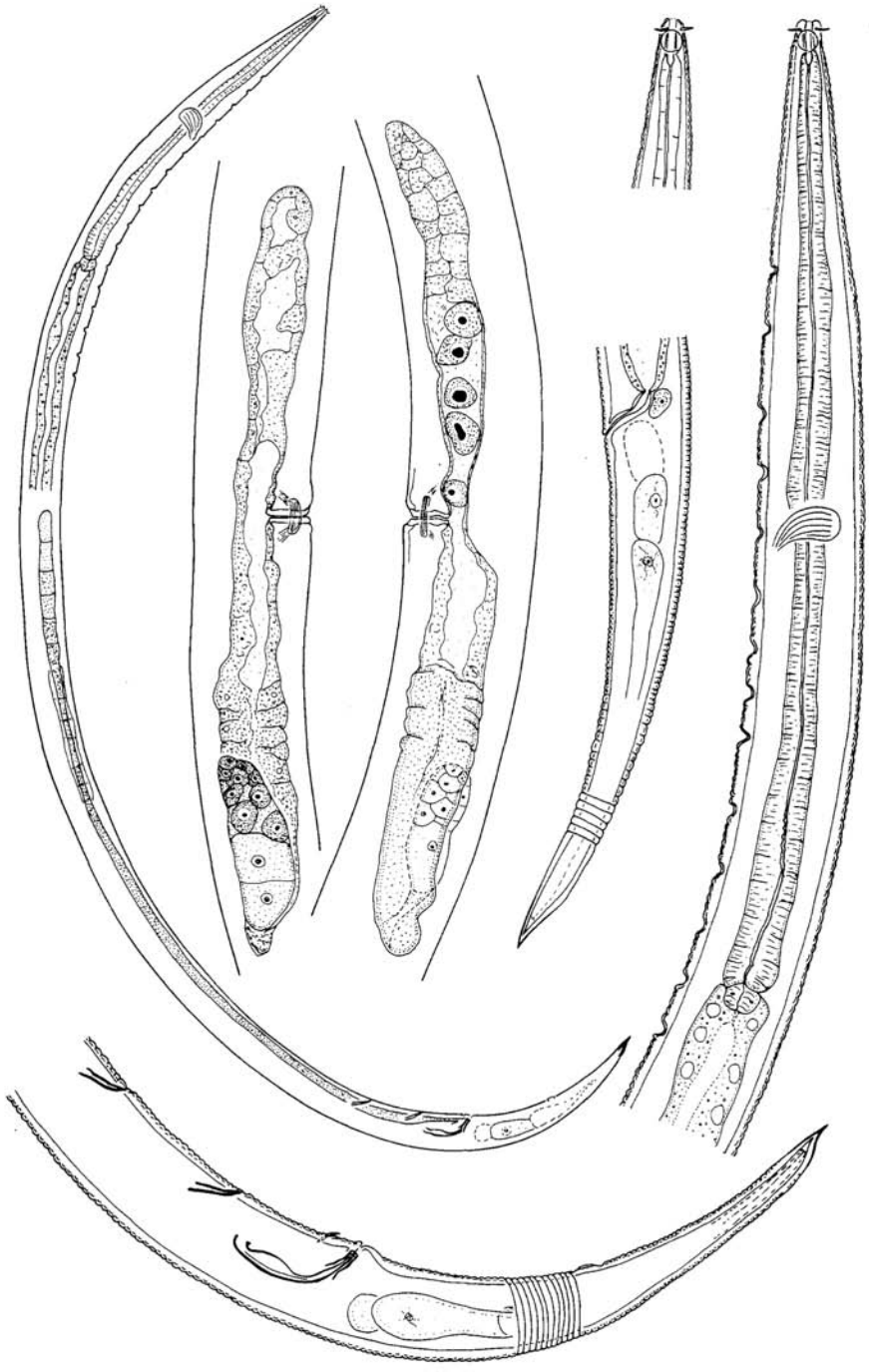
1920 *Ionema* – Cobb, Contribution to a Science of Nematology 9: 235.
1920 *Nemella* – Cobb, Contribution to a Science of Nematology 9: 236.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae absent. Epidermal glands absent. Somatic setae absent. Labial region rounded, continuous with body contour, lips fused. First annulus posterior to amphids and cephalic setae bases, weak cephalic capsule present. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located posterior to amphids. Subcephalic and cervical sensilla, deirid absent. Ocelli present, located along the anterior part of pharynx. Amphidial fovea ventrally-unispiral. Secretory-excretory system: renette cell located opposite to ventral side of intestine; excretory canal short, extending from pore along ventral region of pharynx towards excretory ampulla. Oral opening undescribed. Buccal cavity narrow, dorsal armament absent: cheilostom undifferentiated; gymnostom and stegostom narrow tubular. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen at stoma base. Subventral gland orifices not seen. Pharynx cylindrical anteriorly, muscularised, gradually widening posteriorly into a glandular "cylindrus"; with uniformly thickened lumen throughout, lacking valves and bulbs. Dorsal gland sector strongly developed. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system diorchic; testes directed forward (outstretched); spicules arcuate, with ovoid ventrally inclined manubrium, narrowing shaft and thin velum; gubernaculum plate-like with apophysis. Copulatory apparatus: two postcloacal sensilla. Tail elongate-conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised.

Biology: Most known species are amphimictic and marine. Found in marine habitats from all over the world, including Antarctica (unpublished).

Taxonomy: Type species ***Ionema cobbi*** (Steiner, 1916). Four valid species.

This genus is in need of revision. No recent references and keys are available.



Listia capensis (Furstenberg & Vincx, 1988) Hope & Tchesunov, 1999

Reproduced with modifications from Furstenberg & Vincx (1988) with kind permission from *Suid-Afrikaanse Tydskrif vir Dierkunde*

Genus *Listia* Blome, 1982

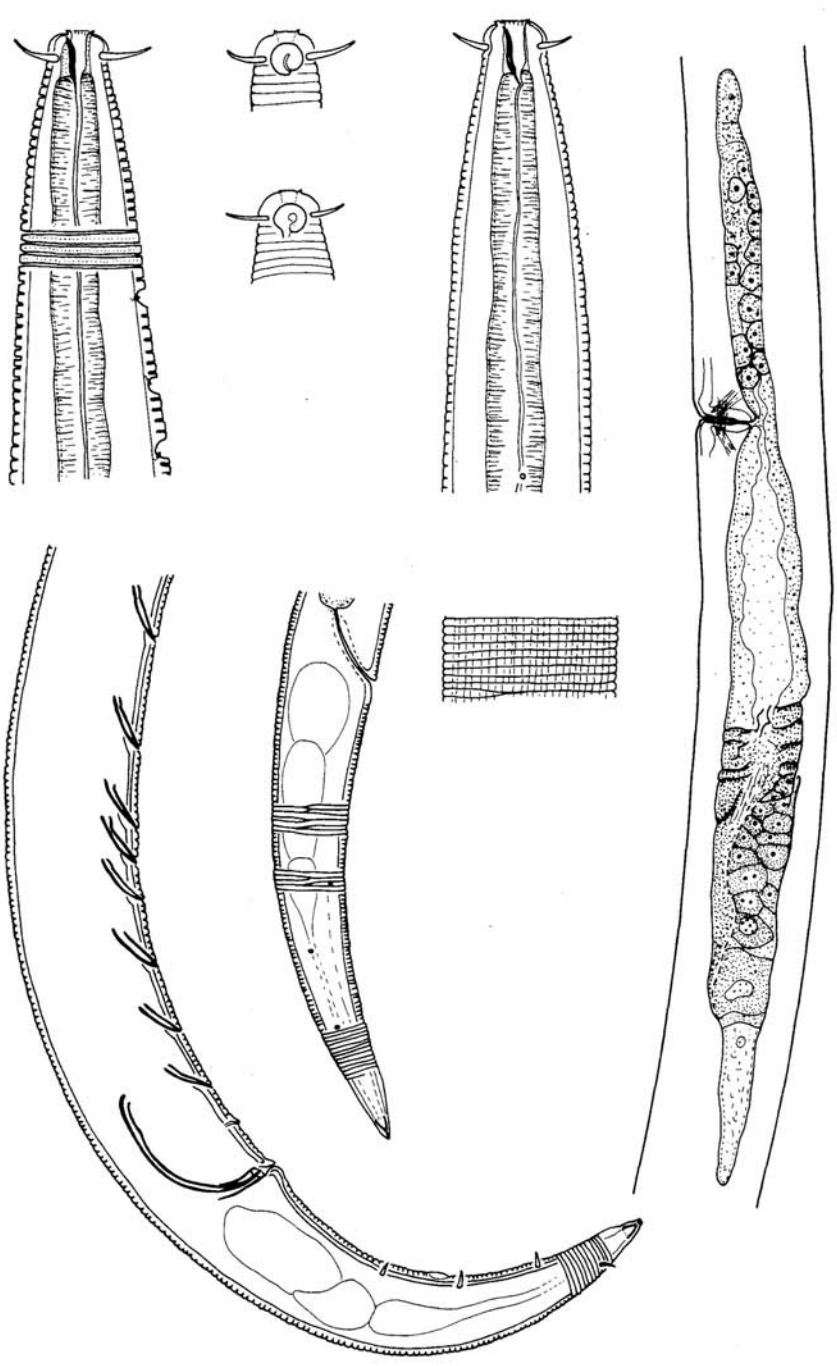
1982 *Listia* – Blome, Mikrofauna Meeresbodens 86: 17.
1988 *Eontolaimus* – Furstenberg & Vincx, Suid-Afrikaanse Tydskrif vir Dierkunde 23: 212.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae absent. Epidermal glands absent. Somatic sensilla (papilliform) present, not connected to epidermal glands. Labial region rounded, continuous with body contour, lips basally fused. First annulus posterior to cephalic setae bases, cephalic capsule absent. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located anterior to amphids. Subcephalic and cervical sensilla, deirid and ocelli absent. Amphidial fovea ventrally-unispiral. Secretory-excretory system absent. Oral opening undescribed. Buccal cavity barrel-shaped, without armament: cheilostom undifferentiated; gymnostom barrel-shaped, with parallel walls; stegostom short, funnel-shaped. Radial tubes absent. Dorsal and subventral gland orifices undescribed. Pharynx cylindrical anteriorly, gradually widening posteriorly; muscularised with uniformly thickened lumen throughout, lacking valves and bulbs. Cardia embedded in intestine. Female reproductive system monodelphic, opisthodelphic; ovary reflexed antidromously; anterior uterine sac serves as spermatheca; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by a single sphincter muscle (when known); *pars refringens vaginae* absent. Male reproductive system diorchic; testes outstretched; spicules arcuate, with ovoid ventrally inclined manubrium, narrowing shaft; gubernaculum plate-like. Copulatory apparatus: 0-55 alveolar supplements extending to pharyngeal region; 2-10 tubular supplements; precloacal papilliform sensillum; postcloacal papilliform sensilla; subventral pairs of caudal setae. Tail elongate-conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised.

Biology: Amphimictic. All three known species are marine.

Taxonomy: Type species ***Listia variopapillata*** Blome, 1982. Three valid species.

1. Blome, D. (1982). Systematik der Nematoda eines Sandstrandes der Nordseeinsel Sylt. *Mikrofauna Meeresbodens* 86: 1-194.
2. Furstenberg & Vincx (1988). *Procamacolaimus tubifer* Gerlach, 1953, *Procamacolaimus africanus* sp. nov. and *Eontolaimus capensis* gen. nov., sp. nov. (Nematoda, Leptolaimidae) from South Africa. *Suid-Afrikaanse Tydskrif vir Dierkunde,* 23: 208-214.



Onchiolistia tubifera (Gerlach, 1953) Blome, 2002

Reproduced with modifications from Furstenberg & Vincx (1988) with kind permission from *Suid-Afrikaanse Tydskrif vir Dierkunde*

Genus *Onchiolistia* Blome, 2002

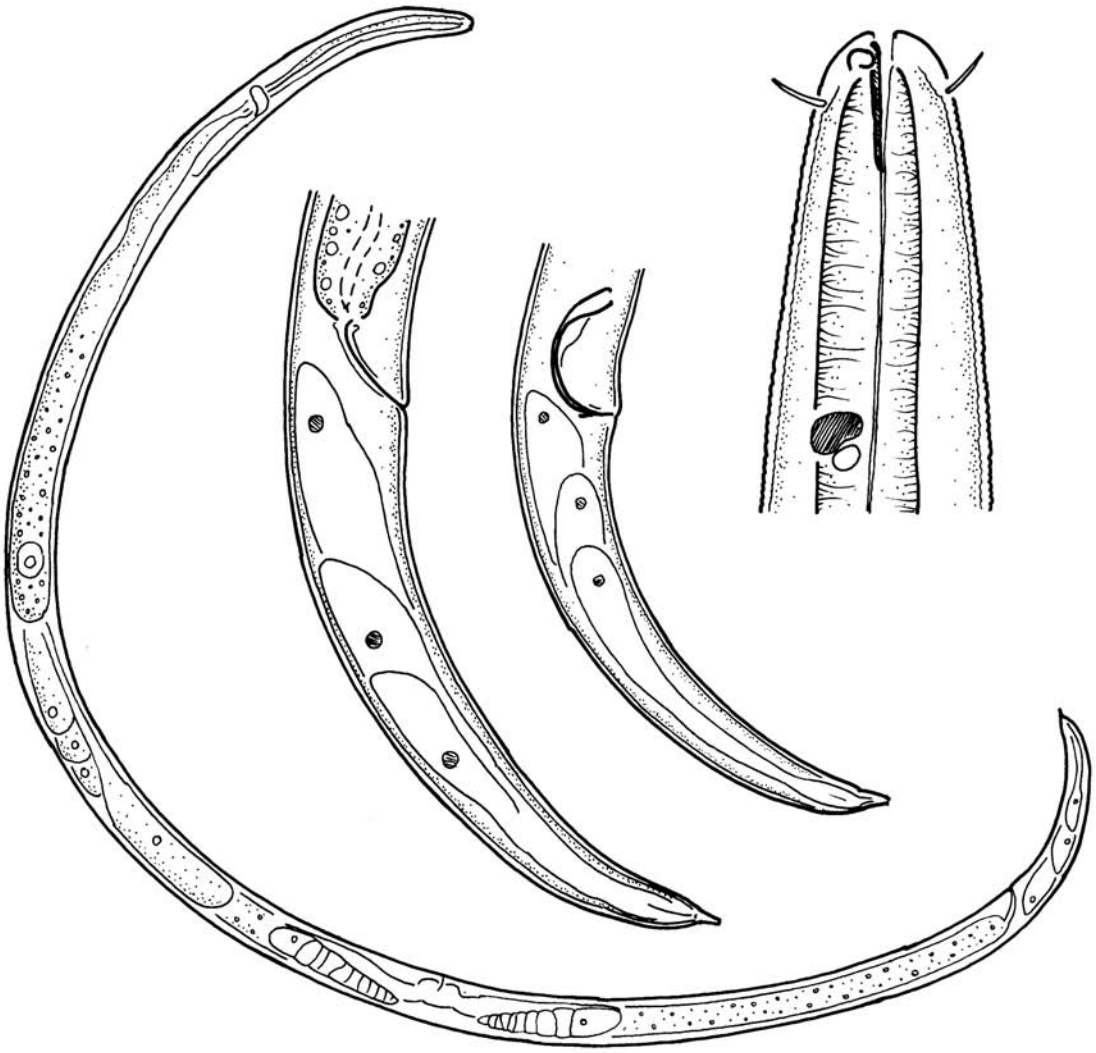
2002 *Onchiolistia* – Blome, Memoirs of the Queensland Museum 48: 32-33.

Morphology: Cuticle annulated, annules smooth or with fine longitudinal striation. Lateral alae absent. Epidermal glands absent. Somatic sensilla (papilliform) present, not connected to epidermal glands. Labial region rounded, continuous with body contour, lips basally fused. First annulus posterior to amphids and cephalic setae bases, weak cephalic capsule present. Inner and outer labial sensilla indistinct. Cephalic sensilla setiform; their bases located at level with amphids. Subcephalic and cervical sensilla, deirid and ocelli absent. Amphidial fovea ventrally-unispiral. Secretory-excretory system present or absent, but never described. Oral opening circular, surrounded by a tubular protrusion. Buccal cavity narrow, with dorsal armament: cheilostom undifferentiated; gymnostom and stegostom with dorsal onchiostyle. Radial tubes absent. Dorsal and subventral gland orifices undescribed. Pharynx cylindrical anteriorly, gradually widening posteriorly; muscularised with uniformly thickened lumen throughout, lacking valves and bulbs. Cardia embedded in intestine. Female reproductive system monodelphic, opisthodelphic; ovary reflexed antidromously; anterior uterine sac serves as spermatheca; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by a single sphincter muscle (when known); *pars refringens vaginae* present. Females of *O. africana* have single alveolar supplement just anterior to vulva opening. Male reproductive system diorchic; testes outstretched; spicules arcuate with small ventrally inclined manubrium, narrowing shaft; gubernaculum plate-like. Copulatory apparatus: 25-93 alveolar supplements; 6-8 tubular supplements; precloacal papilliform sensillum; postcloacal papilliform sensilla; subventral and subdorsal pairs of caudal setae. Tail elongate-conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised.

Biology: Amphimictic. All three species are marine.

Taxonomy: Type species ***Onchiolistia multipapillata*** Blome, 2002. Three valid species.

1. Blome, D. (2002). Five new genera of free-living marine nematodes from sandy beaches of eastern Australia. *Memoirs of the Queensland Museum* 48: 29-43.
2. Furstenberg & Vincx (1988). *Procamacolaimus tubifer* Gerlach, 1953, *Procamacolaimus africanus* sp. nov. and *Eontolaimus capensis* gen. nov., sp. nov. (Nematoda, Leptolaimidae) from South Africa. *Suid-Afrikaanse Tydskrif vir Dierkunde,* 23: 208-214.



