595.132:591.4(481-5:984)

MEDEDELINGEN LANDBOUWHOGESCHOOL
WAGENINGEN • NEDERLAND • 71-7 (1971)

FREELIVING AND PLANT PARASITIC NEMATODES FROM SPITZBERGEN, COLLECTED BY MR. H. VAN ROSSEN

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Received 22-X-1970

1. Introduction

In July 1965 Mr. H. van Rossen visited Spitzbergen as nematological participant of an expedition organized by I.Y.F. (International Youth Federation for the Conservation and Study of Nature). Some basis camps were made, from which the field work was done. Sixty-five nematode samples were taken. In this paper the data on collection localities and techniques, supplied by Mr. van Rossen, will be given first. Then a review will be given of the nematodes found.

2. The island of Spitzbergen and the collection localities

The island of Spitzbergen – more exact Vest Spitzbergen – lies in the arctic part of Europe, extending from 76°30′ to 80° N. latitude and 11°–22° E. longitude. The warm Gulf current influences the climate to such a degree that Ny Ålesund, the northernmost town, located at 79° N. lat., is accessible from the sea all the year round, though the inland temperatures may sink to −48 °C. Summer lasts for about four months; its mean temperatures lie between 3 and 11 °C at Ny Ålesund. In the northern parts the sun does not set for nearly four months so that the top soil is warmed rather constantly.

The northern part of Spitzbergen enjoys a warmer climate than the southern region (from Sörkapp to Hornsund) because of the influence of the cold Novaya Zemlya current in the south.

In enclosed niches temperature may rise to 22 °C. On the other hand, temperature may drop suddenly owing to strong glacial winds.

The relative humidity of the air is very low. Precipitation is 310 mm per year, mostly in the form of snow. With the exception of more exposed places the soil is usually moist or frozen.

There were two basis camps. The first was a tent camp at Longyearbyen, from which samples were taken in the surroundings of this site, and also during a five-days trip in the mountainous region south of Longyearbyen. The second was in a house in Ny Ålesund. Here too samples were taken in the surroundings, and during a longer trip of three days.

Finally boat trips were made to Blomstrandhalvöya, Magdalenafjorden and Virgohamna (See map).

Description of sampling sites:

A. Silt localities. Along the sea, from outer flood line (marked by sea weeds) inland. The tidal difference is 40 cm. The water has a low salt content owing to large inflow of water from glaciers.

1. Isfjorden, Adventdalen, 78°15′ N. lat. Close to Longyearbyen. Two localities:

a. Haf along lagoon opposite end-moraine, 2 km south-east from bridge over Longyearbreen River; just inland from sea weed line, between driftwood, silt vegetation and nests of Eider Duck and Arctic Tern. Sample 2.

b. Near bridge of Longyearbyen, south-east side. Between tufts of grass and nests of Arctic Tern, from eroding sandy slope towards the sea, behind a wooden shed. Water temperature 4°C. Air temperature 4–11°C. Sample 6.

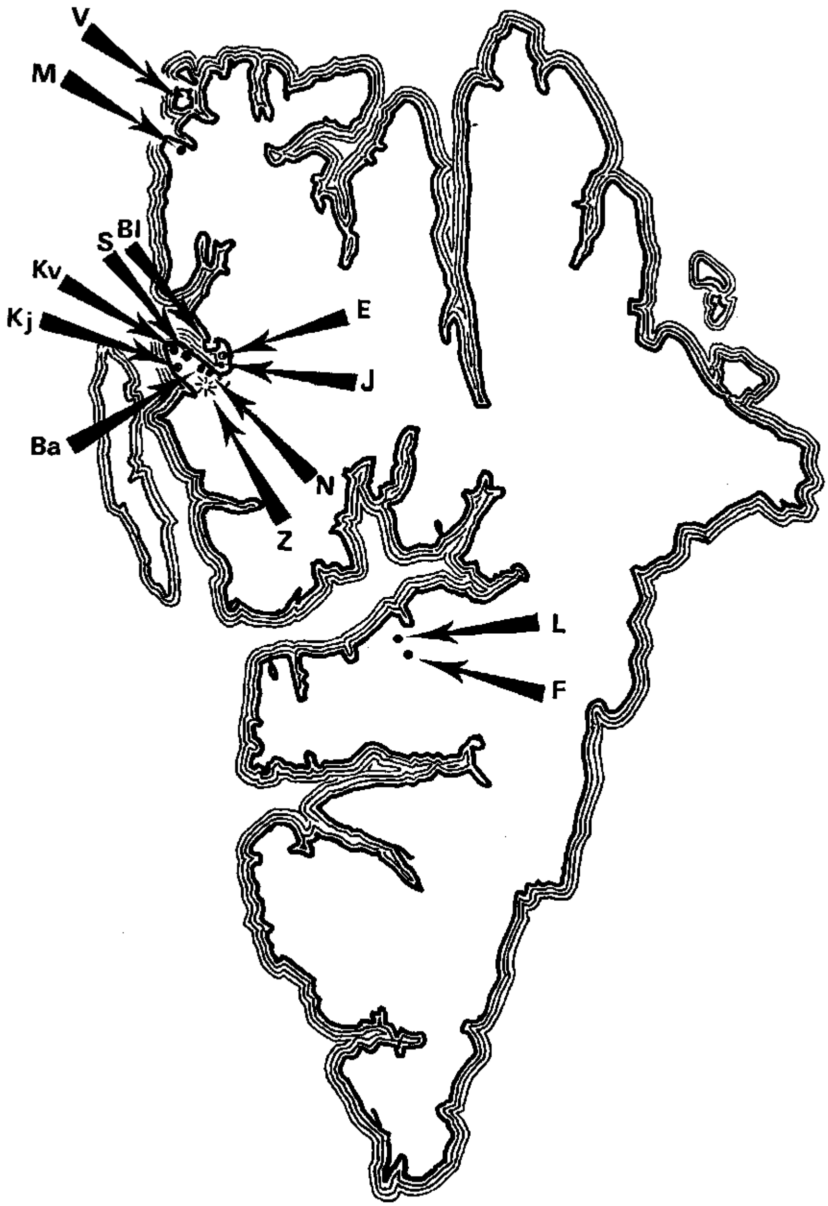
2. Kongsfjorden, 79° N. lat. Stuphallet. Halfway between Ny Ålesund and the mouth of the Kongsfjord at Kvadehuk. Stuphallet is a birds mountain one km from the shoreline. Sample taken along the beach with red sand, without vegetation; and higher up the dune, where a few grass tufts were present. A small brooklet, most covered with snow, enters the sea here. Domain of Arctic Petrel. Water temperature 2°C. Air temperature 8–10°C. Sample 57/58.

3. Kongsfjorden, 79° N. lat. Blomstrandhalvöya, Gorillahytte. A peninsula facing south. Gorillahytte is situated in the north-eastern enclosure, close to the glacier. Many ice-bergs come floating along here, on their way to sea. Bathing place of seals. Shore of white sand without vegetation. Water temperature 2°. Air temperature 9°. Sample 66.

4. Kongsfjorden, 79° N. lat. Ny Ålesund. One meter above sea level, about 20 m from shoreline. Vegetation typical for exposed coastal plains. Air temperature 2–6°. Samples 68 (permafrost at 30 cm) and 69 (60 cm).

5. Magdalenafjorden, 79°35′ N. lat. Small peninsula used as cemetery for Dutch whalers, 2–4 m above sea level, exposed to winds. Fjord surrounded by glaciers. Greater part of peninsula covered by snow. Many ducks swim around, the Arctic Skua breeds here. Water temperature 2°. Air temperature 5°. Sample 48, from moss zone with some grasses and Saxifragaceae.

6. Smeerenburgfjorden, Danskövya, Virgohamna, 79°45′ N. lat. Opposite the former Smeerenburg, founded by the Dutch in 1630, is a small bay which was used as launching-site for the exploration balloon of the Swede Andree. Many remains of wood and iron materials can still be found. This region –



Map of Spitzbergen showing collection sites. Ba = Bayelva; Bl = Blomstrandhalvöya; E = Eskjeret; F = Fardalen; J = Juttahl; Kj = Kjarsvika; Kv = Kvadehuk; L = Longyearbyen; M = Magdalenafjord; N = Ny Ålesund; S = Stuphallet; V = Virgohamna; Z = Zeppelinfjellet.

northernmost point of Vest Spitzbergen – is very cold because of its exposure to winds from the northern polar ice cap. Temperature about 0°. We never saw the sun owing to a dense fog. No bird's song was heard. Conditions along bay and under overhanging rocks optimal for mosses. Sample 46 from a site with grasses and lichens, sample 47 from a site with mosses (*Calliergon* and *Drepanocladus*).

B. Freshwater sites.

7. Isfjorden, Longyearbyen, 78°15′ N.lat. End-moraine, just behind camping site, along brook, 25 minutes' walk along road, south east from telegraph station. Sampling sites:
   a. Slope exposed to wind and sun. Vegetation typical for dry exposed places. Gravel; tundra plants. Samples 17–20 and 40–44.
   b. Lower part of slope. Vegetation denser, typical for moist soils. Sample 21.
   c. Mosses and grasses near patch of snow. Samples 1, 15, 16.
   d. A heap of sand, accidentally thrown up, with *Festuca brachyphylla* and *Poa* spec. at foot of slope. Samples 3 and 4.
   e. Pool in lowest part of the terrain. Sample 5.
8. Isfjorden, Longyearbyen, 78°15′ N.lat. Mountain slope, immediately north west of Longyearbyen, rather steep, leading to Sverdruphamare, 400 m above sea level. Air temperature 5–11°. Two samples taken every 50 m: one under plants, one at least 50 cm from plants. According to vegetation this slope can be divided into four zones:
   a. Vegetation abundant. 10–50 m above sea level. *Dryas octopetala*, *Cassiope tetragona*, *Salix polaris* form a dense mat, together with many grasses and other plants.
   b. Vegetation still rich but more dispersed on eroded soil. 50–100 m.
   c. Many mosses in wet places; less higher plants, more widely spaced on eroded soils; species typical for more exposed and drier places. 150–350 m; plants becoming scarcer with increasing altitude.
   d. Very few plants; or no vegetation where soil had been washed away between sharp basalt stones. Very steep slope. 350–400 m. Samples 22–39.
9. Isfjorden, Fardalen, 78°15′ N.lat. Mountainous country south of Longyearbyen. Samples taken close to Fardalenhytte, from a dense dark green mat of various grass species; presumably nitrogen-rich soil, elsewhere vegetation yellowish-green. Air temperature 3–5°. Permafrost at 25 cm. Samples 7–11, from various depths.
10. Kongsfjorden, Ny Ålesund, Zeppelinfjellet, 79° N.lat. Northern mountain slope, south of Ny Ålesund, rather exposed and dry; fairly warm. Sample 51 on top of mountain, under *Saxifraga*, close to snow layer, alt. 435 m. Temperature 5°. Samples 52 and 67 lower, at 50 m altitude where slope gradually becomes more horizontal.Samples taken in and around polygones. Temperature 5–11°.
11. Kongsfjorden, birds' islands Eskjeret and Juttahl. 79°N.lat. These islands are elevated 20–30 m above sea level. Eider duck nests all over the islands; thus sampling sites rich in nitrogen, with tufts of dark green grass (*Phippsia* spec.).