Onchium minutum Kito, 1981

Original figure by O. Holovachov,
based on Kito (1981) with modifications

Genus *Onchium* Cobb, 1920

1920 *Onchium* – Cobb, Contribution to a Science of Nematology 9: 303.

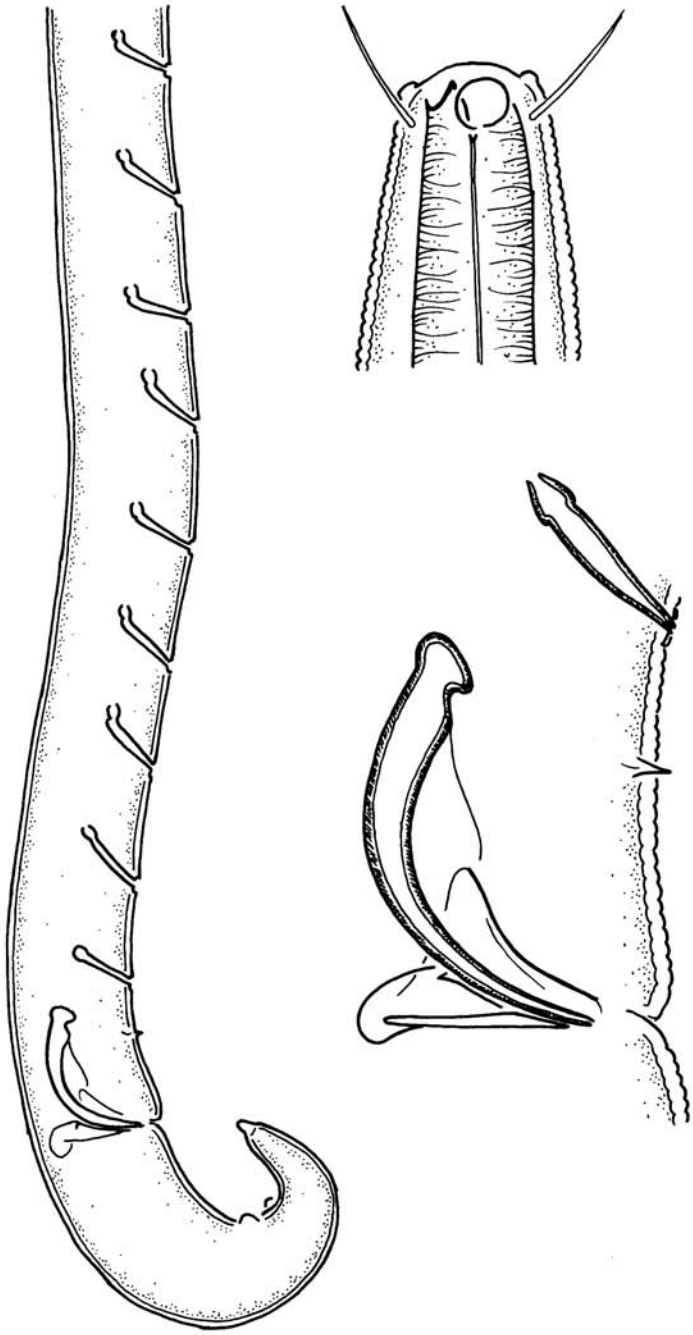
1920 *Onchulella* – Cobb, Contribution to a Science of Nematology 9: 306.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae absent. Epidermal glands absent. Somatic setae absent. Labial region rounded, continuous with body contour, lips fused. First annulus posterior to amphids and cephalic setae bases, weak cephalic capsule present. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located posterior to amphids. Subcephalic and cervical sensilla, and deirid absent. Ocelli present, located along the anterior part of pharynx. Amphidial fovea ventrally-unispiral. Secretory-excretory system: renette cell located opposite to ventral side of intestine; excretory canal short, extending from pore along ventral region of pharynx towards excretory ampulla. Oral opening undescribed. Buccal cavity narrow, with dorsal armament: cheilostom undifferentiated; gymnostom and stegostom with dorsal onchiostyle. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen at stoma base. Subventral gland orifices not seen. Pharynx cylindrical anteriorly, muscularised, gradually widening posteriorly into a glandular "cylindrus"; with uniformly thickened lumen throughout, lacking valves and bulbs. Dorsal gland sector strongly developed. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system diorchic; testes directed forward (outstretched); spicules arcuate, with ovoid ventrally inclined manubrium, narrowing shaft and thin velum; gubernaculum plate-like. Copulatory apparatus: two postcloacal sensilla. Tail elongate-conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised.

Biology: Most known species are amphimictic and marine. Found in marine habitats from all over the world, including Antarctica (unpublished).

Taxonomy: Type species ***Onchium ocellatum*** Cobb, 1920. Seven valid species and one species of uncertain taxonomic status.

This genus is in need of revision. No recent references and keys are available.



Procamacolaimus papillosus Warwick, 1973

Original figure by O. Holovachov,
based on Warwick (1973) with modifications

Genus *Procamacolaimus* Gerlach, 1954

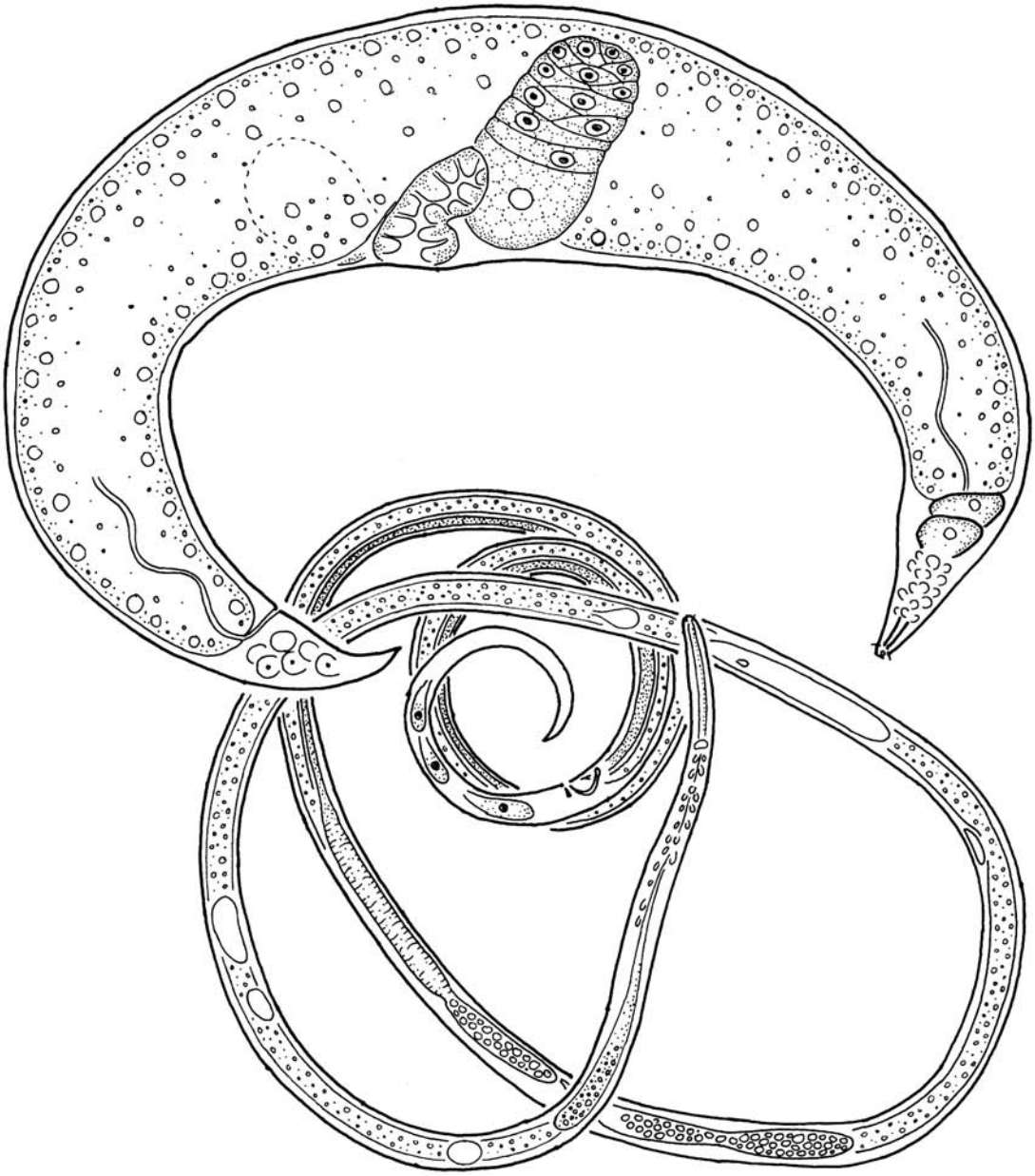
1954 *Procamacolaimus* – Gerlach, Vie et Milieu 4: 92.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae absent or undescribed. Epidermal glands absent. Somatic sensilla (papilliform) present, not connected to epidermal glands. Labial region rounded, continuous with body contour, lips basally fused. First annulus posterior to amphids and cephalic setae bases, weak cephalic capsule present. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located at level with amphids or posterior to amphids. Subcephalic and cervical sensilla, deirid and ocelli absent. Amphidial fovea ventrally-unispiral. Secretory-excretory system: renette cell located opposite to ventral side of intestine; excretory canal short, extending from pore along ventral region of pharynx towards excretory ampulla (absent in some species). Oral opening undescribed. Buccal cavity narrow, with dorsal armament: cheilostom undifferentiated; gymnostom with a single dorsal odontium pointing forward; stegostom funnel-shaped, with dorsal onchiostyle; odontium and odontostyle joined together. Radial tubes absent. The exception is *P. dorylaimus*: stoma with strongly cuticularised, spear-like structure, with narrow inner canal; partly enveloped by muscular pharyngeal tissue; and probably protrusible. Dorsal gland orifice penetrates pharyngeal lumen at stoma base. Subventral gland orifices not seen. Pharynx cylindrical anteriorly, gradually widening posteriorly; muscularised with uniformly thickened lumen throughout, lacking valves and bulbs. Cardia embedded in intestine. Female reproductive system didelphic (known only in *P. acer* and *P. dorylaimus*), amphidelphic; ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by a single sphincter muscle (when known); *pars refringens vaginae* absent. Male reproductive system diorchic; testes are known only in *P. dorylaimus* where they are opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate, with ovoid ventrally inclined manubrium, narrowing shaft; gubernaculum plate-like. Copulatory apparatus: 6-24 tubular supplements; precloacal papilliform sensillum; postcloacal papilliform sensilla; subventral and subdorsal pairs of caudal setae. Tail elongate-conoid. Three caudal glands present, their nuclei are incaudal. Single pseudocoelomocyte located anterior to caudal glands. Spinneret functional, strongly (*P. phinneyi* and *P. tenuispiculum*) or weakly cuticularised.

Biology: All known species are marine, most of them are described from males only. Two undescribed males are found, one on the Dutch coast of the North Sea and another one on the Pacific coast of California.

Taxonomy: Type species ***Procamacolaimus acer*** Gerlach, 1954. Eight valid species.

1. Holovachov O. (2003). *Procamacolaimus dorylaimus* sp. nov. (Nematoda: Leptolaimidae) from the Southern Atlantic. *Annales Zoologici* 53: 551-557.



Smithsoninema inaequale Hope & Tchesunov, 1999

Original figure by O. Holovachov,
based on Tchesunov (2006) with modifications

Genus *Smithsoninema* Hope & Tchesunov, 1999

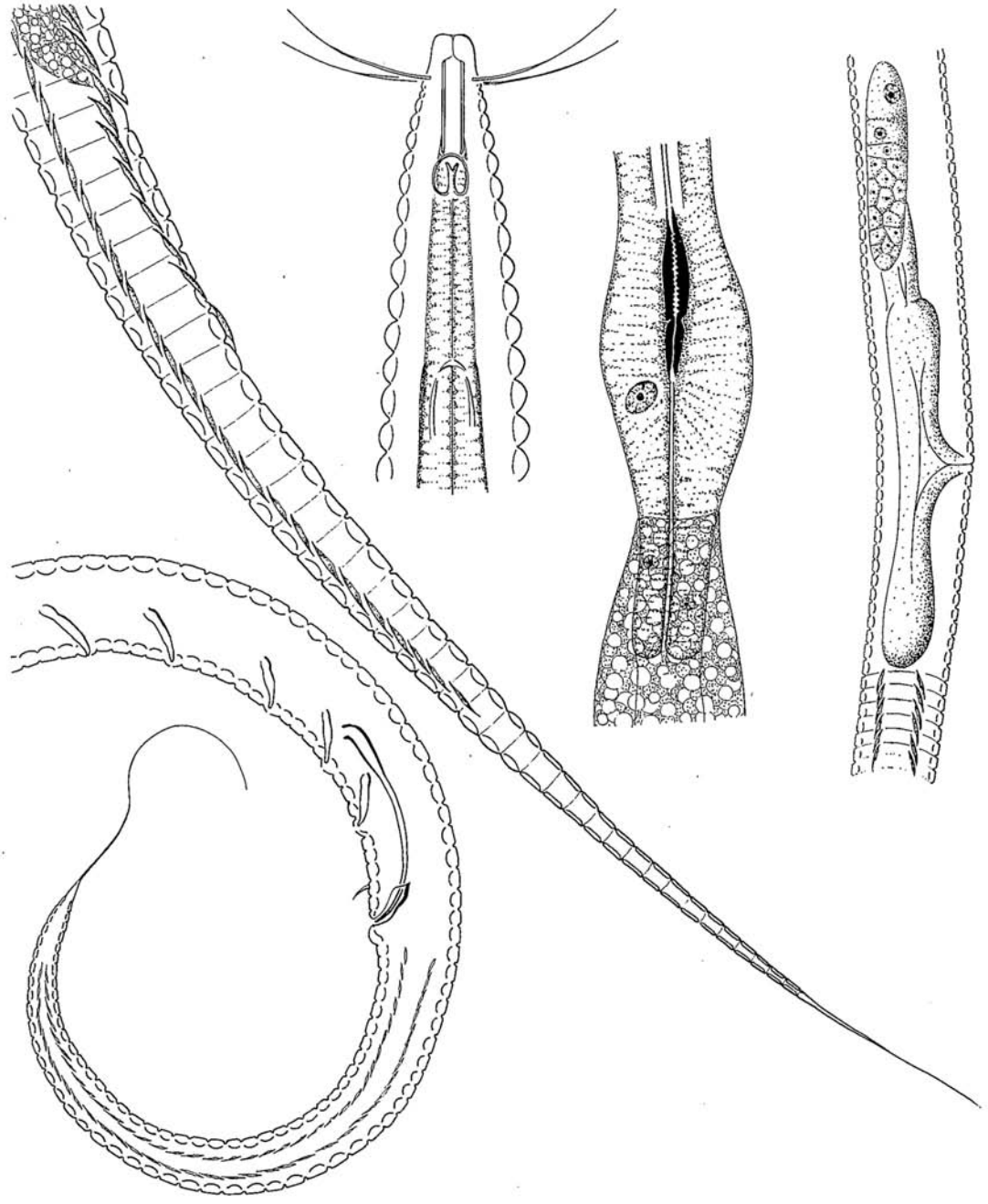
1999 *Smithsoninema* – Hope & Tchesunov, Invertebrate Biology 118: 98-99.

Morphology: Pronounced sexual dimorphism: female shorter and plumper, male longer and thinner. Cuticle annulated, annules smooth, without ornamentation. Lateral alae absent. Epidermal glands absent. Somatic setae absent. Labial region rounded, continuous with body contour, lips fused. First annulus posterior to amphids and cephalic setae bases, weak cephalic capsule present. Inner labial sensilla indistinct. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located posterior to amphids. Subcephalic and cervical sensilla, and deirid absent. Ocelli present, located along the anterior part of pharynx. Amphidial fovea ventrally-unispiral. Secretory-excretory system: renette cell located opposite to ventral side of intestine; excretory canal short, extending from pore along ventral region of pharynx towards excretory ampulla. Oral opening undescribed. Buccal cavity narrow, with dorsal armament: cheilostom undifferentiated; gymnostom and stegostom with dorsal onchiostyle only in the male; female stoma narrow tubular. Radial tubes absent. Dorsal gland orifice penetrates pharyngeal lumen at stoma base. Subventral gland orifices not seen. Pharynx cylindrical anteriorly, muscularised, gradually widening posteriorly into a glandular "cylindrus"; with uniformly thickened lumen throughout, lacking valves and bulbs. Dorsal gland sector strongly developed. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by a single sphincter muscle; *pars refringens vaginae* absent. Male reproductive system diorchic; testes directed forward (outstretched); spicules arcuate, with ovoid ventrally inclined manubrium, narrowing shaft and thin velum; gubernaculum plate-like. Copulatory apparatus: two postcloacal sensilla. Tail elongate-conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, weakly cuticularised.

Biology: The type species was found inside the shell and cell body of the foraminiferan *Vanhoeffenella* aff. *guassi*.

Taxonomy: Type and only species ***Smithsoninema inaequale*** Hope & Tchesunov, 1999.

1. Hope, W.D. & Tchesunov, A.V. (1999). *Smithsoninema inaequale* n. g. and n. sp. (Nematoda, Leptolaimidae) inhabiting the test of a foraminiferan. *Invertebrate Biology* 118: 95-108.



Chronogaster spinicorpus Maggenti, Raski, Koshy & Sosamma, 1983

Reproduced with modifications from Maggenti *et al.* (1983) with kind permission from *Revue de Nématologie* (ORSTOM)

Genus *Chronogaster* Cobb, 1913

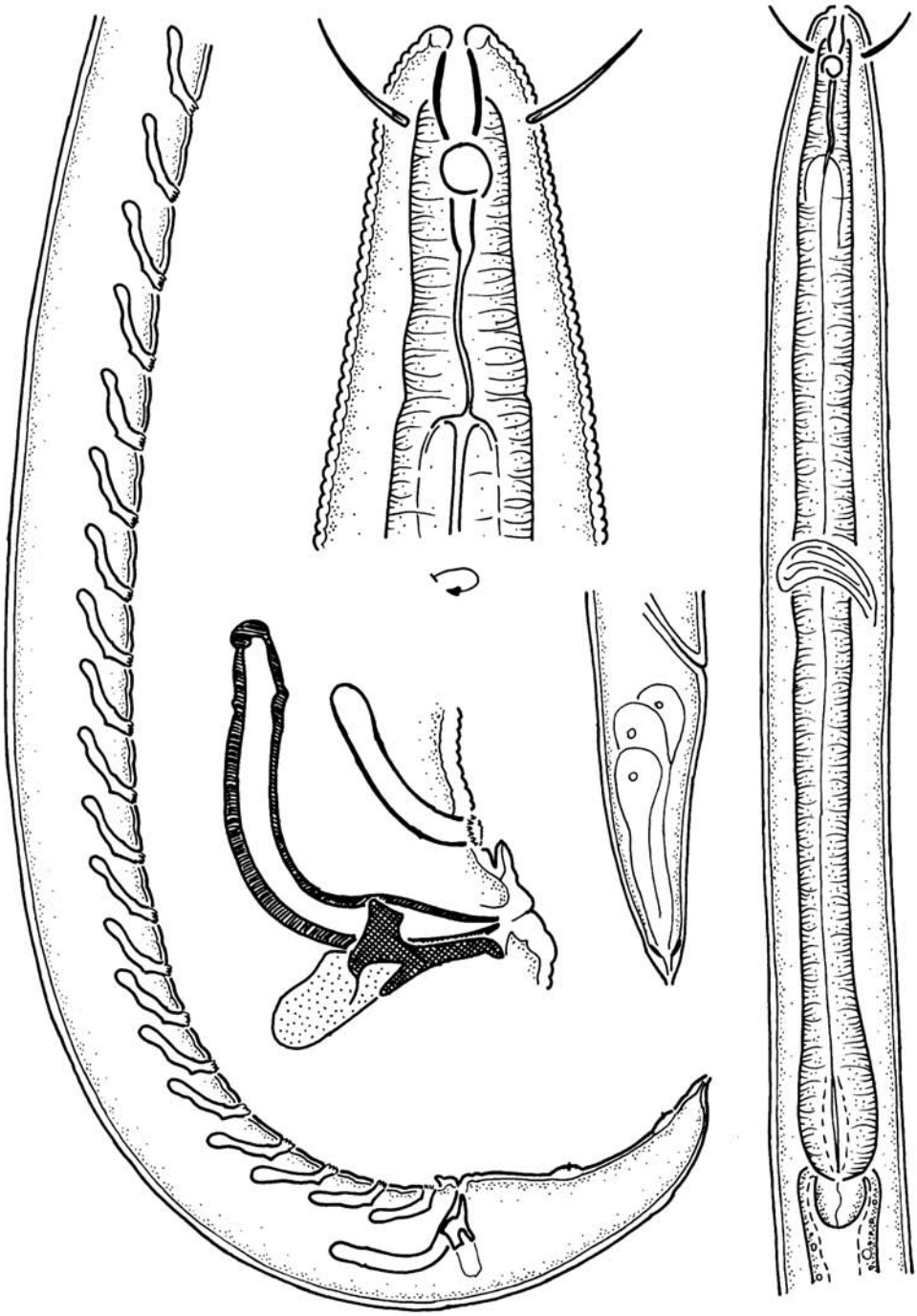
1913 *Chronogaster* – Cobb, Journal of Washington Academy of Science 3: 443.
1921 *Walcherenia* – de Man, Capita Zoologica 1: 14.
2003 *Keralanema* – Siddiqi, International Journal of Nematology 13: 236.

Morphology: Cuticle annulated, annules smooth in most species, without ornamentation, with the exception of *C. magnifica, C. alata, C. teselata* (annules divided by longitudinal striae) and *C. spinicorpus* (annules with 12 rows of hook-like spines). Lateral alae absent. Epidermal glands present, connected with body pores, or absent. Many species may have crystalloid bodies in the body cavity. Somatic setae absent. Labial region variable in shape, rounded or truncate, continuous with body contour, lips basally fused. First annulus anterior to cephalic setae bases, cephalic capsule absent. Inner labial sensilla pore-like, located on inner surface of lips. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located at base of labial region or on one of the anteriormost annules. Subcephalic and cervical sensilla and ocelli absent. Deirid absent. Amphidial fovea ventrally-unispiral, stirrup- or horseshoe-shaped. Secretory-excretory system: renette cell enveloping distal part of pharynx from ventral and lateral sides; excretory pore located posterior to nerve ring; excretory canal strongly cuticularised, extending from pore along ventral region of pharynx towards renette cell, making loops around pharynx (no constant pattern as far as is known) before entering renette cell. Pseudocoelomocytes near renette cell not described. Base of pharynx enveloped by another two pseudocoelomocytes. Oral opening pore-like or triradial. Buccal cavity funnel-shaped: cheilostom undifferentiated; gymnostom barrel-shaped, with parallel, sclerotised walls; stegostom funnel-shaped or cylindrical in its anterior part (short), narrow tubular in its posterior part (long). Radial tubes emerging at the base of stegostom. Dorsal gland orifice penetrates posterior tubular part of the stegostom. Subventral gland orifices open into pharyngeal lumen at corpus-isthmus junction, just anterior to nerve ring. Pharynx distinctly subdivided into corpus, isthmus and bulbus; corpus gradually widening posteriorly; isthmus narrower than and separated from corpus by a break in muscular tissue and cuticular lumen; basal bulbus with strongly developed valvular apparatus; valves with three denticulate ridges. Post-bulbal extension (cylindrical part of the pharyngeal muscular tissue) is present. Cardia embedded in intestine. Two pseudocoelomocytes present posterior to pharynx base. Female reproductive system monodelphic, prodelphic; ovary reflexed antidromously; spermatheca absent; vulva equatorial or pre-equatorial due to long tail; vagina straight; *pars proximalis vaginae* encircled by one sphincter muscle; epiptygmata absent. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate, with ovoid manubrium, conoid or subcylindrical shaft; gubernaculum plate-like, sometimes with caudal apophysis. Copulatory apparatus: 0-19 tubular supplements; precloacal sensillum setiform or absent (in *C. boettgeri*); postcloacal sensilla papilliform or absent (in *C. spinicorpus*); usually with subventral and subdorsal rows of setae in the precloacal and caudal region. Tail conoid, elongate-conoid or subcylindrical. Three caudal glands present only in *C. boettgeri* (absent in several species), their nuclei are incaudal. Spinneret functional in *C. boettgeri* only, absent in other species. Tail tip with variously shaped mucro. Sexual dimorphism in the tail terminus structure was noted in four species where male tail is bluntly rounded and lacks the mucro characteristic for the females.

Biology: Most species thelytokous except for *C. spinicorpus.* Occur in freshwater, thermal springs, moist soil, fungal mats (*C. troglodytes*) and brackish habitats (*C. alata*).

Taxonomy: Type species ***Chronogaster gracilis*** Cobb, 1913. Forty seven valid species.

1. Holovachov, O. & De Ley, P. (2006). Order Plectida. In: Eyualem, A., Andrássy, I. & Traunspurger, W. (eds.) *Freshwater nematodes: ecology and taxonomy.* CAB International: 611-647.
2. Maggenti, A.C., Raski, D.J., Koshy, P.K. & Sosamma, V.K. (1983). A new species of *Chronogaster* Cobb, 1913 (Nemata: Plectidae) with an amended diagnosis of the genus and discussion of cuticular ornamentation. *Revue de Nematologie* 6: 257-263.



Caribplectus supplementus (Keppner, 1988) Holovachov, 2004

Original figure by O. Holovachov,
based on Keppner (1988) with modifications

Genus *Caribplectus* Andrássy, 1973

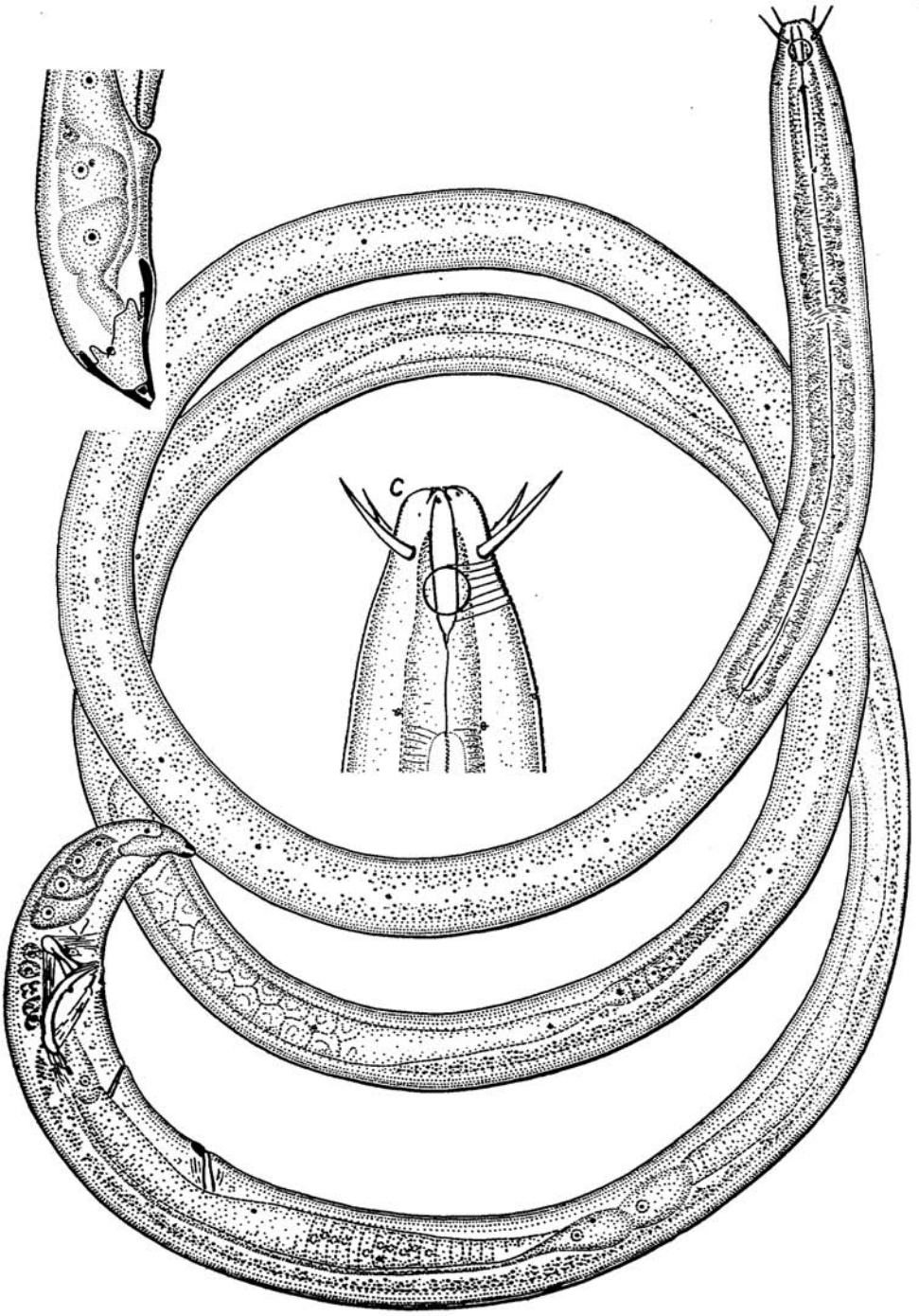
1973 *Caribplectus* – Andrássy, Acta Zoologica Academiae Scientiarum Hungaricae 19: 242-243.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae absent. Epidermal glands absent. Somatic setae present, not connected to epidermal glands. Labial region rounded, continuous with body contour, lips basally fused. First annulus anterior to cephalic setae bases, cephalic capsule absent. Inner labial sensilla pore-like, located on inner surface of lips. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located posterior to labial region. Subcephalic and cervical sensilla and ocelli absent. Deirid absent. Amphidial fovea ventrally-unispiral. Secretory-excretory system: renette cell enveloping distal part of pharynx from ventral and lateral sides; excretory pore located posterior to nerve ring; excretory canal strongly cuticularised, extending from pore along ventral region of pharynx towards renette cell. Pseudocoelomocytes near the renette cell or not described. Oral opening hexagonal. Buccal cavity funnel-shaped: cheilostom undifferentiated; gymnostom barrel-shaped, with parallel, sclerotised walls; stegostom funnel-shaped in its anterior part (long), narrow tubular in its posterior part (long). Radial tubes emerging at the base of stegostom. Dorsal gland orifice penetrates posterior tubular part of the stegostom. Subventral gland orifices open into pharyngeal lumen at corpus-isthmus junction, just anterior to nerve ring. Pharynx distinctly subdivided into corpus, isthmus and bulbus; corpus gradually widening posteriorly; isthmus narrower than and separated from corpus by a break in muscular tissue and cuticular lumen; basal bulbus with weakly developed valvular apparatus; valves with three logitudinal ridge-like thickenings. Cardia embedded in intestine. Two pseudocoelomocytes present posterior to pharynx base. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca undescribed; vulva equatorial; vagina straight; *pars proximalis vaginae* undescribed; epiptygmata absent. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate, with ovoid manubrium, narrowing shaft and thin velum; gubernaculum triangular, with dorsal apophysis. Copulatory apparatus: 16-23 tubular supplements; precloacal sensillum papilliform; postcloacal sensilla papilliform; usually with subventral and subdorsal rows of setae in the precloacal and caudal region. Tail conoid. Three caudal glands present, their nuclei are incaudal. Single pseudocoelomocyte located anterior to caudal glands. Spinneret functional, not cuticularised; in some species its tip is surrounded by setiform projections.

Biology: Species of this genus occur in brackish and marine environments. It was found in the Caribbean region of Columbia, Costa Rica, Cuba and the US.

Taxonomy: Type species ***Caribplectus magdalenae*** (Riemann, 1970) Andrássy, 1973. Two valid species.

1. Keppner, E.J. (1988). Six new species of free-living marine nematodes (Nematoda: Araeolaimida: Enoplida) from two estuaries in Northwest Florida, U.S.A. *Transactions of the American Microscopical Society* 107: 79-95.