Exposed areas. Temperature 5–12°. Samples 53 (Eskjeret) and 54–56 (Juttahl).

12. Kongsfjorden, Stuphallet, 79° N. lat. Halfway between Ny Ålesund and mouth of Kongsfjord. Tundra plain between foot of birds' mountain and the sea. Typical tundra vegetation (*Saxifraga oppositifolia* is conspicuous here) with polygones. Temperature 8–10°. Samples 59, 61 and 62; sample 60 straight under bird rocks, very moist soil, dense grass tufts intermixed with other plants characteristic for nitrogen-rich soils.
13. Kongsfjorden, Kvadehuk, 79° N. lat. Beachhead in sea, 30 m altitude, at mouth of fjord opposite tip of Prins Karls Forland Island. Typical tundra with polygones and permanently frozen soil (pure loam). Temperature 3–4°. Sample 63 taken under one grass and one *Saxifraga* plant, no other plants being visible here.
14. Forlandsundet, Bröggerhalvöya, Kjarsvika, 79° N. lat. Mountain slope behind Kjarsvika hytte, about 5 km from Kvadehuk. Southern slope below birds' mountain, protected from continental glacial winds; the sea in front of it is a shallow basin between Bröggerhalvöya and Prins Karls Forland. Very warm place, temperature rising to 22°. Sample 65, from nitrogen-rich soil below bird rocks, not far from den of Arctic Fox.
15. Kongsfjorden, Bayelva, 79° N. lat. Plains north of the red Bayelva river, which runs into Kongsfjord 2 km from Ny Ålesund. Loamy soil with poor vegetation, mostly grasses and mosses. Temperature 5–7°; kept low by glacial winds from Bröggerbreen. Sample 64.
16. Kongsfjorden, Ny Ålesund, town. 79° N. lat. Sand and loam. Eroded soils, vegetation typical for open but rather moist sites. Temperature 5–11°. Sample 70.
17. Kongsfjorden, Blomstrandhalvöya, 79° N. lat. Peninsula in Kongsfjord, altitude about 40 m; vegetation abundant; rather warm in spite of a glacier wall 30 m high in the immediate vicinity. Sample 50, between marble stones. Sample 49 from a cold site on a slope close to the sea.

List of individual samples:

1. Longyearbyen, camping site Adventdalen, Isfjorden, southern slope, 40 m altitude; vegetation grasses and mosses.
2. Longyearbyen, beach; grasses, driftwood, sea weed.
3. Longyearbyen, camping site, thrown-up sand heap; grasses.
4. Longyearbyen, camping site, thrown-up sand heap; fine grasses.
5. Longyearbyen, camping site, pool with *Eriophyllum* sp. along road.
6. Longyearbyen, behind wooden shed near bridge, grass tufts.
7. Fardalenhytte, close to hut. Moss and flowers.
8. Fardalenhytte, close to hut, 0–10 cm depth. Grasses.
9. As 8, depth 10–15 cm.
10. As 8, depth 15–20 cm.
11. As 8, depth 20–25 cm (25 cm permafrost).
15. Longyearbyen, end-moraine, western slope towards sea, just under snow. Fine grasses and mosses.

16. As 15, grass tufts and moss in centre, alt. 10 m.
17. Longyearbyen, western edge of high plain, alt. 20 m.
18. Longyearbyen, high plain, gravel, grass and *Salix reticulata.*
19. Longyearbyen, end-moraine above northern slope. Grass, *Papaver, Silene, Saxifraga, Draba, Oxyria, Polygonum.*
20. Longyearbyen, end-moraine, middle of northern slope, 10 m alt. Grass tufts and *Salix.*
21. Longyearbyen, lower part of slope. Grasses.
22. Longyearbyen, bare sand.
23. As 22, 10 m alt., with grasses.
24. Longyearbyen, between houses, alt. 50 m, bare sand.
25. As 24, much coal-dust; grasses.
26. Longyearbyen, alt. 100 m; between sites with vegetation.
27. As 26, grass.
28. Longyearbyen, alt. 150 m; bare soil.
29. As 28, grass tufts and mud. Up to this altitude there is an even vegetation cover.
30. Longyearbyen, alt. 200 m; bare sand.
31. As 30, grass and moss tufts, mud.
32. Longyearbyen, alt. 250 m; bare sand between coal.
33. As 32, grass and moss tufts between rocks.
34. Longyearbyen, alt. 300 m; bare sand.
35. As 34, grasses and mosses between rocks.
36. Longyearbyen, alt. 350 m; bare sand.
37. As 36; grass and moss tufts between stones.
38. Longyearbyen, alt. 400 m; bare sand near third Stone Man.
39. As 38, grasses and mosses.
40. Longyearbyen, *Cerastium.*
41. Longyearbyen, *Saxifraga groenlandica.*
42. Longyearbyen, *Papaver dahlianum.*
43. Longyearbyen, *Carex saxatilis.*
44. Longyearbyen, *Draba alpina.*
46. Virgohamna, very moist soil with grasses.
47. As 46; mosses.
48. Magdalenafjord, cemetery on peninsula. Mosses.
49. Blomstrandhalvöya, near Ny London, very cold soil. Grasses and mosses.
50. Blomstrandhalvöya, warm soil, 5 m above sea level. Between stones.
51. Ny Ålesund, summit of Zeppelinfjellet, 435 m alt. Under *Saxifraga.*
52. Ny Ålesund, base of Zeppelinfjellet, alt. 50 m, in polygones; permafrost at 30 cm.
53. Island of Eskjeret, nesting site of eider ducks. Fine grasses.
54. Island of Juttahl, alt. 10 m; grasses near house.
55. Island of Juttahl, under bird rock. Grasses.
56. Island of Juttahl, old eider duck nest on top of island, alt. 30 m. Grasses.
57. Stuphallet, between Ny Ålesund and Kvadehuk. Beach under rocks, above flood line.

58. Stuphallet, on dune along beach, alt. 20 m. Red sand. (Samples 57 and 58 combined in one vial).
59. Stuphallet, bird mountain, moss vegetation, lower part of slope.
60. Stuphallet, just under nests, where vegetation on slope begins. Fine grasses.
61. Stuphallet, Polygone, high stony edge; *Saxifraga oppositifolia.*
62. Stuphallet, Polygone, center, Grass.
63. Kvadehuk, polygone plain, loam. Bare except for one grass plant and one *Saxifraga.*
64. Bayelva, between Ny Ålesund and Kvadehuk, opposite radio satellite station. Grass.
65. Kjoerfjellet, under bird rock near Kjarsvika. Fine grasses.
66. Blomstrandhalvöya, Eastern side, near Gorillahytte. Bare sand.
67. Ny Ålesund, end moraine under Zeppelinfjellet. Bare.
68. Ny Ålesund, near beach. Permafrost at 30 cm. Bare.
69. Ny Ålesund, near beach, permafrost at 60 cm. Bare.
70. Ny Ålesund, town. *Poa alpina vivipara.*

3. TECHNIQUE OF SAMPLING AND PROCESSING

With a small handspade 100–200 grams of soil were dug out and stored in plastic bags. The samples were sifted over a wide-mesh sieve; in this way coarse material and stones were removed. The remaining soil – about 50 g – was washed into a 2 litre plastic container. The samples were then washed by the stir and decanting method: add ample water, stir with a spoon, let heavier particles settle for about ten seconds; then decant into a second container. This was repeated thrice. The suspension thus obtained was filtered over two 45 μ sieves. The residue was washed onto two cottonwool filters which were left in a basin with a thin water layer for at least six hours, after which the basin was emptied into a conical 100 ml beaker. After one more hour the upper part of the water was sucked off cautiously. The bottom suspension containing the nematodes was washed into 12 ml glass tubes, which were now filled about halfway. These tubes were heated in boiling water to kill the nematodes. After cooling F.A.A. of double concentration was added.

The Longyearbyen samples were washed in brook water, the others in the water of the washing house at Ny Ålesund.

4. RESULTS

In the laboratory each sample was first surveyed for species. Then the remainder was counted in counting dishes divided into 20 compartments, from which at least three were fully counted. Total numbers were estimated on this basis. Thus the numbers of specimens are approximate except for small samples.

Owing to prolonged stay in formalin-containing fixative the nematodes had grown rather dark. Otherwise the state of conservation was good generally. Most dorylaims were even excellent, the oesophageal gland nuclei being distinct.

The total number of specimens found in these 65 samples approached 25.000.

Sample 1.

Eudorylaimus agilis	105
Prismatolaimus intermedius	59
Achromadora semiarmata	48
Eudorylaimus spec.	53
Tylenchus davainei	27
Tylenchus cf. *thornei*	20
Enchodelus conicaudatus	13
Aphelenchoides arcticus	12
Monhystera villosa	11
Prismatolaimus spec.	9
Plectus rhizophilus	9
Eudorylaimus lugdunensis	8
Plectus parietinus	7
Chiloplacus saccatus	6
Tylenchorhynchus leptus	2
Bastiania gracilis	2
Eudorylaimus megodon	1
Total	392

Sample 2.

Anaplectus granulosus	4
Eucephalobus oxyuroides	3
Chiloplacus saccatus	3
Teratocephalus lirellus	3
Tylenchus thornei	1
Eudorylaimus spec.	1
Monhystera spec.	1
Total	16

Sample 3.

Tylenchus leptosoma	453
Tylenchus thornei	398
Teratocephalus lirellus	175
Chiloplacus saccatus	157
Plectus acuminatus	87
Acrobeloides enoploides	48
Aphelenchoides arcticus	20
Tylenchorhynchus arcticus	19
Eucephalobus arcticus	17
Monhystera villosa	8
Monhystera filiformis	6
Heterocephalobus elongatus	3
Tylenchorhynchus leptus	2
Eudorylaimus megodon	2
Eudorylaimus spec.	2
Enchodelus conicaudatus	2
Plectus assimilis	2
Bastiania gracilis	1
Prismatolaimus intermedius	1
Achromadora tenax	1
Tylenchus spec.	25
Indeterminable	3
Total	1432

Sample 4.