Cynura clunderi Murphy, 1965

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Genus *Cynura* Cobb, 1920

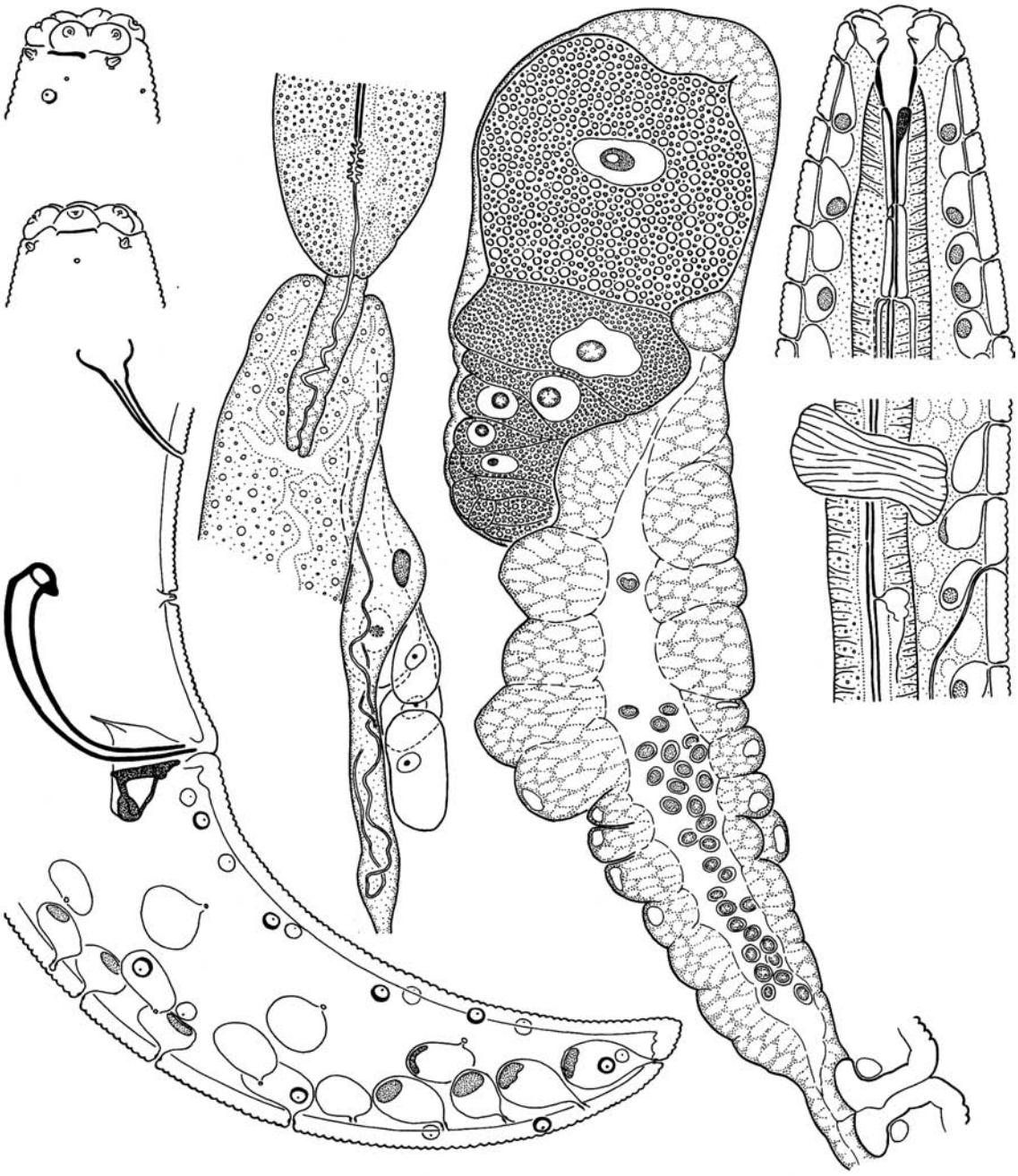
1920 *Cynura* – Cobb, Contribution to a Science of Nematology 9: 262.
1966 *Plectolaimus* – Inglis, Bulletin of the British Museum (Natural History), Zoology 14: 100.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae present as a two rows of punctations. Epidermal glands absent. Somatic sensilla present, not connected to epidermal glands. Labial region rounded, continuous with body contour or strongly offset, lips basally fused. First annulus anterior to cephalic setae bases, cephalic capsule absent. Inner labial sensilla pore-like, located on inner surface of lips. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located posterior to labial region. Subcephalic and cervical sensilla and ocelli absent. Deirid absent. Amphidial fovea ventrally-unispiral. Secretory-excretory system: renette cell enveloping distal part of pharynx from ventral and lateral sides; excretory pore located posterior to nerve ring; excretory canal strongly cuticularised, extending from pore along ventral region of pharynx towards renette cell. Pseudocoelomocytes near the renette cell or not described. Oral opening hexagonal. Buccal cavity funnel-shaped: cheilostom undifferentiated; gymnostom barrel-shaped, with parallel, sclerotised walls; stegostom funnel-shaped in its anterior part (long), narrow tubular in its posterior part (long). Radial tubes emerging at the base of stegostom. Dorsal gland orifice penetrates posterior tubular part of the stegostom. Subventral gland orifices open into pharyngeal lumen at corpus-isthmus junction, just anterior to nerve ring. Pharynx distinctly subdivided into corpus, isthmus and bulbus; corpus gradually widening posteriorly; isthmus narrower than and separated from corpus by a break in muscular tissue and cuticular lumen; basal bulbus with weakly developed valvular apparatus; valves with three logitudinal ridge-like thickenings. Cardia embedded in intestine. Two pseudocoelomocytes present posterior to pharynx base. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight; *pars proximalis vaginae* undescribed; *pars refringens vaginae* present at least in some species. Alveolar supplements are present anterior and posterior to vulva in *C. klunderi*. Male reproductive system diorchic; testes outstretched (opposed with anterior testis outstretched and posterior one reflexed); spicules arcuate, with ovoid manubrium, narrowing shaft and thin velum; gubernaculum triangular, with dorsal apophysis. Copulatory apparatus: 2 tubular supplements; precloacal sensillum papilliform; postcloacal sensilla papilliform; usually with subventral and subdorsal rows of setae in the precloacal and caudal region. The anteriormost tubule with sclerotized guiding piece (*C. klunderi*) or with rugged denticulate distal end (*C. juliani, C. cerambus*). Tail conoid. Three caudal glands present, their nuclei are incaudal. Single pseudocoelomocyte located anterior to caudal glands. Spinneret functional, strongly cuticularised.

Biology: Species of this genus occur in marine environments. It was found in the Caribbean region of Cuba, Pacific coast of California and Atlantic coast of Florida in the US, South Africa, Madagascar and Maldives.

Taxonomy: Type species ***Cynura uniformis*** Cobb, 1920. Five valid species and one species of uncertain taxonomic status.

1. Andrássy, I. (1973). Nematoden aus Strand- und Höhlenbiotopen von Kuba. *Acta Zoologica Academiae Scientiarum Hungaricae* 19: 233-270.
2. Murphy, D.G. (1965). *Cynura klunderi* (Leptolaimidae), a new species of marine nematodes. *Zoologischer Anzeiger* 175: 216-222.



Pakira orae Yeates, 1967

Reproduced with modifications from Holovachov (2004) with kind permission from *Annales Zoologici*

Genus *Pakira* Yeates, 1967

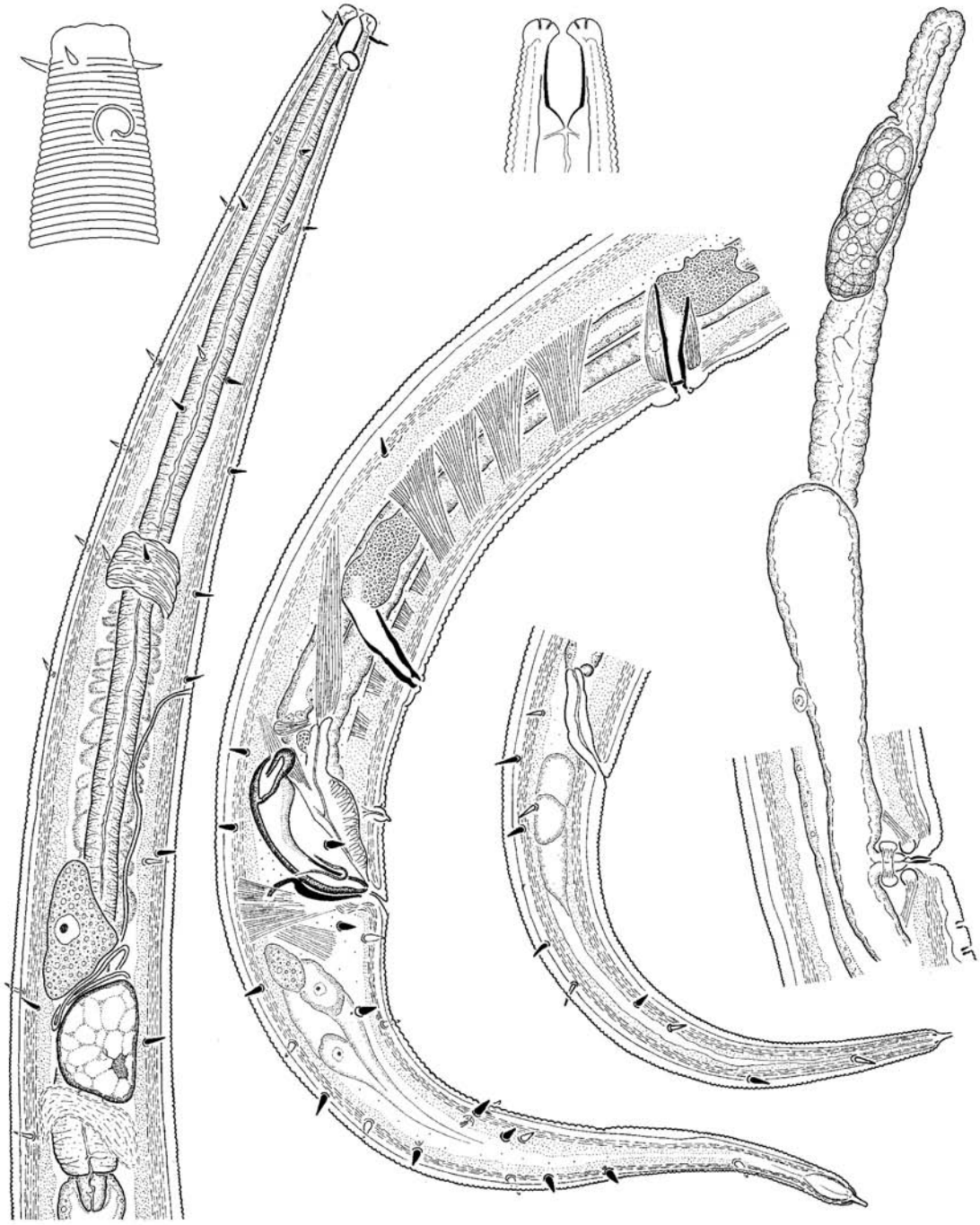
1967 *Pakira* – Yeates, New Zealand Journal of Science 10: 287-288.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae absent. Epidermal glands present, connected with body pores, arranged in six rows along the body. Somatic setae absent. Labial region truncate, offset by a constriction, lips separate. First annulus anterior to cephalic setae bases, cephalic capsule absent. Inner labial sensilla pore-like, located on inner surface of lips. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla papilliform; their bases located at base of labial region. Males with small cervical papilliform sensilla located posterior to amphid. Subcephalic sensilla and ocelli absent. Deirid absent. Amphidial fovea a transverse slit. Secretory-excretory system: renette cell opposite to anterior part of intestine; excretory pore located posterior to nerve ring; excretory canal strongly cuticularised, extending from pore along ventral region of pharynx towards renette cell, making a long coil in the renette cell. Two to three pseudocoelomocytes located along the renette cell. Oral opening hexagonal. Buccal cavity funnel-shaped: cheilostom with small sclerotizations (interlabial folds); gymnostom barrel-shaped, with parallel, sclerotised walls; stegostom cylindrical. Radial tubes emerging at the base of stegostom. Dorsal gland orifice penetrates posterior part of the stegostom. Subventral gland orifices open into pharyngeal lumen somewhat posterior to nerve ring. Pharynx cylindrical anteriorly, gradually widening posteriorly; muscularised anteriorly and glandular posteriorly; with uniformly thickened lumen throughout, cuticular lining in the basal part is folded and probably works as a simple valve. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by one sphincter muscle; *pars refringens vaginae* absent. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate, with ovoid manubrium, subcylindrical shaft; gubernaculum plate-like with caudal apophysis. Copulatory apparatus: 2 tubular supplements; precloacal papilliform sensillum; postcloacal sensilla papilliform; with subventral and subdorsal rows of papillae in the precloacal and caudal region. Tail conoid. Caudal glands usually absent. Spinneret absent; tail terminus is finely rounded.

Biology: One species hitherto described from sand dune habitats in New Zealand and South Africa. Unpublished data suggest that this genus is widely distributed in New Zealand and Australia in a wide range of terrestrial habitats. *P. orae* is an amphimictic species. Another yet undescribed species is parthenogenetic.

Taxonomy: Type and only species ***Pakira orae*** Yeates, 1967.

1. Heyns, J. & Coomans, A. (1990). *Pakira orae* Yeates, 1967 from Transkei (Nematoda: Leptolaimidae). *Suid-Afrikaanse Tydskrif vir Dierkunde* 25: 46-53.
2. Holovachov, O. (2004). Morphology, phylogeny and evolution of the superfamily Plectoidea Örley, 1880 (Nematoda: Plectida). *Annales Zoologici* 54: 631-672.



Hemiplectus muscorum Zell, 1991

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Genus *Hemiplectus* Zell, 1991

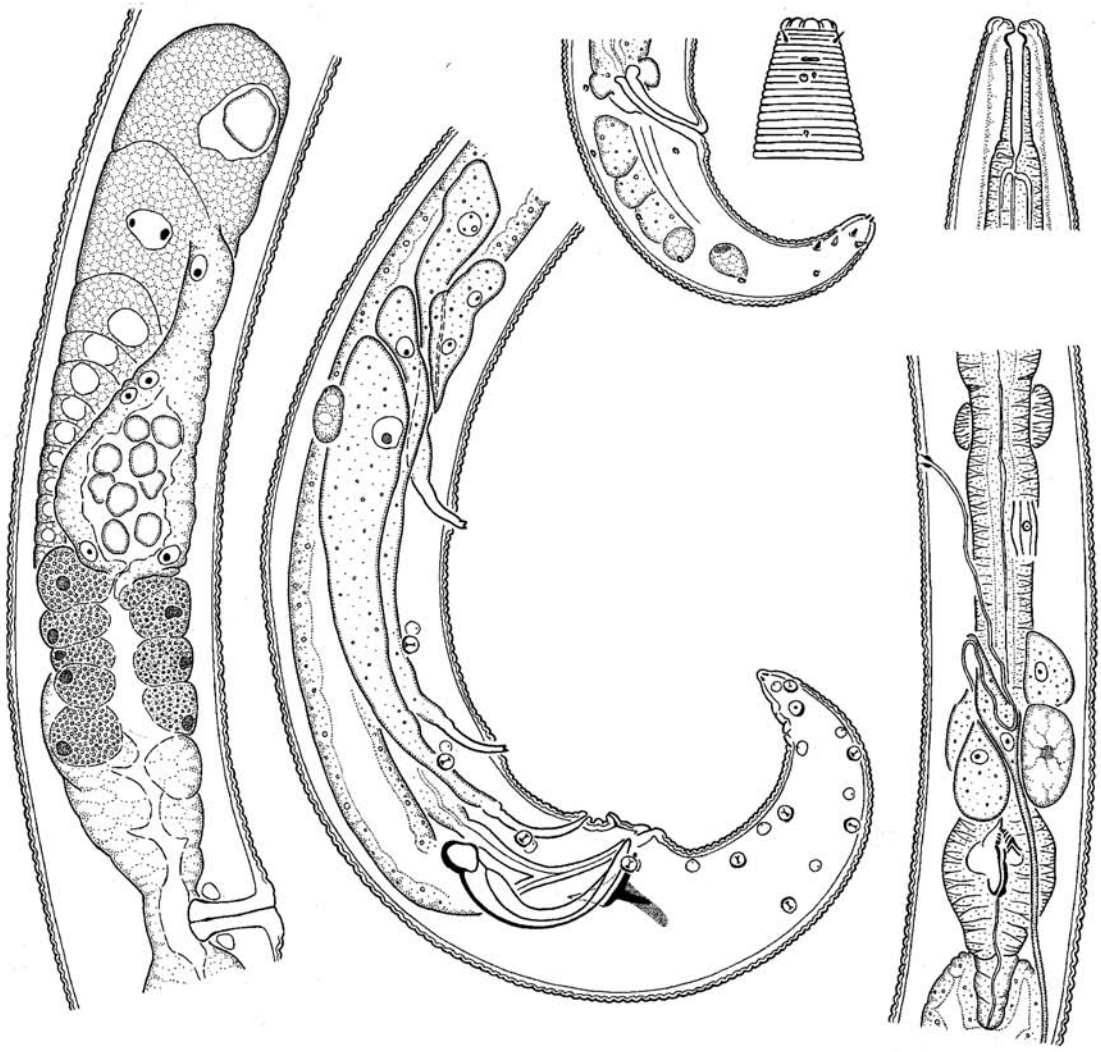
1991 *Hemiplectus* – Zell, Zoologischer Anzeiger 226: 298-299.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae absent. Epidermal glands present, connected with small papillae on cuticle surface, distinct body pores absent. Somatic setae present, not connected to epidermal glands. Pair of lateral setae just posterior to or level with nerve ring (one on each body side) shorter and plumper than somatic setae elsewhere and may be homologous to deirids. Labial region truncate, lips basally fused. First annulus at level of cephalic setae bases. Inner labial sensilla pore-like, located on inner surface of lips. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located at base of labial region. Subcephalic and cervical sensilla and ocelli absent. Amphidial fovea ventrally-unispiral. Secretory-excretory system: renette cell enveloping distal part of pharynx from ventral and lateral sides; excretory pore located posterior to nerve ring; excretory canal strongly cuticularised, extending from pore along ventral region of pharynx towards renette cell, making two loops (one on each side of pharynx) before entering renette cell. Two pseudocoelomocytes located anterior to renette cell on left/right dorsosublateral sectors of body. Base of pharynx enveloped by another two pseudocoelomocytes. Oral opening hexagonal. Buccal cavity barrel-shaped: cheilostom without sclerotisations; gymnostom barrel-shaped, with parallel, sclerotised walls; stegostom linear, its lining continuous with that of corpus. Radial tubes emerging posterior to barrel-shaped cavity. Dorsal gland orifice penetrates posterior part of stoma. Subventral gland orifices open into pharyngeal lumen at "corpus-isthmus" junction, just anterior to nerve ring. Pharynx cylindrical anteriorly, gradually widening posteriorly; muscularised with uniformly thickened lumen throughout, lacking valves and bulbs. Cardia embedded in intestine. Two pseudocoelomocytes present posterior to pharynx base. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by a single sphincter muscle; epiptygmata present. Transverse cuticular grooves or folds present in vulva region. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate, with ovoid manubrium, narrowing shaft and thin velum; gubernaculum plate-like with dorsal apophysis. Copulatory apparatus: two tubular supplements and single precloacal sensillum present, postcloacal sensilla absent. Tail conoid. Three caudal glands present, their nuclei are incaudal. Single pseudocoelomocyte located anterior to caudal glands. Spinneret functional, not cuticularised.

Biology: This species is usually found associated with mosses. Hitherto known only from Europe (Orkney and the Azores islands, Great Britain) and North America (northern California, Washington and Alaska in the USA, British Columbia in Canada). It was found in the following (but not limited to) species of mosses *Plagiothecium undulatum* (Hedw.) Schimp., *Isothecium myosuroides* Brid., *Rhytidiadelphus loreus* (Hedw.) Warnst., *Hylocomium splendens* (Hedw.) Schimp., *Kindbergia oregana* (Sull.) Ochyra, *Dicranum fuscescens* Turn., and *Rhizomnium glabrescens* (Kind.) Kop.

Taxonomy: Type and only species ***Hemiplectus muscorum*** Zell, 1991.

1. Holovachov O., Boström S., Mundo-Ocampo M., Tandingan De Ley I., Yoder M., Burr. A.H.J. & De Ley P. (2009). Morphology, molecular characterisation and systematic position of *Hemiplectus muscorum* Zell, 1991 (Nematoda: Plectida). *Nematology* 11: 719-737.