Plectus acuminatus	20
Chiloplacus saccatus	8
Eucephalobus arcticus	8
Eudorylaimus spec.	6
Plectus assimilis	4
Monhystera villosa	4
Tylenchorhynchus leptus	3
Plectus cf. *parvus*	2
Plectus parietinus	2
Cephalobus spec.	2
Enchodelus spec.	2
Eudorylaimus alleni	1
Anaplectus granulosus	1
Total	63

Sample 5.

Monhystera vulgaris	32
Aphelenchoides arcticus	30
Eudorylaimus spec.	38
Heterocephalobus elongatus	19
Plectus rhizophilus	13
Monhystera stagnalis	6
Tripyla papillata	6
Neotylenchidae	6
Eucephalobus arcticus	7
Eudorylaimus megodon	3
Prismatolaimus spec.	1
Chiloplacus saccatus	1
Ditylenchus spec.	1
Prodorylaimus spec.	1
Total	164

Sample 6.

Chiloplacus saccatus	6
Panagrolaimus rigidus	2
Aphelenchoides arcticus	1
Prismatolaimus intermedius	1
Ditylenchus spec.	1
Total	11

Sample 7.

Tylenchus spec.	61
Tylenchus thornei	29
Prismatolaimus dolichurus	19
Plectus spec. juveniles	15
Tylenchus leptosoma	12
Eudorylaimus spec.	12
Basiria dolichura	7
Achromadora tenax	6
Plectus rhizophilus	6
Plectus parvus	5
Anaplectus granulosus	4
Ditylenchus spec.	3
Heterocephalobus elongatus	1
Indeterminable	12
Total	192

Sample 8.

Teratocephalus lirellus	67
Plectus rhizophilus	58
Prismatolaimus primitivus	40
Prismatolaimus dolichurus	38
Tylenchus thornei	27
Achromadora tenax	14
Monhystera filiformis	
)	13
Monhystera vulgaris	
Euteratocephalus crassidens	12
Eudorylaimus spec.	5
Aphelenchoides arcticus	5
Basiria dolichura	1
Heterocephalobus elongatus	1
Anaplectus granulosus	1
Tylenchus leptosoma	1
Chiloplacus saccatus	1
Total	284

Sample 9.

Tylenchus thornei	961
Eudorylaimus subjunctus	127
Prismatolaimus primitivus	1
Total	1089

Sample 10.

Tylenchus thornei	282
Eudorylaimus subjunctus	10
Plectus rhizophilus	6
Monhystera spec.	4
Prismatolaimus spec. juv.	2
Aphelenchoides arcticus	1
Tylenchus leptosoma	1
Heterocephalobus elongatus	1
Achromadora cf. *tenax*	1
Total	308

Sample 11.

Tylenchus thornei	1261
Eudorylaimus subjunctus	19
Prismatolaimus spec.	12
Plectus spec.	6
Teratocephalus lirellus	6
Ditylenchus spec.	4
Tylencholaimus proximus	2
Tylenchorhynchus arcticus	2
Monhystera spec.	2
Anaplectus spec. juv.	2
Total	1316

Sample 15.

Plectus longicaudatus	81
Teratocephalus lirellus	31
Tylenchus davainei	18
Monhystera spec.	13
Tylenchus leptosoma	10
Aphelenchoides arcticus	8
Eudorylaimus spec.	4
Tylenchus spec.	3
Total	168

Sample 16.

Tylenchus davainei	62
Teratocephalus lirellus	50
Monhystera spec.	23
Tylenchus thornei	18
Tylenchus costatus	16
Aphelenchoides arcticus	16
Plectus longicaudatus	
)	14
Plectus acuminatus	
Enchodelus parvus	12
Eudorylaimus spec.	6
Ereptonema arcticum	4
Enchodelus analatus	1
Indeterminable	2
Total	224

Sample 17.

Tylenchus thornei	714
Eudorylaimus parvus + spec.	71
Monhystera spec.	44
Enchodelus cf. *macrodoroides*	26
Tylencholaimus proximus	26
Cervidellus serratus	22
Plectus spec.	22
Teratocephalus lirellus	21
Aphelenchoides arcticus	17
Ditylenchus spec.	10
Enchodelus analatus	7
Acrobeloides tricornis	6
Chiloplacus saccatus	3
Ereptonema arcticum	1
Tylenchorhynchus cf. *nothus*	1
Total	991

Sample 18.

Cervidellus serratus	213
Tylenchus thornei	95
Tylencholaimus proximus	52
Tylenchorhynchus leptus	50
Tylenchorhynchus arcticus	32
Helicotylenchus spitsbergensis	19
Aphelenchoides arcticus	15
Eudorylaimus spec.	14
Tylenchus davainei	12
Panagrolaimus rigidus	9
Chiloplacus saccatus	8
Plectus parvus	5
Pseudhalenchus spec.	4
Stegelleta mucronata	3
Acrobeloides spec.	3
Acrobeloides tricornis	2
Enchodelus cf. *macrodoroides*	1
Tylenchorhynchus magnicauda	1
Total	538

Sample 19.

Monhystera spec. (*filiformis*-group)	214
Plectus acuminatus	50
Plectus parvus	50
Tylenchus thornei	32
Aphelenchoides arcticus	29
Plectus rhizophilus	27
Tylenchus davainei	24
Cephalobus nanus	16
Eudorylaimus spec.	11
Enchodelus analatus	7
Acrobeloides spec.	7
Prismatolaimus spec.	5
Ereptonema arcticum	2
Chiloplacus saccatus	1
Panagrolaimus rigidus	1
Neotylenchidae	1
Total	473

Sample 20.

Tylenchus thornei	51
Cervidellus serratus	43
Eudorylaimus spec.	21
Tylenchus spec.	21
Aphelenchoides arcticus	15
Plectus spec.	15
Tylenchus leptosoma	12
Tylenchus davainei	12
Teratocephalus lirellus	12
Acrobeloides enoploides	10
Monhystera spec.	3
Tylenchus costatus	2
Heterocephalobus elongatus	2
Indeterminable	10
Total	229

Sample 21.

Tetylenchus joctus	70
Monhystera filiformis	55
Aphelenchoides arcticus	49
Achromadora tenax	49
Cervidellus serratus	43
Prismatolaimus dolichurus	30
Teratocephalus lirellus	30
Ereptonema arcticum	24
Acrobeloides enoploides	19
Eudorylaimus spec.	17
Tylenchus costatus	13
Tylenchus leptosoma	12
Acrobeloides tricornis	8
Plectus longicaudatus	8
Heterocephalobus elongatus	7
Ditylenchus spec.	7
Tylenchus davainei	6
Tylenchus spec.	6
Prismatolaimus intermedius	6
Chiloplacus spec.	3
Monhystera villosa	2
Tylenchorhynchus leptus	1
Enchodelus analatus	1
Indeterminable	6
Total	472

Sample 22.

Monhystera cf. *dispar*	2
Eudorylaimus spec.	1
Total	3

Sample 23.

Acrobeloides enoploides	91
Cervidellus serratus	28
Aphelenchoides arcticus	23
Teratocephalus lirellus	18
Eucephalobus arcticus	13
Tylenchus leptosoma	11
Cephalobus spec.	9
Plectus spec.	8
Tylenchorhynchus leptus	7
Eudorylaimus spec.	7
Prismatolaimus spec.	6
Chiloplacus saccatus	5
Tylenchus spec.	5
Ditylenchus spec.	4
Acrobeles ciliatus	3
Heterocephalobus elongatus	3
Hexatylus spec.	2
Plectus parietinus	2
Monhystera cf. *filiformis*	1
Anaplectus granulosus	1
Eucephalobus oxyuroides	1
Helicotylenchus spitsbergensis	1
Total	249

Sample 24. (17 specimens lost)

Tylenchus davainei	33
Aphelenchoides arcticus	5
Nothotylenchus spec.	4
Tylenchorhynchus leptus	2
Tylenchus spec.	2
Ditylenchus spec.	2
Monhystera spec.	2
Tylenchus leptosoma	1
Acrobeles ciliatus	1
Acrobeloides enoploides	1
Chiloplacus spec.	1
Teratocephalus lirellus	1
Total	55 + 17 = 72

Sample 25.

Tylenchus leptosoma	180
Tylenchus thornei	89
Cervidellus serratus	53
Tylenchorhynchus leptus	13
Aphelenchoides arcticus	10
Teratocephalus lirellus	10
Tylenchorhynchus arcticus	10
Acrobeloides enoploides	9
Plectus acuminatus	9
Eudorylaimus lugdunensis	8
Enchodelus analatus	4
Tylenchus spec.	4
Monhystera cf. *vulgaris*	3
Plectus parvus	2
Alaimus spec.	2
Heterocephalobus elongatus	1
Eudorylaimus megodon	1
Tylencholaimus proximus	1
Helicotylenchus spitsbergensis	1
Total	410

Sample 26.

Tylenchus leptosoma	89
Tylenchus thornei	48
Tylencholaimus proximus	36
Tylenchus spec.	29
Monhystera filiformis	23
Tylenchorhynchus leptus	21
Eudorylaimus spec.	24
Alaimus parvus	14
Plectus spec.	8
Tylenchorhynchus magnicauda	7
Chiloplacus spec.	3
Rhabdolaimus terrestris	2
Criconemoides hemisphaericaudatus	2
Enchodelus cf. *macrodoroides*	2
Cervidellus serratus	2
Prismatolaimus intermedius	2
Achromadora tenax	1
Acrobeloides enoploides	1
Ditylenchus spec.	1
Total	315

Sample 27.

Tylenchus spec.	302
Aphelenchoides arcticus	144
Tylenchus cf. *thornei*	97
Tylenchus leptosoma	87
Ditylenchus spec.	83
Eudorylaimus spec.	75
Monhystera villosa *Monhystera vulgaris*	50
Achromadora semiarmata	36
Teratocephalus lirellus	26
Tylenchus cf. *davainei*	25
Rhabdolaimus terrestris	21
Eudorylaimus cf. *lugdunensis*	19
Enchodelus conicaudatus	11
Plectus assimilis	12
Alaimus parvus	6
Achromadora tenax	6
Plectus spec.	6
Cervidellus serratus	2
Prismatolaimus intermedius	2
Longidorella magna	2
Heterocephalobus elongatus	2
Criconema spec.	2
Tylenchorhynchus leptus	1
Enchodelus cf. *macrodoroides*	1
Total	1018

Sample 28.