Anaplectus granulosus (Bastian, 1865) De Coninck & Schuurmans Stekhoven, 1933

Reproduced with modifications from Holovachov *et al.* (2004) with kind permission from *Russian Journal of Nematology*

Genus *Anaplectus* De Coninck & Schuurmans Stekhoven, 1933

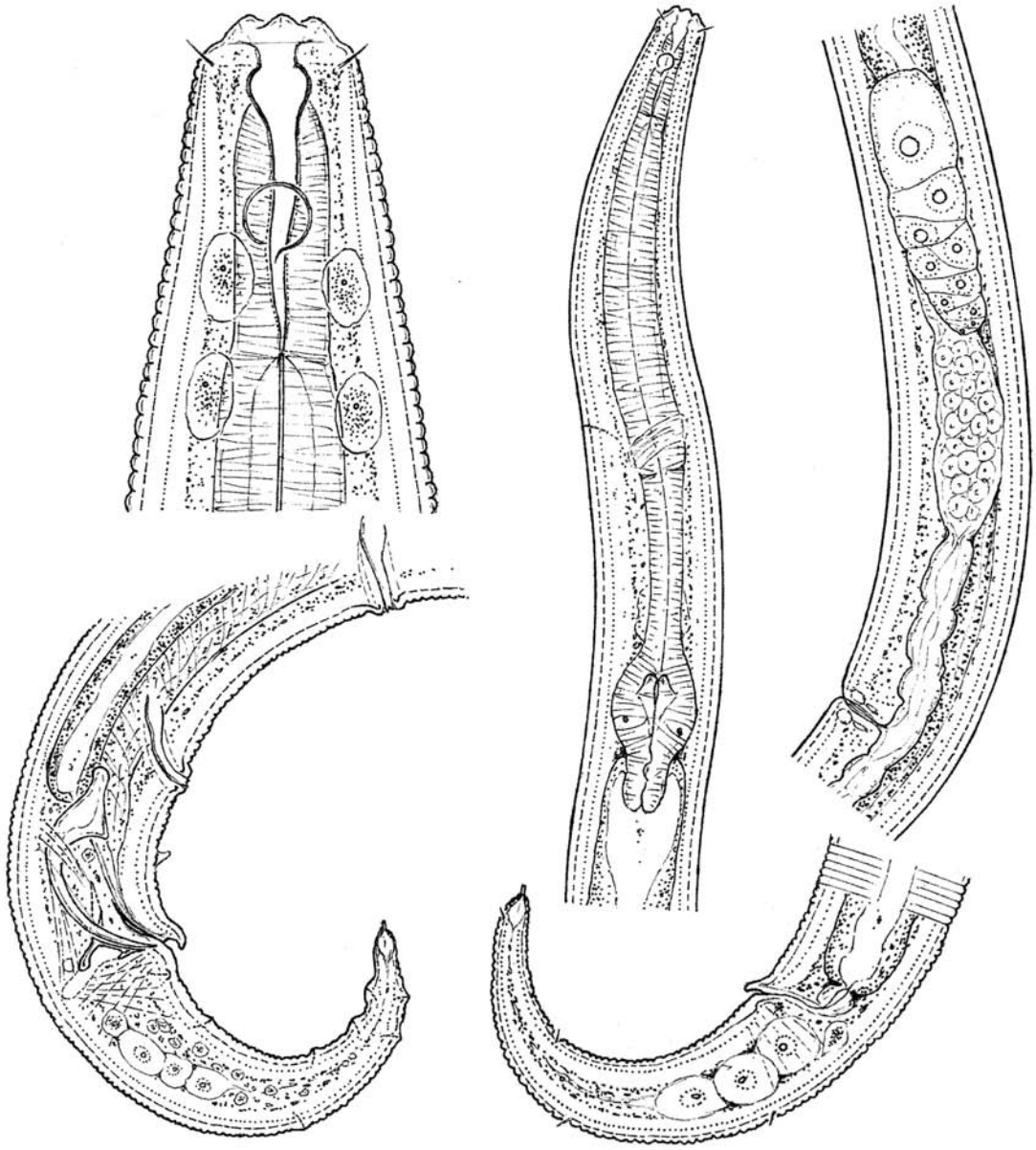
1933 *Anaplectus* – De Coninck & Schuurmans Stekhoven, Mémoires du Musée Royal d'Histoire Naturelle de Belgique 58: 94.
1963 *Marinoplectus* – Kreis, Zoology of Iceland 2: 13-14.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae consisting of two wings (alae) divided by striated cuticle (four incisures under the LM). Epidermal glands present, connected with body pores, arranged in four or six longitudinal rows. Somatic setae present on the female tail only, not connected to epidermal glands. Labial region truncate, continuous with body contour or offset by a constriction, lips basally fused. First annulus anterior to cephalic setae bases, cephalic capsule absent. Inner labial sensilla pore-like, located on inner surface of lips. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located on one of the anteriormost annules. Cervical sensilla present in both sexes, located a few annules posterior to amphid. Subcephalic sensilla and ocelli absent. Deirid present. Amphidial fovea a transverse slit. Secretory-excretory system: renette cell enveloping distal part of pharynx from ventral and lateral sides; excretory pore located posterior to nerve ring; excretory canal strongly cuticularised, extending from pore along ventral region of pharynx towards renette cell, making two loops (one on each side of pharynx) before entering renette cell. Two pseudocoelomocytes located anterior to renette cell on left/right dorsosublateral sectors of body. Oral opening hexagonal. Buccal cavity funnel-shaped: cheilostom undifferentiated; gymnostom barrel-shaped, with arcuate walls; stegostom cylindrical in its anterior part (long), narrow tubular in its posterior part (short). Radial tubes emerging at the base of stegostom. Dorsal gland orifice penetrates posterior tubular part of the stegostom. Subventral gland orifices open into pharyngeal lumen at corpus-isthmus junction, just anterior to nerve ring. Pharynx distinctly subdivided into corpus, isthmus and bulbus; corpus gradually widening posteriorly; isthmus narrower than and separated from corpus by a break in muscular tissue and cuticular lumen; basal bulbus with strongly developed valvular apparatus. Cardia embedded in intestine. Two pseudocoelomocytes present posterior to pharynx base. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca axial; crustaformeria present between spermatheca and ovijector; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by one sphincter muscle; *pars refringens vaginae* absent. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate, with ovoid manubrium, narrowing shaft and thin velum; manubrium usually with large lateral fenestra; gubernaculum plate-like, with one or two apophyses. Copulatory apparatus: 2-5 tubular supplements; precloacal sensillum papilliform; postcloacal sensilla papilliform; two to three opposed subventral pairs anterior to cloaca; one subventral pair at level with cloaca; three subventral pairs and three subdorsal pairs in a zig-zag pattern on tail; one lateral pair in subterminal position on tail. Tail conoid. Three caudal glands present, their nuclei are incaudal. Single pseudocoelomocyte located anterior to caudal glands. Spinneret functional, not cuticularised or absent.

Biology: Amphimictic. *A. granulosus* and *A. grandepapillatus* often inhabit freshwaters, while remaining species are mostly terrestrial.

Taxonomy: Type species ***Anaplectus granulosus*** (Bastian, 1865) De Coninck & Schuurmans Stekhoven, 1933. Thirteen valid species.

1. Holovachov O., Boström S., Winiszewska G. & Hánĕl L. (2004). Description of two known and one new species of the genus *Anaplectus* De Coninck & Schuurmans Stekhoven, 1933 from Europe, and a revised taxonomy of the genus (Nematoda: Plectida). *Russian Journal of Nematology* 12: 45-58.



Arctiplectus alaskanus Andrássy, 2003

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Genus *Arctiplectus* Andrássy, 2003

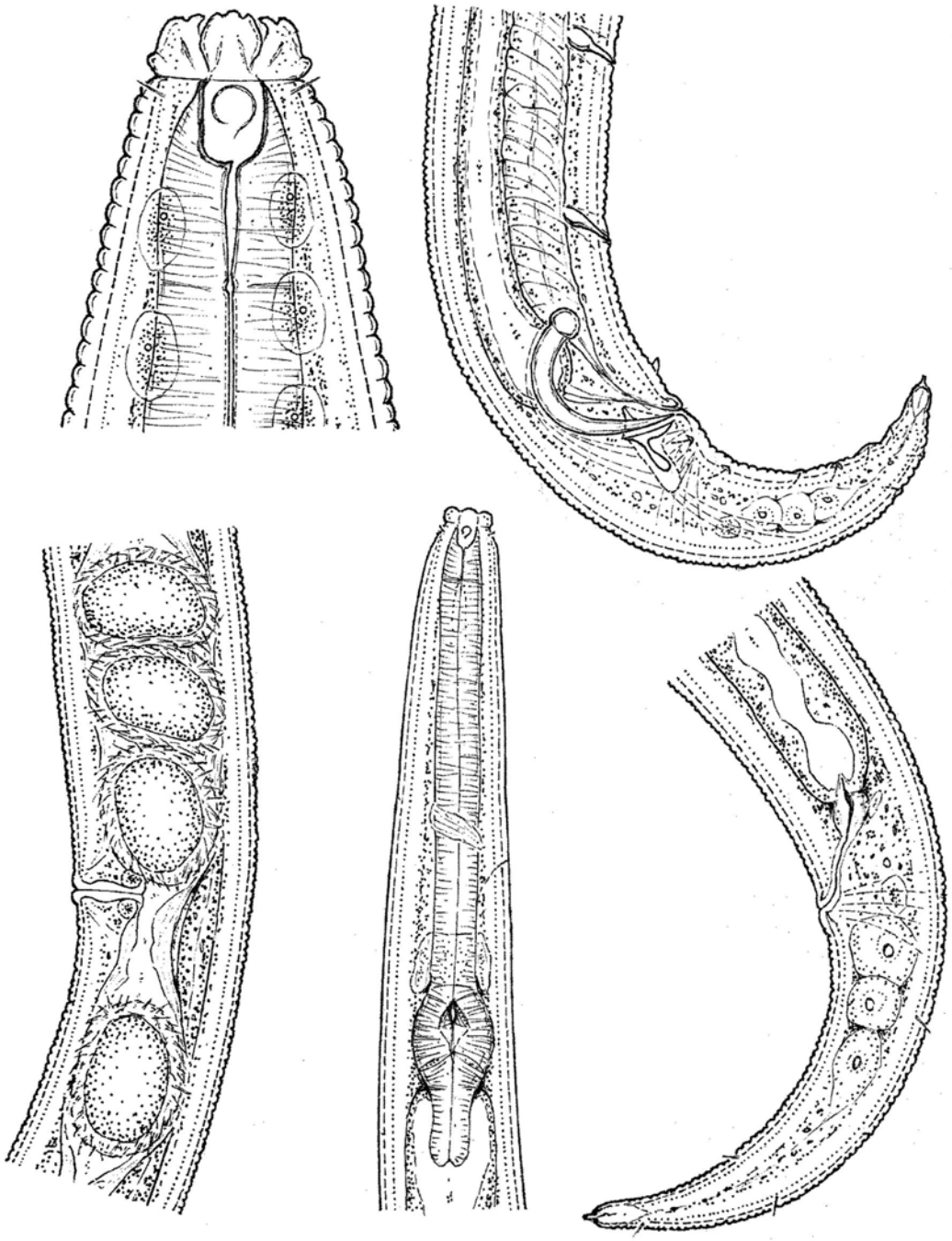
2003 *Arctiplectus* – Andrássy, Journal of Nematode Morphology and Systematics 5: 35.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae consisting of two wings (alae) divided by striated cuticle (four incisures under the LM). Epidermal glands present, connected with body pores, arranged in four or six longitudinal rows. Somatic setae present on the female tail only, not connected to epidermal glands. Labial region truncate, offset by a constriction, lips separate, protruding. First annulus anterior to cephalic setae bases, cephalic capsule absent. Inner and outer labial sensilla undescribed. Cephalic sensilla setiform; their bases located at base of labial region on one of the anteriormost annules. Subcephalic and cervical sensilla and ocelli absent. Deirid present. Amphidial fovea ventrally-unispiral. Secretory-excretory system: renette cell enveloping distal part of pharynx from ventral and lateral sides; excretory pore located posterior to nerve ring; excretory canal strongly cuticularised, extending from pore along ventral region of pharynx towards renette cell. Oral opening undescribed. Buccal cavity funnel-shaped: cheilostom undifferentiated; gymnostom barrel-shaped, with arcuate walls; stegostom funnel-shaped in its anterior part (long), narrow tubular in its posterior part (short). Radial tubes emerging at the base of stegostom. Dorsal gland orifice penetrates posterior tubular part of the stegostom. Subventral gland orifices open into pharyngeal lumen at corpus-isthmus junction, just anterior to nerve ring. Pharynx distinctly subdivided into corpus, isthmus and bulbus; corpus gradually widening posteriorly; isthmus narrower than and separated from corpus by a break in muscular tissue and cuticular lumen; basal bulbus with strongly developed valvular apparatus. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca axial; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by one or two sphincter muscles; *pars refringens vaginae* absent. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules sickle-shaped, with conoid shaft; gubernaculum plate-like, with two apophyses. Copulatory apparatus: 2 tubular supplements; precloacal papilliform sensillum; postcloacal sensilla papilliform; usually with subventral and subdorsal rows of papillae in the caudal region. Tail conoid. Three caudal glands present, their nuclei are incaudal. Single pseudocoelomocyte located anterior to caudal glands. Spinneret functional, not cuticularised.

Biology: Amphimictic. The only species was found in two localities in Alaska (USA).

Taxonomy: Type and only species ***Arctiplectus alaskanus*** Andrássy, 2003.

1. Andrássy, I. (2003). New and rare nematodes from Alaska. I. Three species of the family Plectidae. *Journal of Nematode Morphology and Systematics* 5 (2002): 33-48.



Perioplectus secundus Andrássy, 2003

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Genus *Perioplectus* Sanwal in Gerlach & Riemann, 1973

1968 *Periplectus* – Sanwal, Canadian Journal of Zoology 46: 992.

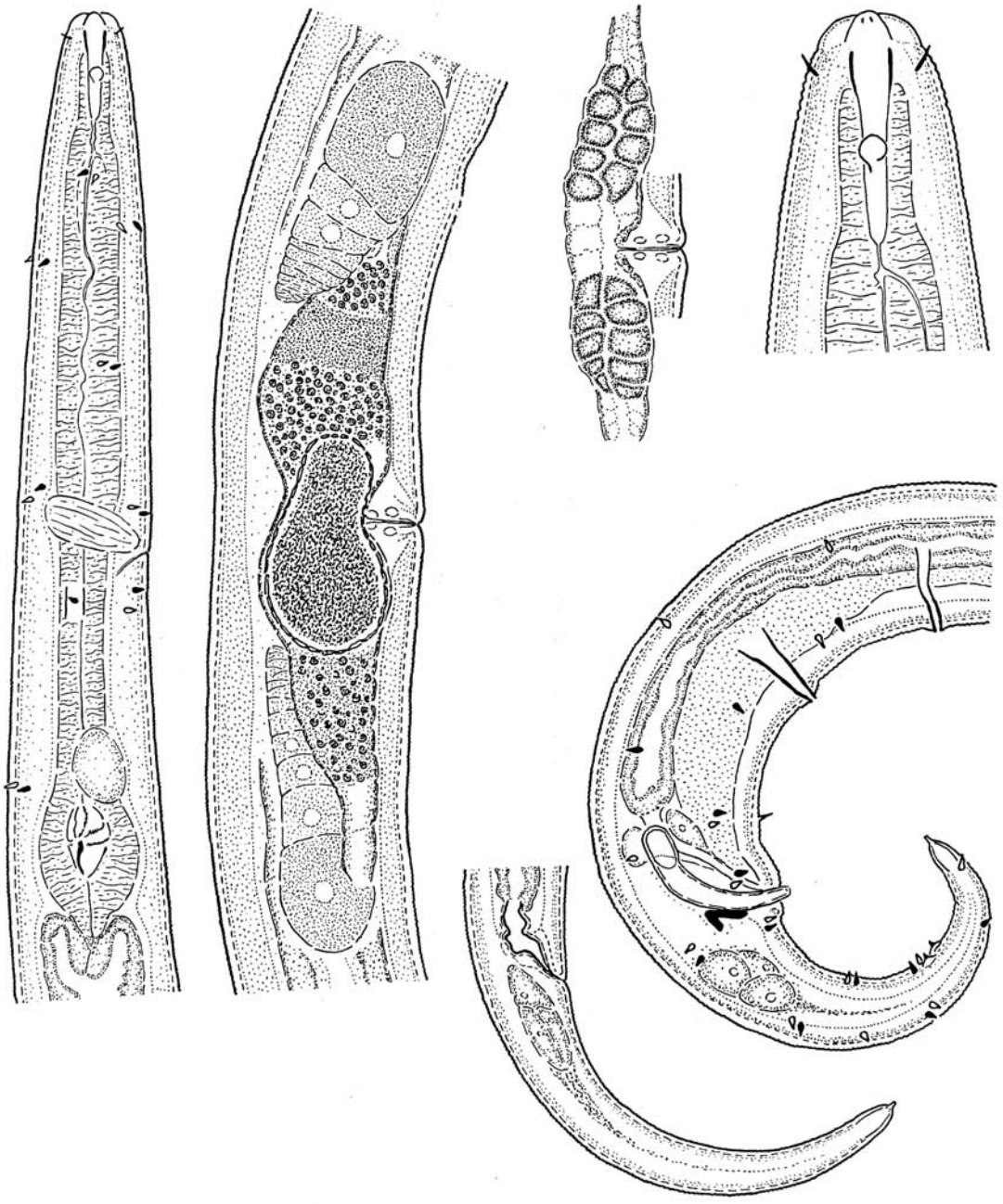
1973 *Perioplectus* – Sanwal in Gerlach & Riemann, Veröffentlichungen des Instituts für Meeresforschung in Bremerhaven, Supplement 4: 11.