Tylenchus thornei	34
Eudorylaimus spec.	21
Prismatolaimus intermedius	16
Enchodelus parvus	9
Tylenchus davainei	9
Tylenchus leptosoma	6
Tylenchus spec.	6
Tylenchus costatus	3
Enchodelus analatus	3
Ditylenchus spec.	3
Teratocephalus lirellus	3
Monhystera spec.	2
Achromadora semiarmata	1
Tylenchorhynchus leptus	1
Tylencholaimus spec.	1
Eudorylaimus cf. *megodon*	1
Total	119

Sample 29.

Tylenchus leptosoma	837
Tylenchus thornei	317
Achromadora tenax	189
Eudorylaimus spec.	43
Prismatolaimus intermedius	17
Monhystera spec.	8
Teratocephalus lirellus	6
Enchodelus analatus	2
Enchodelus conicaudatus	1
Alaimus spec.	1
Total	1421

Sample 30.

Tylenchus thornei	8
Eudorylaimus spec.	6
Tylenchus leptosoma	5
Enchodelus spec.	4
Chiloplacus saccatus	2
Aphelenchoides arcticus	2
Cervidellus serratus	1
Achromadora tenax	1
Monhystera filiformis	1
Tylenchorhynchus microdorus	1
Acrobeloides enoploides	1
Total	32

Sample 31.

Tylenchus spec.	45
Tylenchus leptosoma	20
Teratocephalus lirellus	18
Eudorylaimus spec.	13
Prismatolaimus dolichurus	12
Basiria spec.	8
Ditylenchus spec.	3
Aphelenchoides arcticus	2
Plectus parvus	2
Achromadora tenax	1
Anaplectus granulosus	1
Cylindrolaimus melancholicus	1
Enchodelus conicaudatus	1
Heterocephalobus elongatus	1
Monhystera filiformis	1
Total	129

Sample 32.

Achromadora tenax	2
Plectus parvus	2
Tylenchus thornei	2
Eudorylaimus spec.	1
Prismatolaimus spec.	1
Total	8

Sample 33.

Tylenchus leptosoma		97
Teratocephalus lirellus		18
Plectus spec.		15
Eudorylaimus spec.		12
Prismatolaimus spec.		12
Monhystera spec.		7
Plectus cf. *armatus*		5
Aphelenchoides arcticus		4
Heterocephalobus elongatus		2
Tylenchus spec.		2
Cylindrolaimus melancholicus		1
Enchodelus analatus		1
Achromadora semiarmata		1
Alaimus spec.		1
Indeterminable		1
	Total	179

Sample 34.

Tylenchus thornei		472
Eudorylaimus spec.		71
Monhystera filiformis		30
Prismatolaimus primitivus		27
Enchodelus analatus		26
Tylenchus leptosoma		20
Plectus spec.		14
Tylenchus davainei		11
Achromadora semiarmata		10
Eudorylaimus subjunctus		9
Neotylenchidae		9
Prismatolaimus intermedius		8
Enchodelus cf. *macrodoroides*		5
Aphelenchoides arcticus		3
Tetylenchus joctus		2
Alaimus spec.		1
Ereptonema arcticum		1
Amphidelus dolichurus		1
Ditylenchus spec.		1
	Total	721

Sample 35.

Tylenchus leptosoma		164
Teratocephalus lirellus		5
	Total	169

Sample 36.

Prismatolaimus dolichurus		130
Tylenchus costatus		8
Tylenchus spec.		8
Aphelenchoides arcticus		8
Achromadora tenax		6
Eudorylaimus spec.		6
Enchodelus analatus		3
Theristus spec.		2
Tylenchus leptosoma		2
Plectus cf. *inquirendus*		1
Plectus spec.		1
Indeterminable		2
	Total	177

Sample 37.

Tylenchus leptosoma		186
Eudorylaimus spec.		31
Achromadora semiarmata		19
Enchodelus conicaudatus		15
Chiloplacus saccatus		13
Prismatolaimus dolichurus		11
Tylenchus davainei		9
Cephalobus persegnis		8
Eudorylaimus agilis		6
Heterocephalobus elongatus		4
Achromadora tenax		4
Teratocephalus lirellus		3
Alaimus spec.		2
Eudorylaimus subjunctus		2
Plectus inquirendus		1
	Total	314

Sample 38.

Tylenchus leptosoma		11
Tylenchus costatus		7
Prismatolaimus intermedius		5
Tylenchus spec.		1
Achromadora tenax		1
Tylencholaimus proximus		1
Plectus acuminatus		1
Acrobeloides enoploides		1
	Total	28

Sample 39.

Tylenchus davainei		240
Teratocephalus lirellus		58
Prismatolaimus spec.		11
Monhystera spec.		7
Eudorylaimus spec.		6
Tylenchus leptosoma		5
Enchodelus conicaudatus		2
Heterocephalobus elongatus		2
Tylenchus spec.		1
Plectus assimilis		1
	Total	333

Sample 40.

Plectus acuminatus	67
Tylenchus spec.	24
Tylenchus davainei	21
Enchodelus spec.	15
Acrobeloides enoploides	9
Cervidellus serratus	7
Teratocephalus lirellus	7
Eudorylaimus spec.	8
Tylenchorhynchus arcticus	5
Helicotylenchus spitsbergensis	4
Achromadora tenax	4
Eucephalobus arcticus	4
Aphelenchoides arcticus	3
Prismatolaimus spec.	3
Monhystera spec.	3
Tylenchus leptosoma	1
Chiloplacus spec.	1
Nothotylenchus spec.	1
Total	185

Sample 41.

Teratocephalus lirellus	49
Tylenchus leptosoma	47
Aphelenchoides arcticus	18
Prismatolaimus dolichurus	10
Prismatolaimus primitivus	10
Tylenchus spec.	5
Eucephalobus arcticus	4
Plectus spec.	3
Euteratocephalus crassidens	2
Eudorylaimus spec.	2
Monhystera spec.	1
Achromadora tenax	1
Total	152

Sample 42.

Cervidellus serratus	15
Ditylenchus spec.	15
Plectus spec.	14
Aphelenchoides arcticus	10
Chiloplacus spec.	9
Eudorylaimus subjunctus	5
Acrobeloides spec.	5
Eudorylaimus spec.	6
Tylenchus davainei	5
Tylenchus spec.	3
Eudorylaimus megodon	3
Acrobeloides tricornis	1
Monhystera spec.	1
Acrobeles ciliatus	1
Eucephalobus arcticus	1
Plectus cf. *armatus*	1
Total	95

Sample 43.

Cervidellus serratus	37
Helicotylenchus spitsbergensis	29
Acrobeloides enoploides	25
Tylenchus cf. *thornei*	18
Teratocephalus lirellus	12
Aphelenchoides arcticus	11
Tylenchorhynchus leptus	9
Plectus parvus	9
Eudorylaimus spec.	3
Tylenchus leptosoma	3
Eucephalobus arcticus	1
Cephalobus persegnis	1
Tylenchorhynchus spec.	1
Total	159

Sample 44.

Cervidellus serratus	511
Tylenchus spec.	136
Teratocephalus lirellus	126
Plectus spec.	108
Tylenchus thornei	61
Monhystera spec.	38
Tylenchus leptosoma	25
Plectus cornus	25
Eucephalobus arcticus	18
Heterocephalobus elongatus	18
Acrobeles ciliatus	14
Aphelenchoides arcticus	7
Tylenchorhynchus leptus	7
Longidorella magna	5
Eudorylaimus spec.	5
Helicotylenchus spitsbergensis	4
Chiloplacus spec.	4
Prismatolaimus intermedius	1
Enchodelus spec.	1
Ditylenchus spec.	1
Total	1115

Sample 46.

Eudorylaimus subjunctus	42
Plectus spec.	26
Teratocephalus lirellus	25
Tylenchus davainei	18
Tylenchus leptosoma	7
Enchodelus conicaudatus	3
Monhystera spec.	2
Aphelenchoides arcticus	2
Enchodelus analatus	1
Tylenchus thornei	1
Alaimus spec.	1
Total	128

Sample 47.

Tylenchus spec.	43
Tylenchus leptosoma	41
Teratocephalus lirellus	32
Plectus spec.	23
Aphelenchoides arcticus	3
Total	142

Sample 48.

Tylenchus leptosoma	439
Acrobeloides enoploides	50
Cephalobus nanus	38
Tylenchorhynchus arcticus	21
Plectus spec.	19
Aphelenchoides arcticus	12
Plectus rhizophilus	11
Teratocephalus lirellus	6
Eudorylaimus subjunctus	4
Eudorylaimus spec.	2
Heterocephalobus elongatus	2
Tylenchus davainei	1
Tylenchus thornei	1
Total	606

Sample 49.

Tylenchus leptosoma	169
Cervidellus serratus	64
Eudorylaimus spec.	24
Enchodelus conicaudatus	11
Teratocephalus lirellus	6
Tylenchus thornei	2
Total	276

Sample 50.

Panagrolaimus papillosus	164
Tylenchus davainei	16
Aphelenchoides arcticus	15
Tylenchorhynchus leptus	1
Total	196

Sample 51.

Plectus parietinus	4
Tylencholaimus spec.	3
Plectus spec.	2
Panagrolaimus spec.	1
Aphelenchoides arcticus	1
Tylenchus thornei	1
Total	12

Sample 52.

Tylenchorhynchus arcticus	18
Tylenchus costatus	10
Tylenchus leptosoma	5
Eudorylaimus subjunctus	4
Tylenchus davainei	3
Tylenchus spec.	3
Aphelenchoides arcticus	2
Heterocephalobus elongatus	1
Prismatolaimus intermedius	1
Enchodelus conicaudatus	1
Tylencholaimus proximus	2
Tylenchorhynchus leptus	1
Total	51

Sample 53.

Tylenchorhynchus microdorus	404
Eucephalobus arcticus	181
Tylenchorhynchus leptus	153
Teratocephalus lirellus	139
Cervidellus serratus	113
Aphelenchoides arcticus	110
Anaplectus porosus	40
Stegelleta mucronata	32
Tylenchus spec.	29
Monhystera spec.	19
Tylenchus leptosoma	18
Eucephalobus striatus	17
Ereptonema arcticum	17
Chiloplacus spec.	15
Panagrolaimus spec.	6
Eudorylaimus vanrosseni	4
Eudorylaimus spec.	1
Plectus parvus	1
Total	1299

Sample 54.

Tylenchorhynchus microdorus	186
Teratocephalus lirellus	124
Cervidellus serratus	93
Tylenchus spec.	40
Tylenchus leptosoma	34
Acrobeles ciliatus	24
Acrobeloides tricornis	23
Eucephalobus arcticus	22
Ereptonema arcticum	10
Prismatolaimus spec.	7
Tylenchus davainei	7
Anaplectus granulosus	5
Eudorylaimus spec.	4
Eucephalobus oxyuroides	3
Chiloplacus spec.	2
Aphelenchoides arcticus	1
Total	585

Sample 55.