Morphology: Cuticle annulated, annules smooth, without ornamentation. Lateral alae consisting of two wings (alae) divided by striated cuticle (four incisures under the LM). Epidermal glands present, connected with body pores, arranged in four longitudinal rows. Somatic setae present on the female tail only, not connected to epidermal glands. Labial region cylindrical, offset by a constriction, lips separate, complexly lobed. First annulus anterior to cephalic setae bases, cephalic capsule absent. Inner labial sensilla undescribed. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located on one of the anteriormost annules. Cervical sensilla present in males, located a few annules posterior to amphid. Subcephalic ensilla and ocelli absent. Deirid present. Amphidial fovea ventrally unispiral. Secretory-excretory system: renette cell enveloping distal part of pharynx from ventral and lateral sides; excretory pore located posterior to nerve ring; excretory canal strongly cuticularised, extending from pore along ventral region of pharynx towards renette cell, making two loops (one on each side of pharynx) before entering renette cell. Oral opening hexagonal. Buccal cavity funnel-shaped: cheilostom undifferentiated; gymnostom barrel-shaped, with arcuate walls; stegostom conoid in its anterior part (short), narrow tubular in its posterior part (long). Radial tubes emerging at the base of stegostom. Dorsal gland orifice penetrates posterior tubular part of the stegostom. Subventral gland orifices open into pharyngeal lumen at corpus-isthmus junction, just anterior to nerve ring. Pharynx distinctly subdivided into corpus, isthmus and bulbus; corpus gradually widening posteriorly; isthmus narrower than and separated from corpus by a break in muscular tissue and cuticular lumen; basal bulbus with strongly developed valvular apparatus. Cardia embedded in intestine. Two pseudocoelomocytes present posterior to pharynx base. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca axial; crustaformeria present between spermatheca and ovijector; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by one sphincter muscle; *pars refringens vaginae* absent. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate, with ovoid manubrium, narrowing shaft and thin velum; manubrium usually with large lateral fenestra; gubernaculum plate-like, with one or two apophyses. Copulatory apparatus: 2 tubular supplements; precloacal sensillum papilliform; postcloacal sensilla papilliform; four opposed subventral pairs anterior to cloaca; one subventral pair at level with cloaca; four subventral pairs and two subdorsal pairs in a zig-zag pattern on tail; two to three lateral pairs in posterior part of the tail. Tail conoid. Three caudal glands present, their nuclei are incaudal. Single pseudocoelomocyte located anterior to caudal glands. Spinneret functional, not cuticularised.

Biology: Amphimictic. Two species, both known from the northern North America only.

Taxonomy: Type species ***Perioplectus labiosus*** (Sanwal, 1968) Sanwal in Gerlach & Riemann, 1973. Two valid species.

1. Andrássy, I. (2003). New and rare nematodes from Alaska. I. Three species of the family Plectidae. *Journal of Nematode Morphology and Systematics* 5 (2002): 33-48.



Plectus paracuminatus Zell, 1993

Reproduced with modifications from Holovachov *et al.* (2001) with kind permission from *Journal of Nematode Morphology and Systematics*

Genus *Plectus* Bastian, 1865

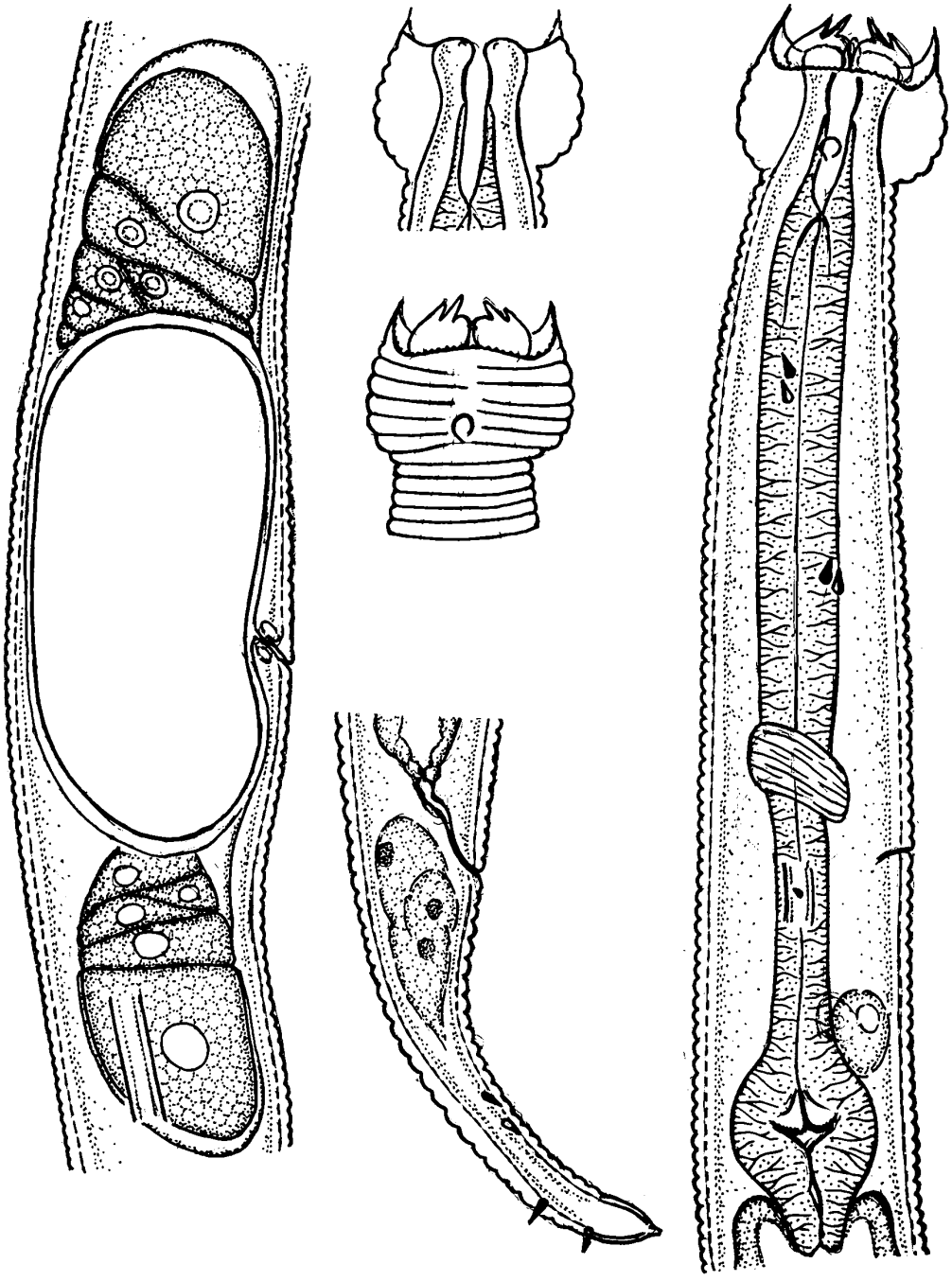
1865 *Plectus* – Bastian, Transactions of the Linnean Society of London 25: 118.
1904 *Plectoides* – de Man, Résultats du Voyage du S.Y. Belgica en 1897-1898-1899: 10.
1964 *Proteroplectus* – Paramonov, [Principles of phytonematology. 2. Taxonomy of phytonematodes]: 37.
1984 *Ceratoplectus* – Andrássy, Klasse Nematoda: 105.
1984 *Chiloplectus* – Andrássy, Klasse Nematoda: 107.

Morphology: Cuticle annulated, annules smooth in most species, without ornamentation (annules divided by longitudinal striae in *P. cancellatus*). Lateral alae consisting of two wings (alae) divided by striated cuticle (four incisures under the LM). Epidermal glands present, connected with body pores, or absent. Somatic setae present, not connected to epidermal glands. Labial region variable in shape, rounded or truncate, continuous with body contour or offset by a constriction, lips separate, smooth or radially incised. In the "subgenus" *Ceratoplectus* the lateral lips are wider than the subdorsal or the subventral; in the species formerly placed in genus *Chiloplectus* lips with inner setiform projection. First annulus anterior to cephalic setae bases, cephalic capsule absent. Inner labial sensilla pore-like, located on inner surface of lips. Outer labial sensilla papilliform, located on outer surface of lips. Cephalic sensilla setiform; their bases located at base of labial region or on one of the anteriormost annules. Subcephalic and cervical sensilla and ocelli absent. Deirid present. Amphidial fovea ventrally-unispiral. Secretory-excretory system: renette cell enveloping distal part of pharynx from ventral and lateral sides; excretory pore located posterior to nerve ring; excretory canal strongly cuticularised, extending from pore along ventral region of pharynx towards renette cell, making two loops (one on each side of pharynx) before entering renette cell. Two pseudocoelomocytes located anterior to renette cell on left/right dorsosublateral sectors of body. Base of pharynx enveloped by another two pseudocoelomocytes. Oral opening hexagonal. Buccal cavity funnel-shaped: cheilostom with or without small sclerotizations (interlabial folds); gymnostom barrel-shaped, with parallel, sclerotised walls; stegostom funnel-shaped or cylindrical in its anterior part (long), narrow tubular in its posterior part (short). Radial tubes emerging at the base of stegostom. Dorsal gland orifice penetrates posterior tubular part of the stegostom. Subventral gland orifices open into pharyngeal lumen at corpus-isthmus junction, just anterior to nerve ring. Pharynx distinctly subdivided into corpus, isthmus and bulbus; corpus gradually widening posteriorly; isthmus narrower than and separated from corpus by a break in muscular tissue and cuticular lumen; basal bulbus with strongly developed valvular apparatus. Some species may have a post-bulbal extension of the pharynx. Cardia embedded in intestine. Two pseudocoelomocytes present posterior to pharynx base. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca absent; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by one or two sphincter muscles; epiptygmata absent or present. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate, with ovoid manubrium, narrowing shaft and thin velum; manubrium usually with large lateral fenestra; gubernaculum plate-like, sometimes with caudal apophysis. Copulatory apparatus: 0-6 tubular supplements; precloacal sensillum setiform or absent; postcloacal sensilla papilliform or absent; usually with subventral and subdorsal rows of setae in the precloacal and caudal region. Tail conoid, elongate-conoid or subcylindrical. Three caudal glands usually present (absent in several species), their nuclei are incaudal. A single pseudocoelomocyte located anterior to caudal glands. Spinneret functional, not cuticularised or absent; in some species its base is surrounded by papilliform projections; can be modified.

Biology: Usually parthenogenetic. Distributed all over the world in freshwater and terrestrial habitats.

Taxonomy: Type species ***Plectus parietinus*** Bastian, 1865. 79 valid species and 24 species of uncertain status.

1. Holovachov, O. & De Ley, P. (2006). Order Plectida. In: Eyualem, A., Andrássy, I. & Traunspurger, W. (eds.) *Freshwater nematodes: ecology and taxonomy.* CAB International: 611-647.
2. Holovachov O., Boström S. & Susulovsky A. (2001). Study of Plectidae (Nematoda) from Ukraine. Description of *Plectus paracuminatus* Zell, 1993 with observations of male sexual characters. *Journal of Nematode Morphology & Systematics* 4: 11-20.



Ereptonema arcticum Loof, 1971

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Genus *Ereptonema* Anderson, 1966

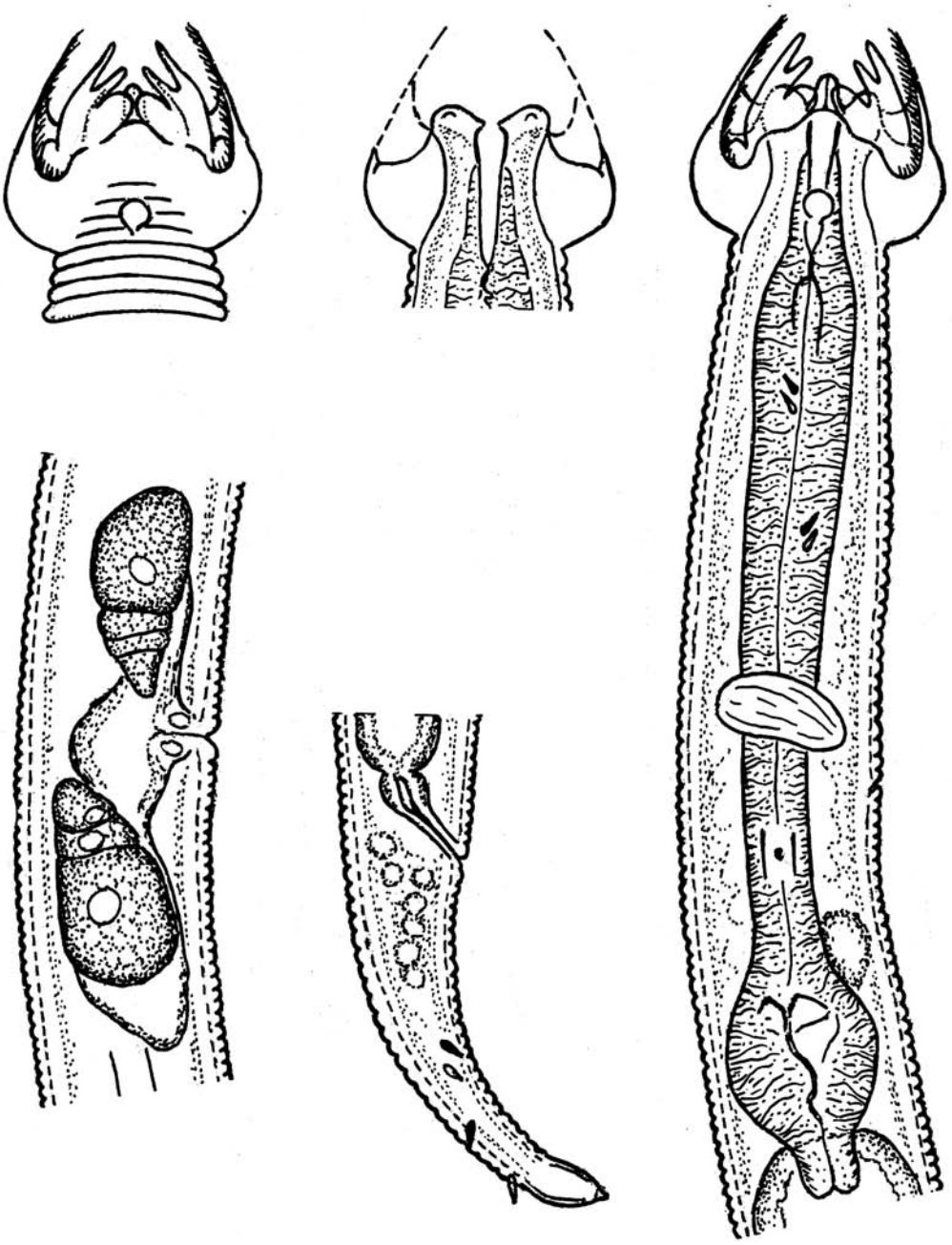
1966 *Ereptonema* – Anderson, Canadian Journal of Zoology 44: 929.
1977 *Wilsereptus* – Chawla, Khan & Saha, Indian Journal of Nematology 5 (1975): 176.
1977 *Paraereptonema* – Eroshenko, Paraziticheskie i svobodnozhyvushchie chervi fauny Dalnego Vostoka. Trudy Biologo-pochvennogo Instituta 47: 6.

Morphology: Cuticle annulated, annules smooth. Lateral alae consisting of two wings (alae) divided by striated cuticle (four incisures under the LM). Epidermal glands absent. Somatic setae present. Anterior end with pronounced bilateral and dorsoventral symmetry. Cervical cuticular expansions bulbiform, with 4-6 transverse striations. Each expansion extends forward into one or two sagittal small flabella, which are hardly discernible from and slightly longer than the adjacent fimbriae. Each flabellum is supported by the arcuate radial ridge of the perioral cuticle that extends from the oral aperture towards the middle of the flabellum. Each flabellum carrying long and slender fimbriae, which are symmetrically located on both sides of the flabellum and directed forward. Anterior margin of each cervical expansion as well as the lateral rims carrying fimbriae, which are somewhat shorter than fimbriae on flabella and also directed forward. They are only faintly visible under the LM. Each lateral sector carrying a pair of cornua and midlateral projection set between the lateral rim and mouth opening. Cornua "ovoid", having a narrow base, with their facing rims divided into two to three tines by deep incisures. Midlateral projection of lateral lip small and rounded, extending forward and reaching at least half the length of cornua. Each midlateral projection has a small terminal aperture and contains a nerve ending. Subventral and subdorsal lips obscure. They apparently have a nerve ending each, probably corresponding with the outer labial sensilla. Peripheral cuticle on the lateral sides of the anterior end with prominent transverse striations continuous with the expansions' striations. First annulus anterior to cephalic expansions and amphids. Subcephalic and cervical sensilla and ocelli absent. Deirid present. Amphidial fovea ventrally-unispiral, located between cervical expansions. Secretory-excretory system: renette cell enveloping distal part of pharynx from ventral and lateral sides; excretory pore located posterior to nerve ring; excretory canal weakly cuticularised, extending from pore along ventral region of pharynx towards renette cell, making two loops (one on each side of pharynx) before entering renette cell. Two pseudocoelomocytes located anterior to renette cell on left/right dorsosublateral sectors of body. Base of pharynx enveloped by another two pseudocoelomocytes. Oral opening hexagonal. Buccal cavity funnel-shaped: cheilostom without interlabial folds; gymnostom barrel-shaped, with parallel, sclerotised walls; stegostom funnel-shaped or cylindrical in its anterior part (long), narrow tubular in its posterior part (short). Radial tubes emerging at the base of stegostom. Dorsal gland orifice penetrates posterior tubular part of the stegostom. Subventral gland orifices open into pharyngeal lumen at corpus-isthmus junction, just anterior to nerve ring. Pharynx distinctly subdivided into corpus, isthmus and bulbus; isthmus narrower than and separated from corpus by a break in muscular tissue and cuticular lumen; basal bulbus with strongly developed valvular apparatus. Some species may have a post-bulbal extension of the pharynx. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca absent; vulva equatorial; vagina straight; pars proximalis vaginae encircled by one sphincter muscle; epiptygmata absent. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate, with ovoid manubrium, narrowing shaft and thin velum; manubrium usually with large lateral fenestra; gubernaculum plate-like. Copulatory apparatus: tubular supplements, precloacal and postcloacal sensilla absent; subventral and subdorsal rows of setae in the precloacal and caudal region. Tail conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, not cuticularised.