Rhabdolaimus terrestris		242
Teratocephalus lirellus		225
Cervidellus serratus		146
Prismatolaimus intermedius		48
Aphelenchoides arcticus		23
Tylenchorhynchus leptus		22
Ereptonema arcticum		19
Tylenchus cf. *thornei*		17
Eudorylaimus spec.		14
Tylenchus leptosoma		14
Plectus parvus		9
Achromadora tenax		8
Monhystera spec.		7
Heterocephalobus elongatus		6
Enchodelus macrodorus		5
Eudorylaimus agilis		4
Eucephalobus arcticus		3
Eudorylaimus vanrosseni		2
Nygolaimus spec.		1
Tylenchus davainei		1
	Total	816

Sample 56.

Cervidellus serratus		201
Teratocephalus lirellus		153
Tylencholaimus teres		105
Tylenchorhynchus leptus		59
Monhystera spec.		48
Tylenchus spec.		43
Acrobeles ciliatus		34
Pratylenchoides crenicauda		29
Eudorylaimus spec.		25
Aphelenchoides arcticus		18
Rhabdolaimus terrestris		6
Tylenchorhynchus magnicauda		5
Tylenchus costatus		1
Plectus spec.		1
	Total	728

Sample 57/58.

Teratocephalus lirellus		180
Prismatolaimus dolichurus		20
Eudorylaimus spec.		12
Monhystera spec.		9
Tylenchus spec.		8
Plectus parvus		8
Plectus acuminatus		8
Basiria dolichura		3
Tylenchus davainei		2
Cylindrolaimus melancholicus		1
Acrobeloides spec.		1
	Total	252

Sample 59.

Panagrolaimus papillosus		8
Aphelenchoides arcticus		3
Tylencholaimus proximus		1
	Total	12

Sample 60.

Panagrolaimus rigidus		44
Panagrolaimus papillosus		39
Monhystera filiformis		33
Cervidellus serratus		33
Ereptonema arcticum		30
Plectus spec.		24
Chiloplacus saccatus		18
Aphelenchoides arcticus		17
Anaplectus porosus		17
Teratocephalus lirellus		9
Eudorylaimus spec.		7
Tylenchus spec.		7
Heterocephalobus spec.		4
Monhystera spec.		4
Ditylenchus spec.		1
	Total	287

Sample 61.

Tylenchus leptosoma		36
Teratocephalus lirellus		23
Rhabdolaimus terrestris		20
Eudorylaimus spec. (*lugd.*)		16
Tylenchus spec.		15
Tylenchus davainei		14
Cervidellus serratus		10
Monhystera spec.		8
Tylenchus costatus		6
Chiloplacus spec.		2
Plectus spec.		2
Odontolaimus chlorurus		2
Tylenchus bryophilus		1
	Total	155

Sample 62.	
Tylenchus leptosoma	101
Teratocephalus lirellus	97
Tylenchus bryophilus	77
Tylenchus spec.	48
Rhabdolaimus terrestris	41
Aphelenchoides arcticus	29
Tylenchus davainei	19
Teratocephalus decarinus	17
Plectus (*parvus* +) spec.	13
Eudorylaimus spec.	12
Monhystera spec.	30
Achromadora tenax	12
Ereptonema arcticum	6
Chiloplacus saccatus	3
Cervidellus serratus	2
Anaplectus granulosus	1
Tylencholaimus proximus	1
Cephalobus persegnis	1
Cylindrolaimus melancholicus	1
Eudorylaimus megodon	1
Heterocephalobus elongatus	1
Criconemoides hemisphaericaudatus	1
Indeterminable	1
Total	515

Sample 63.	
Tylenchus davainei	133
Enchodelus parvus	56
Tylenchus thornei	52
Enchodelus analatus	17
Tylenchus costatus	14
Eudorylaimus spec.	14
Plectus (*parietinus* +) spec.	11
Alaimus depressus	4
Eudorylaimus circulifer	2
Cylindrolaimus melancholicus	1
Prismatolaimus intermedius	1
Tylenchus leptosoma	1
Panagrolaimus rigidus	1
Total	307

Sample 64.	
Tylenchus thornei	64
Plectus parvus	48
Tylenchus leptosoma	47
Acrobeloides enoploides	24
Eudorylaimus subjunctus	21
Monhystera spec.	19
Eudorylaimus spec.	15
Rhabdolaimus terrestris	12
Cervidellus serratus	5
Teratocephalus lirellus	4
Tylenchorhynchus arcticus	2
Anaplectus granulosus	1
Plectus assimilis	1
Tylenchus spec.	1
Cephalobus nanus	1
Prismatolaimus intermedius	1
Total	266

Sample 65.	
Teratocephalus lirellus	101
Monhystera vulgaris	97
Ereptonema arcticum	87
Monhystera spec.	45
Plectus parvus	33
Plectus longicaudatus	17
Cervidellus serratus	13
Eudorylaimus alleni	11
Panagrolaimus rigidus	4
Anaplectus granulosus	4
Chiloplacus spec.	3
Plectus assimilis	3
Teratocephalus decarinus	3
Acrobeloides tricornis	1
Tylenchus costatus	1
Neotylenchidae	1
Total	424

Sample 66.	
Rhabdolaimus terrestris	170
Tylenchus cf. *thornei*	128
Teratocephalus lirellus	67
Acrobeloides tricornis	66
Tylenchus leptosoma	53
Prismatolaimus intermedius	22
Monhystera filiformis	20
Achromadora tenax	15
Tylenchorhynchus magnicauda	12
Tylenchus bryophilus	10
Tylenchorhynchus arcticus	4
Teratocephalus decarinus	4
Eudorylaimus spec.	4
Tylenchus costatus	2
Longidorella magna	2
Achromadora semiarmata	2
Cervidellus serratus	1
Chiloplacus saccatus	1
Enchodelus conicaudatus	1
Tylencholaimus teres	1
Acrobeles ciliatus	1
Plectus spec.	1
Total	587

Sample 67.

Tylenchus thornei		98
Tylenchus spec.		66
Enchodelus / *Eudorylaimus* } *spec.*		58
Plectus assimilis / *Plectus* cf. *armatus*		31
Monhystera spec.		8
Plectus parvus		8
Teratocephalus decarinus		7
Tylencholaimus proximus		6
Tylenchus costatus		6
Tylenchus davainei		6
Eudorylaimus megodon		3
Chiloplacus saccatus		3
Prismatolaimus spec.		3
Aphelenchoides arcticus		3
Plectus cf. *acuminatus*		1
	Total	307

Sample 68.

Tylenchus thornei		40
Prismatolaimus intermedius		38
Tylenchus leptosoma		12
Eudorylaimus spec.		10
Plectus rhizophilus		9
Tylenchus davainei		8
Enchodelus conicaudatus		3
Enchodelus analatus		2
Achromadora semiarmata		1
Bunonema reticulatum		1
Acrobeloides tricornis		1
	Total	125

Sample 69.

Plectus rhizophilus		28
Tylenchus thornei		28
Tylenchus davainei		14
Tylenchus leptosoma		9
Prismatolaimus dolichurus		8
Eudorylaimus maksymovi		7
Eudorylaimus spec.		6
Enchodelus conicaudatus / *Enchodelus analatus*		4
Achromadora tenax		3
Aphelenchoides arcticus		3
Chiloplacus spec.		1
Ereptonema arcticum		1
Bastiania gracilis		1
	Total	113

Sample 70.

Ereptonema arcticum		314
Chiloplacus saccatus		180
Plectus parvus		89
Panagrolaimus rigidus		41
Aphelenchoides arcticus		18
Cervidellus serratus		3
	Total	645

5. TAXONOMIC PART

In the following pages a number of species found will be described more explicitly. The scale lines in the illustrations correspond to 50 μ unless otherwise indicated. The type slides marked WT are in the collection of the Landbouwhogeschool, Wageningen, The Netherlands.

Family Bunonematidae

Bunonema reticulatum Richters, 1905.

One female. Dimensions: L = 0.27 mm; a = 12.6; b = 3.3; c = 14.1; V = $^{12}58^{10}$. Wart series consisting of 38 warts, the anterior one separate. Sample 68.

Family Cephalobidae

Acrobeloides tricornis (Thorne, 1925) Thorne, 1937 (Fig. 1, A–C).

Five females. Dimensions: L = 0.36–0.48 mm; a = 15–18; b = 2.7–3.6; c = 19–23; V = $^{9-16}65\text{–}66^{10-18}$. The specimens agree well with Thorne's original description. The swelling of the corpus is distinct. The nerve ring surrounds the isthmus; opposite it is the excretory pore and a distinct hemizonid two annules long, immediately behind the excretory pore. Cuticular annulation 2 μ wide, shallow and indistinct over the greater part of the body. Tail with nine to ten annules. Vulva lips slightly protruding. The postvulvar part of the gonad extends farther from the vulva than the prevulvar part. Rudiment of second gonad shorter than body width. The double flexure behind the vulva is well developed in one specimen only. Dimensions of an intra-uterine egg: 52 × 19 μ. The intestine is densely filled with globules so that the gonad does not show up very well.

Samples 17, 18, 21, 42, 54, 65, 66 and 67.

Acrobeloides enoploides n.sp. (Fig. 1, D–I).

Dimensions:

Females (n = 21): L = 0.38 mm (0.34–0.43); a = 16 (14–19); b = 3.4 (3.1–3.6); c = 19 (17–21); V = 66 (64–68); G prevulvar = 13 (7–17); G postvulvar = 13 (7–16); T/ABW = 1.5 (1.4–1.7).

Female, holotype: L = 0.40 mm; a = 15; b = 3.4; c = 18; V = $^{10}65^{14}$; T/ABW = 1.6.

Male not found.

Body stout, fusiform. Transverse striation of cuticle distinct, measuring nearly 2 μ on mid-body. Lateral field with two inconspicuous wings (three longitudinal grooves). Prelabial probolae with slightly drawn out, acute tip; somewhat indented halfway. No distinct labial probolae. Corpus of oesophagus fusiform. Excretory pore and hemizonid opposite or slightly behind junction of corpus and isthmus; excretory gland opposite junction of isthmus and bulbus. Vulva lips protruding in some specimens, hardly so in others; this may be connected with the age of the individual. Gonad cephaloboid, ovary with double

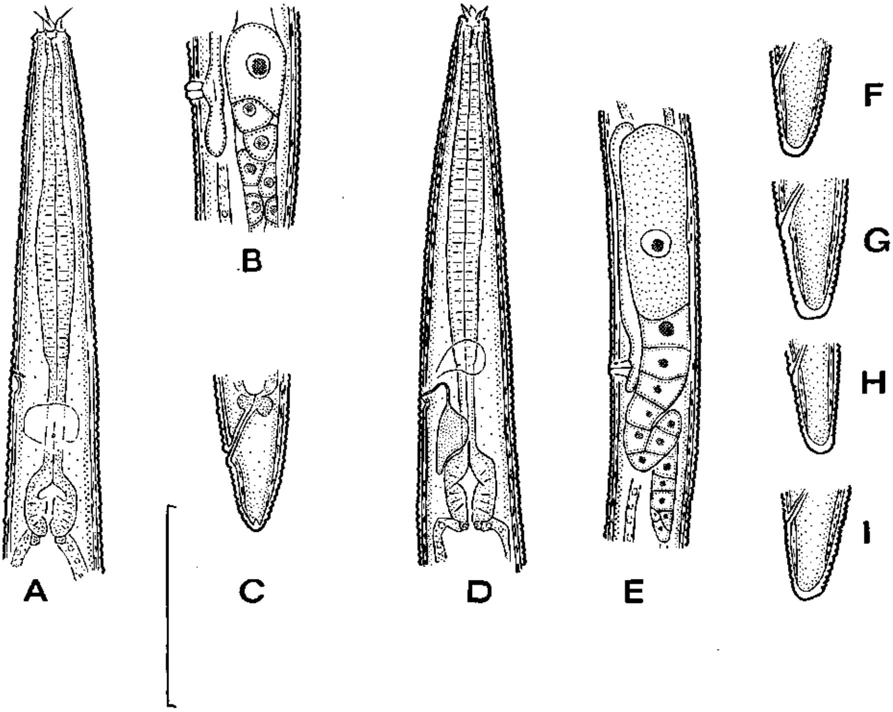


FIG. 1. A-C: *Acrobeloides tricornis* (Thorne), female. A: neck region; B: vulva; C: tail. D-I: *A.enoploides* n.sp., female. D: neck region; E: gonad; F-I: tails.

flexure behind the vulva. Rudiment of second gonad extremely short. Tail very plump, very broadly rounded, tip often slightly oblique; with nine to twelve annules. Immediately before and behind the anus there is usually an annule twice as long as the others. Phasmids opening just before the middle of the tail.

Holotype: Female on slide WT 1197. Paratypes: 20 females on slides WT 1198–1211.

Type locality and habitat: Sample 3. Paratypes from samples 3, 20, 24, 25, 26, 48 and 64. Found furthermore in samples 21, 23, 30, 38, 40 and 43.

This species resembles *A.enoplus* Steiner, 1938, from which it differs by the much plumper tail and the faint indention in the – somewhat *Chiloplacus*-like – prelabial probolae.

Acrobeles ciliatus von Linstow, 1877.

Sixteen females. Dimensions: L = 0.40 mm (0.36–0.44); a = 13–16; b = 3.4–4.0; c = 8.8–10.1; V = $^{12-15}60\text{–}62^{13-20}$. The excretory pore lies on the 20th–23rd annule from head end; there are 84–89 annules between excretory pore and vulva, 49–63 between vulva and anus and about 14–17 on the tail. Total annule number about 171–188, slightly less than in the neotype population

(Thomas & Allen, 1965) which also is slightly larger (0.45–0.54 mm). Excretory pore located at 39–49% of neck length from head end. The tail measures 2.6–3.1 anal body widths. Males were not found.

Samples 23, 24, 42, 44, 54, 56 and 66.

Stegelleta mucronata n.sp. (Fig. 2A).

Females (n = 9): L = 0.32–0.40 mm; a = 16–20; b = 3.3–4.1; c = 13–15; V = $^{15-21}63-66^{10-19}$.

Female, holotype: L = 0.37 mm; a = 19; b = 3.5; c = 13; V = $^{16}66^{13}$.

Male not found.

Body somewhat slenderer than in *Acrobeles* and *Cervidellus*, but of same shape. Transverse striation very coarse, 2.7 μ in mid-body. The excretory pore lies on the 29th–33rd annule; there are 62–67 annules between excretory pore and vulva, 38–43 between vulva and anus and 12–15 on the tail. Total annule number = 147–154. Number of longitudinal grooves about 20–24. Lateral field with two wings (three longitudinal grooves). Labial probolae well developed, acute, with sclerotized edges; between them some sclerotized points. Prelabial probolae setiform, bifurcate over about one-third of their length, the prongs slightly recurved. Corpus of oesophagus 2.5 × as long as isthmus, with slight fusiform swelling; not offset by alteration of tissues from the isthmus. The terminal bulb fills almost the whole body cavity and measures 60% of corresponding body width. The nerve ring surrounds the isthmus in its middle. Hemizonid conspicuous, two annules long. Excretory pore immediately anterior to hemizonid. Vulva lips hardly protruding. Gonad cephaloboid, the double postvulvar flexure in some specimens not present. Dimensions of an intra-uterine egg: 48 × 19 μ. Tail conoid, 1.9–2.4 anal body widths long, the tip mucronate, irregular.

Holotype: Female on slide WT 1212. Paratypes: Eight females on slides WT 1213–1214.

Type habitat and locality: Sample 53. Paratypes also from sample 18.

This species differs from. *S. cancellata* (Thorne, 1925) and *S. tuarua* Yeates, 1967 by the shape of the prelabial probolae; from *S. iketaia* Yeates, 1967 and *S. ophioglossa* Andrássy, 1967[1] by the short tail; from *S. incisa* (Thorne, 1937) by shape of the labial and prelabial probolae and the tapering tail; from *S. argentinica* Andrássy, 1963 (of which only males are known) by the presence of a fusiform swelling in the corpus; from *S. lineata* (Thorne, 1925) by the larger terminal bulb, relatively longer tail and irregular terminus.

Cervidellus serratus (Thorne, 1925) Thorne, 1937 (Fig. 2B)

Dimensions of 50 females: L = 0.38 mm (0.30–0.46); a = 15 (14–19); b = 3.2 (2.9–3.8); c = 12.5 (11–14); V = 65 (60–67).

This species is very common and widespread on Spitzbergen. Body stout, tapering only slightly anteriorly, the diameter at the base of the oesophagus

[1] Syn. *S. incisa* apud Loof, 1964.

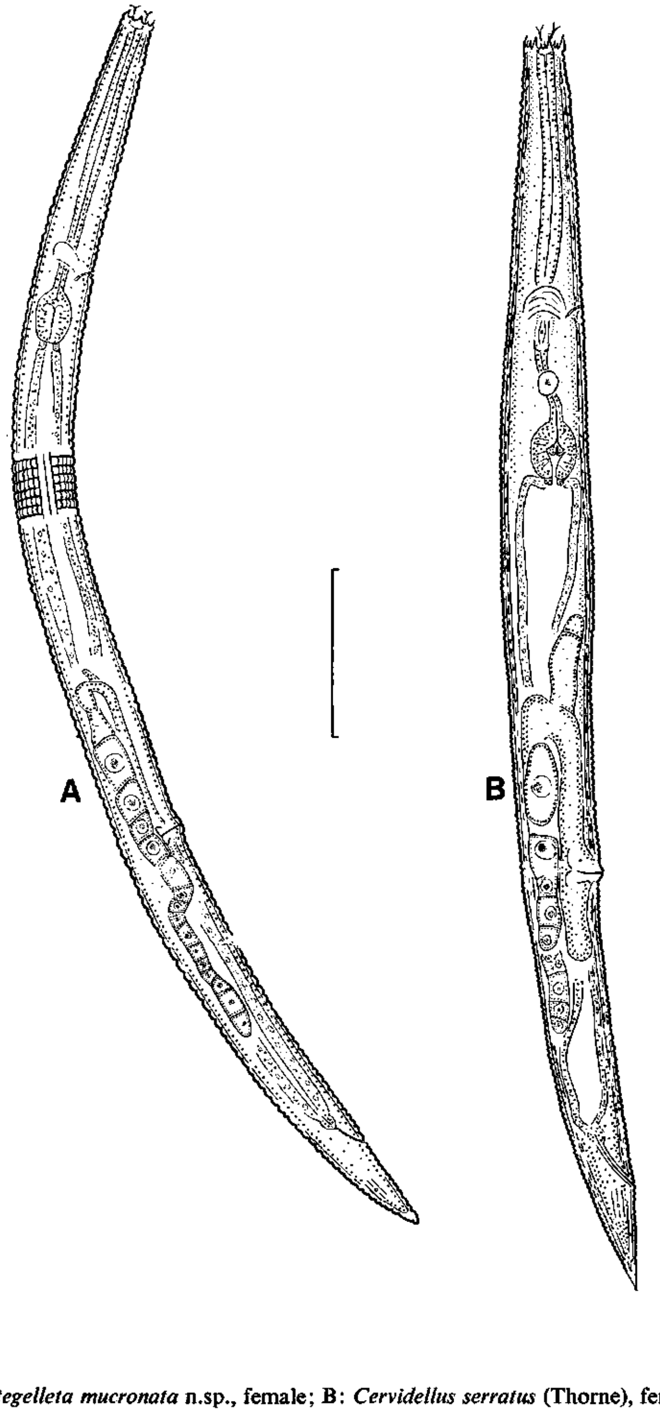


FIG. 2. A: *Stegelleta mucronata* n.sp., female; B: *Cervidellus serratus* (Thorne), female.

being about twice the width of the lip region. Cuticle with coarse transverse striae about 2 μ apart in mid-body; anteriorly they become more spaced, being 2.5–3.0 μ apart behind the lip region. Lateral field with two wings (three longitudinal grooves), about one-sixth of body diameter. Labial probolae acute, sclerotized, the axils bearing forward pointing acute processes. Prelabial probolae bifurcate over nearly half their length. Mouth cavity cephaloboid, details of rhabdions invisible as in the other cephaloboid species. Isthmus of oesophagus offset from corpus chiefly by alteration in the tissues. Terminal bulb well developed, with valves. Deirids not seen. The nerve ring surrounds the posterior end of the corpus. The excretory pore lies at level of anterior end of isthmus. Hemizonid immediately behind excretory pore, one to two annules long. Intestine with wide lumen. Vulva lips strongly protruding. Gonad cephaloboid, with spermatheca at the anterior flexure; the postvulvar part may show a double flexure or not. Dimensions of two intra-uterine eggs: 54–56 × 20–23 μ. In most specimens the posterior rudimentary gonad is relatively large as described by Thorne (1925); however, generally it is small, till one-half of body width, in specimens in which the anterior gonad is little developed. This condition is found generally in young slender females. In most older and fatter specimens the posterior gonad measures 1.3–1.8 body diameters. Rectum about as long as anal body diameter. Tail 1.8–2.3 anal body widths long, regularly conoid with acute, in some specimens slightly offset, terminus.