Biology: Terrestrial. Parthenogenetic.

Taxonomy: Type species ***Ereptonema fimbriatum*** Anderson, 1966. Four valid species and one species of uncertain taxonomic status.

1. Holovachov O., Boström S., Tandingan De Ley I., De Ley P. & Coomans A. (2003). Morphology and systematics of the genera *Wilsonema* Cobb, 1913, *Ereptonema* Anderson, 1966 and *Neotylocephalus* Ali, Farooqui & Tejpal, 1969 (Leptolaimina: Wilsonematinae). *Journal of Nematode Morphology and Systematics* 5 (2002): 73-106.



Neotylocephalus inflatus (Yeates, 1967) Holovachov et al., 2003

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Genus *Neotylocephalus* Ali, Farooqui & Tejpal, 1969

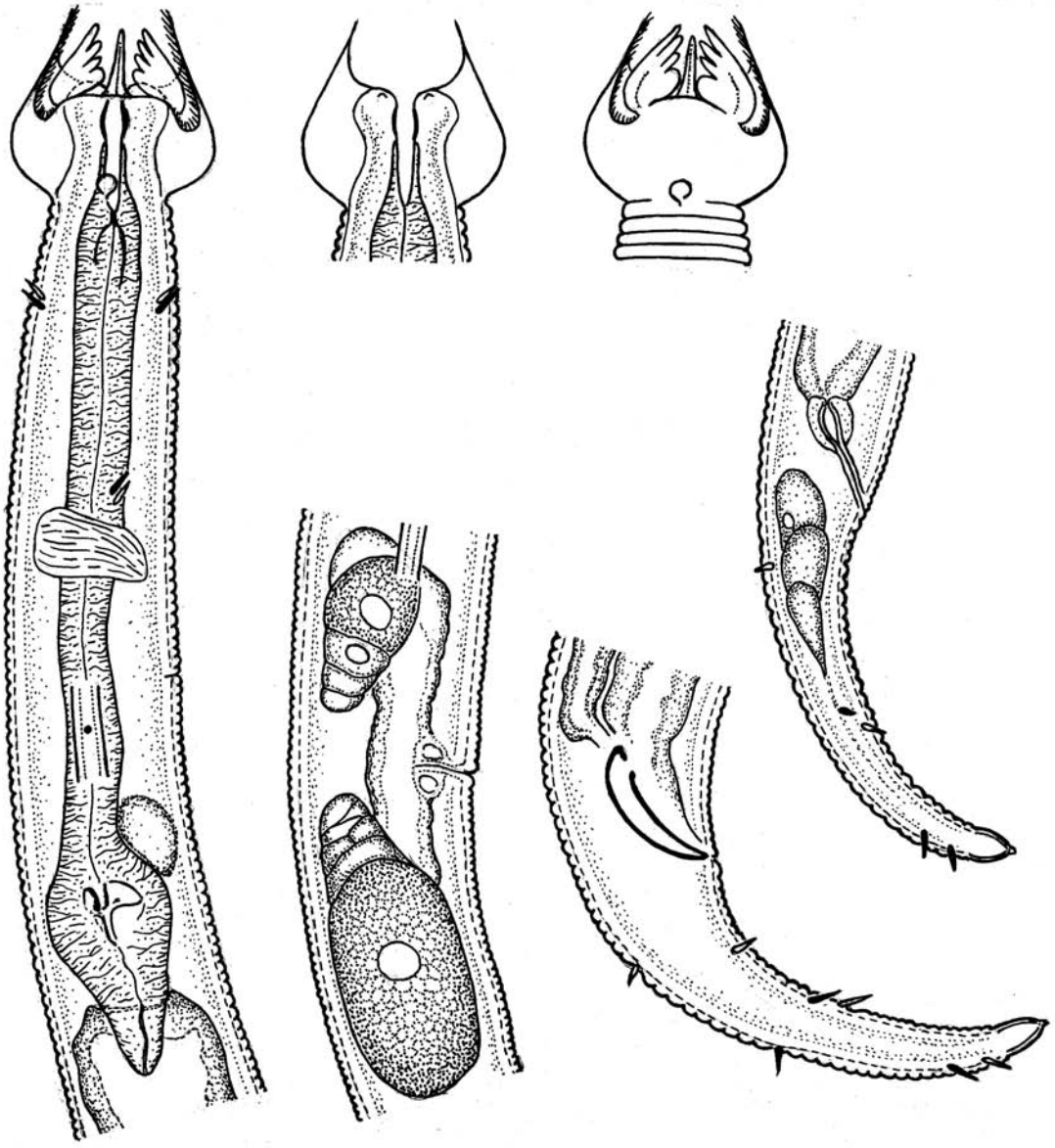
1969 *Neotylocephalus* – Ali, Farooqui & Tejpal, Rivista di Parassitologia 30: 287.
1982 *Spatiocephalus* – Patil & Khan, Indian Journal of Nematology 12: 254.
1986 *Coronacephalus* – Ganguly & Khan, Indian Journal of Nematology 16: 227-229.

Morphology: Cuticle annulated, annules smooth. Lateral alae consisting of two wings (alae) divided by striated cuticle (four incisures under the LM). Epidermal glands absent. Somatic setae present. Anterior end with pronounced bilateral and dorsoventral symmetry. Cervical cuticular expansions bulbiform, smooth under LM but with very fine transverse striations posteriorly under SEM. Each expansion extends forward into two long submedian fimbriate flabella. Each flabellum is supported by the arcuate radial ridge of the perioral cuticle that extends from the oral aperture towards the middle of the flabellum or somewhat anteriorly. Each flabellum carrying long and slender fimbriae, which are symmetrically located on both sides of the flabellum and directed forward. Fimbriae only faintly visible under LM. Each lateral sector carrying a pair of sublateral cornua and a midlateral projection set between lateral rim and oral aperture. Cornua triangular or oval, having a wide base, with their facing rims divided by deep incisures into three tines of comparable length, while the middle one contains a nerve ending and is usually more distinct under light microscope. Midlateral projection of lateral lip short, extending forward to near the middle of cornua; contains a nerve ending, probably of lateral outer labial sensillum. Lateral rims without fimbriae. Perioral cuticle on the lateral sides of the anterior end with only few incomplete transverse striations, its posterior part ending near amphid. First annulus posterior to cephalic expansions and amphids. Subcephalic and cervical sensilla and ocelli absent. Deirid present. Amphidial fovea ventrally-unispiral, located between cervical expansions. Secretory-excretory system: renette cell enveloping distal part of pharynx from ventral and lateral sides; excretory pore located posterior to nerve ring; excretory canal weakly cuticularised, extending from pore along ventral region of pharynx towards renette cell, making two loops (one on each side of pharynx) before entering renette cell. Two pseudocoelomocytes located anterior to renette cell on left/right dorsosublateral sectors of body. Base of pharynx enveloped by another two pseudocoelomocytes. Buccal cavity funnel-shaped: cheilostom without interlabial folds; gymnostom barrel-shaped, with parallel, sclerotised walls; stegostom funnel-shaped or cylindrical in its anterior part (long), narrow tubular in its posterior part (short). Radial tubes emerging at the base of stegostom. Dorsal gland orifice penetrates posterior tubular part of the stegostom. Subventral gland orifices open into pharyngeal lumen at corpus-isthmus junction, just anterior to nerve ring. Pharynx distinctly subdivided into corpus, isthmus and bulbus; isthmus narrower than and separated from corpus by a break in muscular tissue and cuticular lumen; basal bulbus with strongly developed valvular apparatus. Some species may have a post-bulbal extension of the pharynx. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca absent; vulva equatorial; vagina straight; pars proximalis vaginae encircled by one sphincter muscle; epiptygmata absent. Male unknown. Tail conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, not cuticularised.

Biology: Terrestrial. Parthenogenetic.

Taxonomy: Type species ***Neotylocephalus annonae*** Ali, Farooqui & Tejpal, 1969. Three valid species.

1. Holovachov O., Boström S., Tandingan De Ley I., De Ley P. & Coomans A. (2003). Morphology and systematics of the genera *Wilsonema* Cobb, 1913, *Ereptonema* Anderson, 1966 and *Neotylocephalus* Ali, Farooqui & Tejpal, 1969 (Leptolaimina: Wilsonematinae). *Journal of Nematode Morphology and Systematics* 5 (2002): 73-106.



Wilsonema otophorum (de Man, 1880) Cobb, 1913

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Genus *Wilsonema* Cobb, 1913

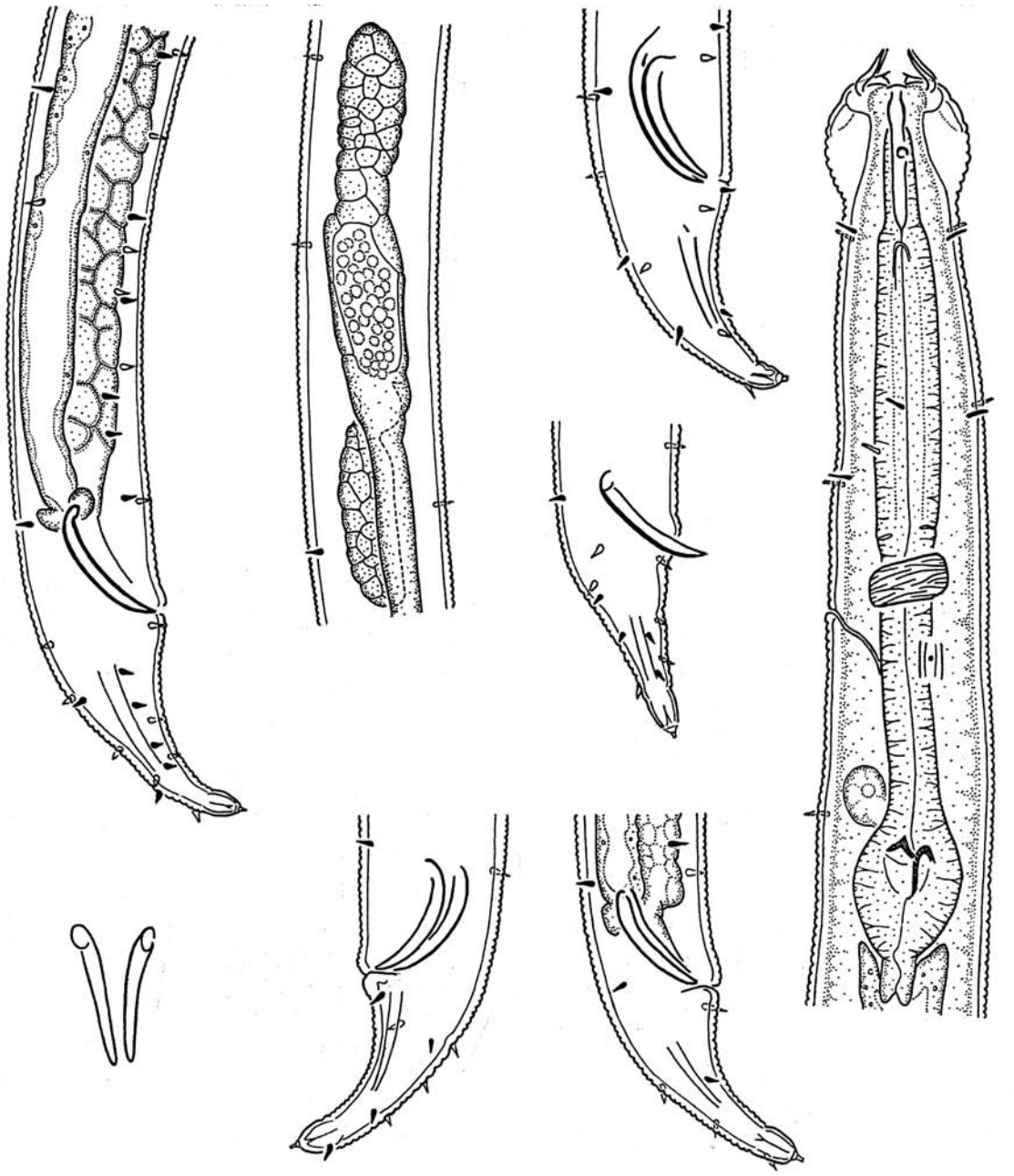
1913 *Wilsonema* – Cobb, Journal of Washington Academy of Sciences 3: 443.
1920 *Pycnolaimus* – Cobb, Contribution to a Science of Nematology 9: 258.
1931 *Bitholinema* – De Coninck, Bulletin du Musée royal d'Histoire naturelle de Belgique 7: 2.
1969 *Wilsotylus* – Chawla, Khan & Prasad, Bulletin of Entomology 10: 146.

Morphology: Cuticle annulated, annules smooth. Lateral alae consisting of two wings (alae) divided by striated cuticle (four incisures under the LM). Epidermal glands absent. Somatic setae present. Anterior end with pronounced bilateral and dorsoventral symmetry. Cervical cuticular expansions bulbiform, without annulation. Each expansion extends forward into one long median fimbriate flabellum. Each flabellum is supported by the arcuate radial ridge of the perioral cuticle that extends from the oral aperture towards the middle of the flabellum or somewhat anteriorly. Each flabellum carrying long and slender fimbriae, which are symmetrically located on both sides of the flabellum and directed inward and somewhat forward. Fimbriae only faintly visible under LM. Each lateral sector carrying a pair of sublateral cornua and a midlateral projection set between the lateral rim and mouth opening. Cornua "triangular", having a wide base, with their facing rims divided into four or rarely five tines by deep incisures. The innermost two to three tines are broadly triangular, while the outermost two tines are elongate. Midlateral projection of lateral lip long and slender, finger-like, extending well forward and reaching the tips of cornua, with a papillar terminus and two small flaps supported by a fine adoral ridge. Each midlateral projection has a small terminal opening and contains a nerve ending. Subventral and subdorsal lips obscure under SEM. They apparently have a nerve ending each, probably corresponding to the outer labial sensilla. Lateral rims somewhat expanded, without fimbriae. Peripheral cuticle on the lateral sides of the anterior end with only few incomplete transverse striae, its posterior part ending near amphid. First annulus posterior to cephalic expansions and amphids. Subcephalic and cervical sensilla and ocelli absent. Deirid present. Amphidial fovea ventrally-unispiral, located between cervical expansions. Secretory-excretory system: renette cell enveloping distal part of pharynx from ventral and lateral sides; excretory pore located posterior to nerve ring; excretory canal weakly cuticularised, extending from pore along ventral region of pharynx towards renette cell, making two loops (one on each side of pharynx) before entering renette cell. Two pseudocoelomocytes located anterior to renette cell on left/right dorsosublateral sectors of body. Base of pharynx enveloped by another two pseudocoelomocytes. Oral opening hexagonal. Buccal cavity funnel-shaped: cheilostom without interlabial folds; gymnostom barrel-shaped, with parallel, sclerotised walls; stegostom funnel-shaped or cylindrical in its anterior part (long), narrow tubular in its posterior part (short). Radial tubes emerging at the base of stegostom. Dorsal gland orifice penetrates posterior tubular part of the stegostom. Subventral gland orifices open into pharyngeal lumen at corpus-isthmus junction, just anterior to nerve ring. Pharynx distinctly subdivided into corpus, isthmus and bulbus; isthmus narrower than and separated from corpus by a break in muscular tissue and cuticular lumen; basal bulbus with strongly developed valvular apparatus. Some species may have a post-bulbal extension of the pharynx. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca absent; vulva equatorial; vagina straight; pars proximalis vaginae encircled by one sphincter muscle; epiptygmata absent. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate, with ovoid manubrium, narrowing shaft and thin velum; manubrium usually with large lateral fenestra; gubernaculum plate-like. Copulatory apparatus: tubular supplements, precloacal and postcloacal sensilla absent; subventral and subdorsal rows of setae in the precloacal and caudal region. Tail conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, not cuticularised.

Biology: Terrestrial. Parthenogenetic.

Taxonomy: Type species ***Wilsonema otophorum*** (de Man, 1880). Four valid species and 3 species inquirenda.

1. Holovachov O., Boström S., Tandingan De Ley I., De Ley P. & Coomans A. (2003). Morphology and systematics of the genera *Wilsonema* Cobb, 1913, *Ereptonema* Anderson, 1966 and *Neotylocephalus* Ali, Farooqui & Tejpal, 1969 (Leptolaimina: Wilsonematinae). *Journal of Nematode Morphology and Systematics* 5 (2002): 73-106.