Found in samples 17, 18, 20, 21, 23, 25, 26, 27, 30, 40, 42, 43, 44, 49, 53, 54, 55, 56, 60, 61, 62, 64, 65, 66 and 70.

Chiloplacus saccatus n.sp. (Fig. 3, A–C).
Syn. *C. quadricarinatus* apud van Rossen & Loof, 1962;
Nec *C. quadricarinatus* (Thorne, 1925) Thorne, 1937;
C. quadricarinatus apud Loof, 1964.

Dimensions:

Females (n = 34): L = 0.56–0.83 mm; a = 20–28; b = 3.5–4.4; c = 16–20; V = 64–68; G prevulvar = 13–20; G postvulvar = 13–22; G_2 = 8–13.

Female, holotype: L = 0.74 mm; a = 22; b = 4.1; c = 20; V = 67; G prevulvar = 16; G postvulvar = 17; G_2 = 11.

Male not found.

Body almost straight in death except for a slight bend ventrad in the vulvar region. Cuticular annulation distinct, 2.4 μ in mid-body, 2 μ in anterior part of neck. Lateral field with four wings (five longitudinal grooves). Prelabial probolae bifurcate over one-third of their length. Edges of lips somewhat sclerotized, but true labial probolae appear not to be present. Corpus of oesophagus cylindrical, 3.4–4.4 × as long as isthmus. Nerve ring surrounding the corpus-isthmus junction. Deirids conspicuous, located at 75–83% of neck length from the head end, always posterior to the corpus-isthmus junction. Isthmus slender, 29–35 μ long. Terminal bulb measuring 17–21 × 13–16 μ, with valves. Hemizonid two annules long, opposite or slightly behind corpus-isthmus junction. Excretory pore immediately anterior to hemizonid.

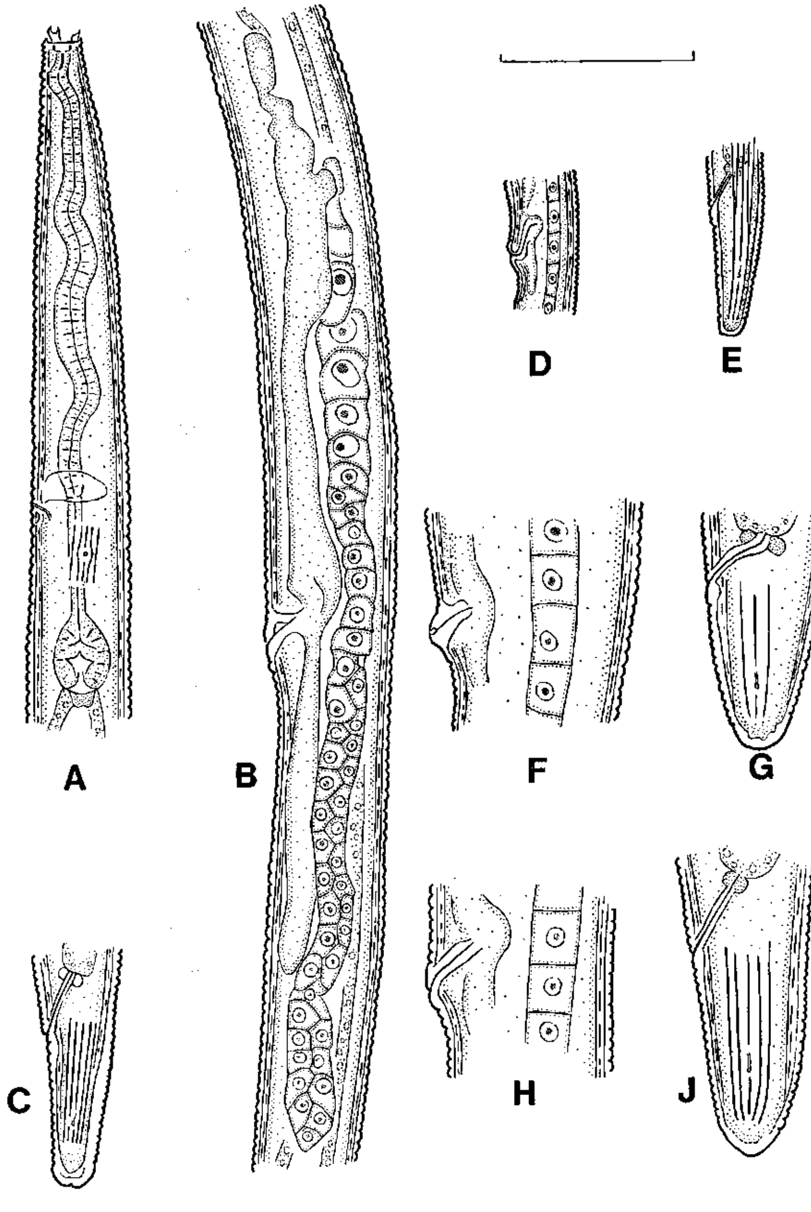


FIG. 3. A-C: *Chiloplacus saccatus* n.sp., female. A: neck region; B. gonad; C: tail. D-E: C. *quadricarinatus* (Thorne) from Venezuela, female: D: vulva; E: tail F-G: *C. contractus* (Thorne), female topotypes. F: vulva; G: tail; H-J: *C. quadricarinatus* (Thorne), female topotypes. H: vulva; J: tail.

Vulva with protruding, large, asymmetrical lips. Gonad cephaloboid, in most specimens with double postvulvar flexure. No sperm. Rudiment of second gonad large, 69–87 μ or 30–45% of vulva-anus distance. Tail sub-cylindroid with broadly rounded or somewhat truncate terminus which usually is indented in the middle. Number of tail annules 14–18. Tail length 1.9–2.6 anal body widths. The phasmids open at 52–69% of tail length.

Holotype: Female on slide WT 1180. Paratypes: 27 females (two with end-on view of head) on slides WT 1181–1196; six females deposited with Dr. Morgan Golden, Beltsville, Maryland, U.S.A.

Type habitat and locality: Sample 70. This species is very widespread on Spitzbergen; it was found also in samples 1, 2, 3, 4, 5, 6, 8, 17, 18, 19, 23, 30, 37, 60, 62, 66 and 67.

Discussion.– Thorne (1925) described, among several *Chiloplacus* (*Acrobeles*) species, one with five lateral lines, viz. *C. quadricarinatus*. Since then repeatedly *Chiloplacus* specimens with five lateral lines have been found, and identified on the basis of this character as *C. quadricarinatus* (van Rossen & Loof, 1962; Loof, 1964). Critical evaluation has now shown that these specimens are not all conspecific.

Twelve females of *C. quadricarinatus* from Thorne's collection were available, collected May, 1933 from shadscale soil, Mosida, Utah, U.S.A. (topotypes) and July, 1925 from dead alfalfa, Fort Collins, Colorado, U.S.A. (types?). Dimensions: L = 0.94–1.16 mm; a = 19–28; b = 3.2–4.3; c = 17–22; V = 63–68; G prevulvar = 12–19; G postvulvar = 14–22; G_2 = 3–5; T/ABW = 1.5–2.4. The deirids lie at 53–72% of neck length from head end, always distinctly anterior to the corpus-isthmus junction (in most specimens the oesophagus is coiled, index 'b' corrected to length of outstretched oesophagus). Hemizonid far anterior to corpus-isthmus junction, two annules long. Excretory pore opens through anterior hemizonid annule or immediately anterior to hemizonid. The corpus is five to six times as long as the isthmus. Length of isthmus = 32–36 μ. The body is contracted ventrally behind the vulva. Vulva lips large and protruding, the posterior one rounded, with cuticle not thicker than on adjacent parts of body. The double postvulvar flexure in the gonad is mostly absent. Tail tapering, somewhat convex-conoid, terminus more rounded than in *C. saccatus*. Tail annules 16–18. The rudimentary second gonad measures about 40–50 μ (See Fig. 3, H–I).

C. quadricarinatus apud van Rossen & Loof (1962) is identical with *C. saccatus*: the deirids lie behind the corpus-isthmus junction and the rudimentary second gonad is very long (87 μ or 33% of the vulva-anus distance).

C. quadricarinatus apud Loof (1964) from Venezuela differs from both *C. quadricarinatus* of Thorne and *C. saccatus* by the smaller and slenderer body; by the shape of the vulva lips, by the lower and more rounded edges of the lips, the more truncate tail, and in that males are numerous. (Fig. 3, D–E). The deirids lie at 63–77% of neck length from the head end, anterior to the corpus-isthmus junction. The corpus is six to seven times as long as the isthmus. The rudimentary second gonad, visible in only one female, is very short, less than one body width and measuring 9% of vulva-anus distance. The vulva does not protrude, the vulva lips are more symmetrical and the vagina is curved; the body is not contracted behind the vulva. This all might suggest specific distinctness from *C. quadricarinatus*. However, in a population from Nigeria I found most of the females agreeing in vulvar characters with those from Venezuela, but a few had protruding vulva lips agreeing in every detail with those of *quadricarinatus*. Males from Nigeria agreed wholly to those from Venezuela in shape and size of spicules and gubernaculum and distribution of papillae. The protrusion of the vulva lips and the contraction of the body behind the vulva may depend on the age of the individual (cf. Anderson, 1968) so this is not a reliable character. As the Venezuelan material generally is not in too good a condition, I hesitate to consider the small difference in lip shape as decisive; also there are no data upon variation in length of the second rudimentary gonad. Remains only the absence of males in Thorne's populations. This, too, does not appear decisive. So I regard the populations from Venezuela and Nigeria as the true *quadricarinatus*. It is conceivable that during development of the adult female the shape of the tail is modified by the thickening of the body (cf. *Pratylenchus neglectus*, Loof, 1960).

Van Rossen & Loof (1962) remarked that their specimens of '*quadricarinatus*' from Sweden showed several characters reminiscent of *C. contractus* (Thorne, 1925) and it seemed worth while to examine this species too. Ten females were available, on the same slides and from the same localities as the *quadricarinatus* specimens, from Thorne's collection. Dimensions: L = 0.72–0.88 mm; a = 14–22; b = 4.2–4.9; c = 16–21; V = 66–68; G prevulvar = 17–31; G postvulvar = 11–21; G_2 = 4–7; T/ABW = 1.4–1.9. In general body shape and through the distinctly protruding and large vulva lips this species strongly resembles *C. quadricarinatus*, from which it can be distinguished by the narrower lateral field with three longitudinal lines; smaller body; much shorter oesophagus, the index 'b' being even higher than in *C. quadricarinatus* despite the lesser body length; less convex tail; presence of a double flexure in the postvulvar part of the gonad; and by the less regularly rounded posterior vulva lip, the cuticle of which is much thicker than that of the adjacent body (Fig. 3, F–G). Hemizonid and excretory pore near corpus-isthmus junction. Deirids not visible because the specimens are strongly flattened. Dimensions of three intra-uterine eggs: 61–67 × 30–36 μ.