Tylocephalus auriculatus (Bütschli, 1873) Anderson, 1966

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Genus *Tylocephalus* Crossman, 1933

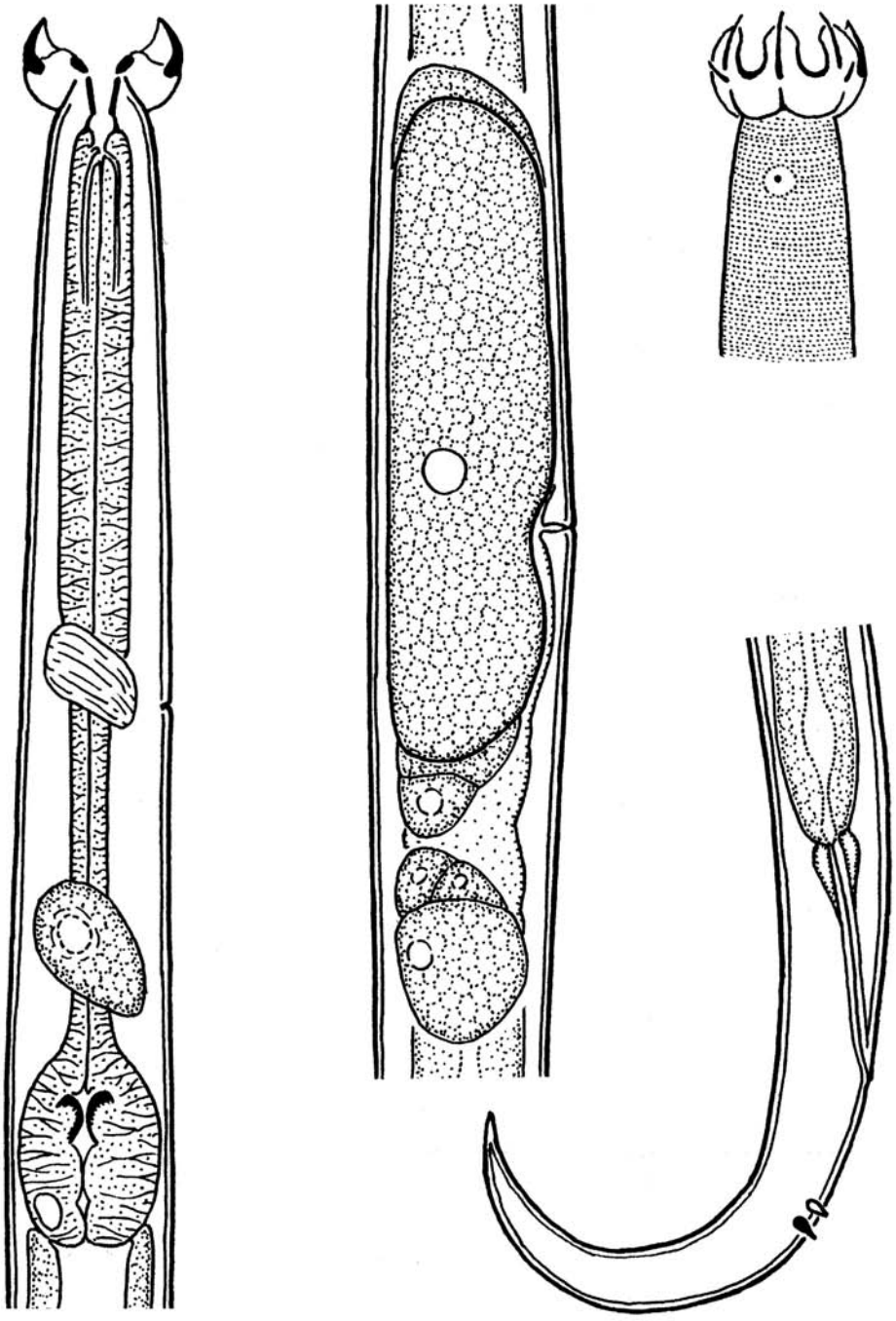
1933 *Tylocephalus* – Crossmann, Journal of Parasitology 20: 106.

Morphology: Cuticle annulated, annules smooth. Lateral alae consisting of two wings (alae) divided by striated cuticle (four incisures under the LM). Epidermal glands absent. Somatic setae present. Anterior end with pronounced bilateral and dorsoventral symmetry. Cervical cuticular expansions bearing a series of 9-13 annules, extending backward to the level of the quartet of "subcephalic" setae. Cornua flattened, leaf-shaped with finely rounded terminus, containing a distinct nerve. Subdorsal and subventral lip pairs modified into two median ridges, each with a pair of submedian flaps of cuticle, projecting forward and inward. Lateral lips modified, bearing two sublateral cuticular plates shaped like large quadrants. Lateral lips midlaterally extending in-between quadrants, each forming a tapering tip, containing a nerve ending. First annulus anterior to cephalic expansions and amphids. Subcephalic and cervical sensilla and ocelli absent. Deirid present. Amphidial fovea ventrally-unispiral, located between cervical expansions. Secretory-excretory system: renette cell enveloping distal part of pharynx from ventral and lateral sides; excretory pore located posterior to nerve ring; excretory canal weakly cuticularised, extending from pore along ventral region of pharynx towards renette cell, making two loops (one on each side of pharynx) before entering renette cell. Two pseudocoelomocytes located anterior to renette cell on left/right dorsosublateral sectors of body. Base of pharynx enveloped by another two pseudocoelomocytes. Oral opening hexagonal. Buccal cavity funnel-shaped: cheilostom with or without small sclerotizations (interlabial folds); gymnostom barrel-shaped, with parallel, sclerotised walls; stegostom funnel-shaped or cylindrical in its anterior part (long), narrow tubular in its posterior part (short). Radial tubes emerging at the base of stegostom. Dorsal gland orifice penetrates posterior tubular part of the stegostom. Subventral gland orifices open into pharyngeal lumen at corpus-isthmus junction, just anterior to nerve ring. Pharynx distinctly subdivided into corpus, isthmus and bulbus; corpus gradually widening posteriorly; isthmus narrower than and separated from corpus by a break in muscular tissue and cuticular lumen; basal bulbus with strongly developed valvular apparatus. Some species may have a post-bulbal extension of the pharynx. Cardia embedded in intestine. Two pseudocoelomocytes present posterior to pharynx base. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca absent; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by one sphincter muscle; epiptygmata absent. Male reproductive system diorchic; testes opposed with anterior testis outstretched and posterior one reflexed; spicules arcuate, with ovoid manubrium, narrowing shaft and thin velum; manubrium usually with large lateral fenestra; gubernaculum plate-like. Copulatory apparatus: tubular supplements, precloacal and postcloacal sensilla absent; subventral and subdorsal rows of setae in the precloacal and caudal region. Tail conoid. Three caudal glands present, their nuclei are incaudal. Spinneret functional, not cuticularised.

Biology: T. auriculatus was found in a variety of habitats, ranging from aquatic plants to arid lands, mosses and rotting wood. *T. longicornis* was recovered from standing water in a bromeliad from Costa Rica.

Taxonomy: Type species ***Tylocephalus auriculatus*** (Bütschli, 1873) Anderson, 1966. Eleven valid species.

1. Holovachov O., Boström S. & Mundo-Ocampo M. (2004). Description of three known and two new species of the genus *Tylocephalus* Crossman, 1933 with a revised taxonomy of the genus and key to species of the subfamily Wilsonematinae (Plectida). *Russian Journal of Nematology* 12: 115-130.



Metateratocephalus bialowieziensis Holovachov, 2004

Reproduced with modifications from Holovachov (2004)

Genus *Metateratocephalus* Eroshenko, 1973

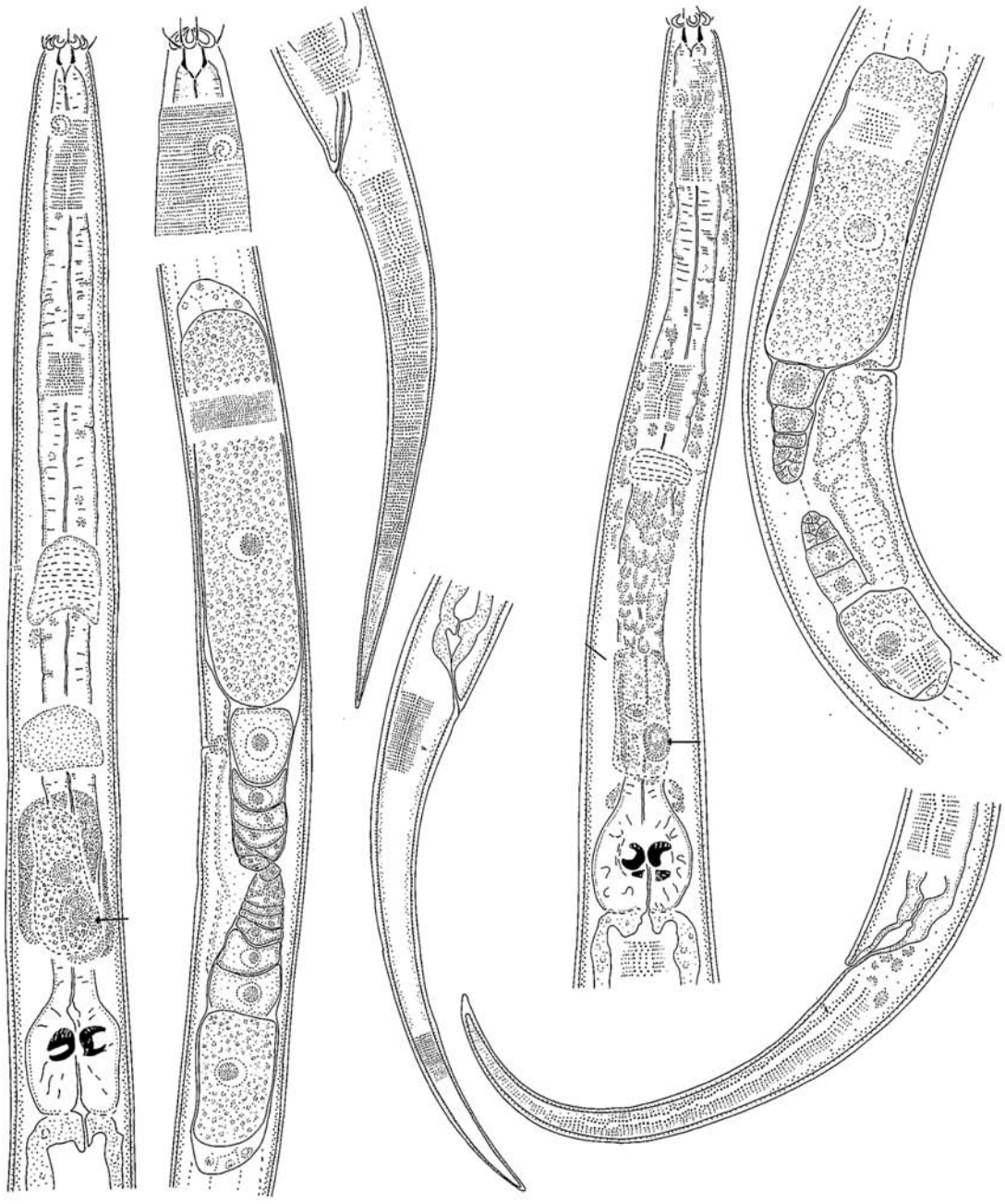
1973 *Metateratocephalus* – Eroshenko, Zoologischeskii Zhurnal 52: 1769.

Morphology: Cuticle smooth, with transverse rows of fine subcuticular punctations. Lateral alae indistinct, subcuticular punctation in lateral sectors is different from the rest of the body or absent. Epidermal glands present, connected with body pores. Somatic setae absent. Labial region strongly offset, crown-shaped with U-shaped sclerotisation under the light microscope, with six leaf-shaped lips; each subdorsal and subventral lip bearing two setae while lateral lips bearing only one setae each (see below). First annulus posterior to cephalic setae bases. Inner labial sensilla indistinct. Outer labial sensilla setiform, located on outer surface of lips. Cephalic sensilla setiform; their bases located at base of lips. Subcephalic and cervical sensilla and ocelli absent. Deirid absent. Amphidial fovea ventrally-unispiral, subcuticular; amphidial opening small tube-like. Secretory-excretory system: renette cell enveloping distal part of pharynx; excretory pore located posterior to nerve ring; excretory canal strongly cuticularised, extending from pore along ventral region of pharynx towards renette cell, making a dense spiral on the right body side within the body of pseudocoelomocyte. Oral opening hexagonal. Buccal cavity funnel-shaped: cheilostom with small sclerotisations; gymnostom barrel-shaped, with parallel, sclerotised walls; stegostom funnel-shaped in its anterior part (short), narrow tubular in its posterior part (short). Radial tubes emerging at the base of stegostom. Dorsal gland orifice penetrates posterior tubular part of the stegostom. Subventral gland orifices open into pharyngeal lumen at corpus-isthmus junction, just anterior to nerve ring. Pharynx distinctly subdivided into corpus, isthmus and bulbus; corpus gradually widening posteriorly; isthmus narrower than and separated from corpus by a break in muscular tissue and cuticular lumen; basal bulbus with strongly developed valvular apparatus. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca absent; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by one sphincter muscle; epiptygmata absent. Male reproductive system monorchic; testis with reflexed germinative zone; spicules arcuate, with ovoid manubrium, conoid shaft; gubernaculum plate-like. Copulatory apparatus: papilliform precloacal sensillum; subventral and subdorsal rows of setae in the caudal region. Tail elongate-conoid. Caudal glands absent. Spinneret absent.

Biology: Thelytokous. *Metateratocephalus gracilicaudatus* is the most common in freshwaters, while *M. crassidens* occurs also in soil, litter, moss and rotting wood.

Taxonomy: Type species ***Metateratocephalus crassidens*** (de Man, 1880) Eroshenko, 1973. Five valid species plus two species of uncertain taxonomic status that may belong to *Metateratocephalus*.

1. Holovachov, O. & De Ley, P. (2006). Order Plectida. In: Eyualem, A., Andrássy, I. & Traunspurger, W. (eds.) *Freshwater nematodes: ecology and taxonomy.* CAB International: 611-647.
2. Holovachov, O. (2004). Description of *Metateratocephalus bialowieziensis* sp. n. (Nematoda, Metateratocephalidae). *Vestnik zoologii* 38: 71-73.



Euteratocephalus palustris (de Man, 1880) Andrássy, 1958

Reproduced with modifications from Swart *et al.* (1991) with kind permission from *Revue de Nématologie* (ORSTOM)

Genus *Euteratocephalus* Andrássy, 1958

1958 *Euteratocephalus* – Andrássy, Acta Zoologica Academiae Scientiarum Hungaricae 4: 18.

Morphology: Cuticle smooth, with transverse rows of fine subcuticular punctations. Lateral alae indistinct, subcuticular punctation in lateral sectors is different from the rest of the body or absent. Epidermal glands present, connected with body pores. Somatic setae absent. Labial region continuous with body contour, with U-shaped sclerotisation under the light microscope, with six leaf-shaped lips; each subdorsal and subventral lips bearing two setae while lateral lips bearing only one setae each (see below). First annulus posterior to cephalic setae bases. Inner labial sensilla indistinct. Outer labial sensilla setiform, located on outer surface of lips. Cephalic sensilla setiform; their bases located at base of lips. Subcephalic and cervical sensilla and ocelli absent. Deirid absent. Amphidial fovea ventrally-unispiral, subcuticular; amphidial opening small tube-like. Secretory-excretory system: renette cell enveloping distal part of pharynx; excretory pore located posterior to nerve ring; excretory canal strongly cuticularised, extending from pore along ventral region of pharynx towards renette cell, making a dense spiral on the right body side within the body of pseudocoelomocyte. Oral opening hexagonal. Buccal cavity funnel-shaped: cheilostom with small sclerotisations; gymnostom barrel-shaped, with parallel, sclerotised walls; stegostom funnel-shaped in its anterior part (short), narrow tubular in its posterior part (short). Radial tubes emerging at the base of stegostom. Dorsal gland orifice penetrates posterior tubular part of the stegostom. Subventral gland orifices open into pharyngeal lumen at corpus-isthmus junction, just anterior to nerve ring. Pharynx distinctly subdivided into corpus, isthmus and bulbus; corpus gradually widening posteriorly; isthmus narrower than and separated from corpus by a break in muscular tissue and cuticular lumen; basal bulbus with strongly developed valvular apparatus. Cardia embedded in intestine. Female reproductive system didelphic, amphidelphic; ovary branches reflexed antidromously; spermatheca absent; vulva equatorial; vagina straight; *pars proximalis vaginae* encircled by one sphincter muscle; epiptygmata absent. Male reproductive system monorchic; testis with reflexed germinative zone; spicules arcuate, with ovoid manubrium, conoid shaft; gubernaculum plate-like. Copulatory apparatus: papilliform precloacal sensillum; subventral and subdorsal rows of setae in the caudal region. Tail elongate-conoid. Caudal glands absent. Spinneret absent.

Morphology: Body generally curved ventrad. Labial region continuous with body contour. Lips with sclerotised edges, deeply divided. Cheilostom flexible, not sclerotised. Tail with a pair of sublateral short setae in female, with several pairs of setae in male.

Biology: Thelytokous. All species inhabit aquatic habitats, including the most widely distributed *E. palustris*.

Taxonomy: Type species ***Euteratocephalus palustris*** (de Man, 1880) Andrássy, 1958. Four valid species.

1. Holovachov, O. & De Ley, P. (2006). Order Plectida. In: Eyualem, A., Andrássy, I. & Traunspurger, W. (eds.) *Freshwater nematodes: ecology and taxonomy.* CAB International: 611-647.
2. Swart, A., De Waele, D. & Heyns, J. (1991). A review of the genus *Euteratocephalus* Andrassy, 1958, with a description of *E. punctatus* n. sp. *Revue de Nématologie* 14: 551-563.

Index of genera