Commonly *C. contractus* is regarded a junior synonym of *C. propinquus* (de Man, 1921) Thorne, 1937, but the description of this species is insufficient and the drawing of the vulva indicates that it is not identical with *C. contractus*. It is best regarded *species inquirenda*. *Acrobeles bonus* Kirjanova, 1951, synonymized with *C. propinquus* and *C. contractus* by Meyl (1961) is different from the latter as testified by the shape of the vulva.

Heterocephalobus elongatus (de Man, 1880) Andrássy, 1967.

Dimensions of ten females: L = 0.61–0.82 mm; a = 27–33; b = 3.7–4.2; c = 12–16; V = 62–64; G_{1-1} = 11–16; G_{1-2} = 11–17; G_2 = 4–5.

Two males: $L = 0.64\text{–}0.85$ mm; $a = 32\text{–}35$; $b = 3.5\text{–}4.4$; $c = 16\text{–}18$; $T = 41 + 9 - 56 + 10$.

Annulation of cuticle shallow and rather indistinct, measuring 1.7 μ in middle of body. Lateral field with two wings (three lateral lines). In the female the posterior uterus seems to bear some gonad tissue; the total length of the posterior gonad is about 1.3 body widths. The postvulval part of the anterior gonad occupies 31–56% of vulva-anus distance. The postanal pulvillus is conspicuous. The rectum is widened anteriorly. Tail length equal to 3.1–4.6 anal body diameters.

Male: Spicules 24 μ long. Two pre-anal subventral papillae, 1.4 and 4 anal body widths from the anus. A pair of adanal papillae; a subventral pair nearly halfway the tail (37–40%); a lateral papilla at the same level (phasmid?); a subventral pair (in one specimen perhaps two) just before the terminus; a lateral pair at nearly the same level, and a lateral pair midway between the two mentioned.

Nerve ring and excretory pore opposite posterior end of corpus, at 63–68% of neck length. Directly behind the excretory pore there is a narrow but distinct hemizonid.

Samples 3, 5, 7, 8, 10, 20, 21, 23, 25, 27, 31, 33, 37, 39, 44, 48, 52, 55, and 62.

Eucephalobus arcticus n.sp. (Fig. 4).

Dimensions:

Females ($n = 17$): $L = 0.68\text{–}1.00$ mm; $a = 22\text{–}29$ (36 in one specimen); $b = 3.6\text{–}4.5$; $c = 12\text{–}16$; $V = 61\text{–}64$; $G_{1-1} = 10\text{–}19$; $G_{1-2} = 12\text{–}19$; $G_2 = 3\text{–}6$.

Males ($n = 2$): $L = 0.76\text{–}0.91$ mm; $a = 24\text{–}26$; $b = 3.7\text{–}4.4$; $c = 16\text{–}17$; $T = 49 + 11 - 54 + 10$.

Female, holotype: $L = 0.93$ mm; $a = 26$; $b = 4.2$; $c = 15$; $V = 62$; $G_{1-1} = 18$; $G_{1-2} = 19$; $G_2 = 4$.

Body rather stout, curved slightly to ventral side in death. Cuticle thick, 3 μ on middle of body. Transverse striation shallow, very coarse (2.5–3 μ). Lateral field one-fifth to one-sixth of body width, with two wings (three lateral lines).

Six lips, each with one large, well offset, forward pointing papilla. Mouth cavity cephaloboid, 1/15 of neck length. Corpus of oesophagus cylindrical, nearly four times as long as isthmus, from which it is offset by a sharp alteration in tissue. Isthmus slightly thinner than corpus. The nerve ring surrounds the oesophagus just before the base of the corpus. Opposite it is a distinct hemizonid, immediately before which lies the excretory pore. Deirid distinct, located at level of junction of corpus and isthmus, at 71% of neck length from head end. The terminal bulb occupies three-fifths of the corresponding body width, measuring 23 × 18 μ and possesses a well developed valve.

Female.– Gonad cephaloboid, with double flexure behind the vulva; the postvulvar part occupying 37–64% of the vulva-anus distance. The uterus is symmetrical, very spacious; the posterior one does not bear any gonad tissue and measures 26–40 μ or about 1.2 body widths. Dimensions of an intra-uterine egg: 69 × 26 μ. Rectum a little longer than anal body width, slightly widened

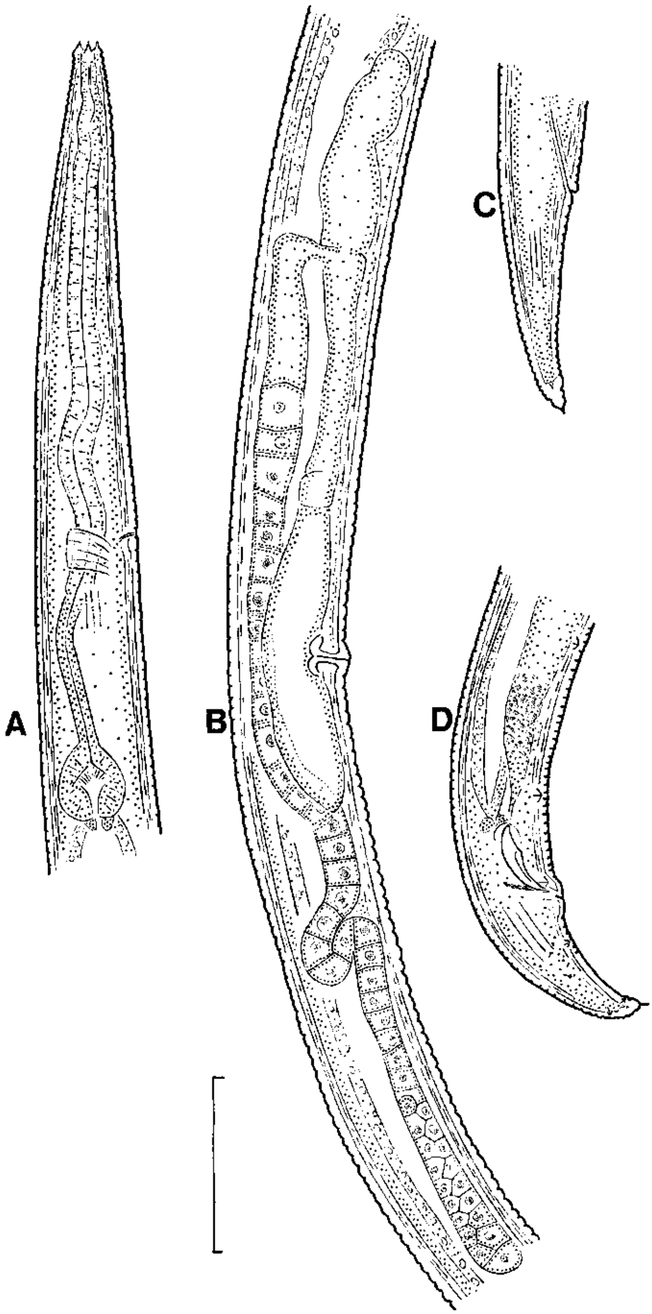


FIG. 4. *Eucephalobus arcticus* n.sp. A-C: female. A: neck region; B: gonad; C: tail. D: male tail.

anteriorly. Postanal pulvillus conspicuous. Tail three anal body widths long (2.6–3.5; in one specimen 3.9); conoid, tapering regularly to the rounded terminus which bears a large, triangular, slightly ventrally directed, mucro which in some specimens on the dorsal side is not offset. The tail tip is slightly knobbed ventrally.

Male.– Posterior end curved about 90° to ventral side. Spicules measuring 24 μ, gubernaculum 13 μ; both of normal cephaloboid shape. Two pairs of preanal subventral papillae, located 1.2 and 3.2 anal body widths from the anus. Adanal and postanal papillae as in *Heterocephalobus elongatus*, the anterior subventral caudal papillae lying slightly more anterior (31%). Testis single, reflexed. Terminus with mucro.

Holotype: Female on slide WT 1132. Paratypes: Sixteen females and two males on slides WT 1133–1141.

Type habitat and locality: Sample 5. Paratypes also in samples 3, 4, 23, 41, 44 and 55. Found furthermore in samples 40, 42, 53 and 54.

This species resembles *E. strandi-cornutus* (Allgén, 1934), from which it differs by the shallow body annulation and the regularly conoid shape of the female tail. It also resembles *Heterocephalobus elongatus*. but is much plumper, the uteri are symmetrical and more spacious. From *E. paracornutus* de Coninck, 1943 it differs by the plump, regularly conoid tail, as well as by larger body size and much coarser annulation.

Family Panagrolaimidae

Panagrolaimus papillosus n.sp. (Fig. 5).

Dimensions:

Females (n = 40): L = 0.59 mm (0.51–0.69); a = 22 (20–25); b = 3.9 (3.4–4.5); c = 19 (17–21); V = 64 (62–66); G_{1-1} = 22 (17–29); G_{1-2} = 22 (13–25); G_2 = 4 (3–5).

Female, holotype: L = 0.59 mm; a = 20; b = 4.1; c = 19; V = 64; G_{1-1} = 20; G_{1-2} = 20; G_2 = 3.

Male not found.

Body stout, slightly bent to ventral side in death; tapering towards both extremities. Cuticle very thin, transverse striation hardly perceptible on the outside of the cuticle. Lateral field with two wings (three longitudinal lines). Lip region one-quarter as wide as body at base of oesophagus; with six rounded lips, each bearing a large, forward pointing papilla. Mouth cavity panagrolaimoid; length of cheilorhabdions 2.5 μ, of prorhabdions about 3–3.5 μ, of mesorhabdions about 2 μ. Corpus of oesophagus cylindroid, thrice as wide and twice as long as isthmus. Terminal bulb measuring 16 × 24 μ, its width equal to three-fifths of the corresponding body diameter. The nerve ring lies in, or slightly posterior to, the middle of the isthmus. Hemizonid and excretory pore at level of nerve ring or slightly behind it. Deirids conspicuous, located at about the same level as excretory pore.

Vulva lips strongly protruding. Vagina with sclerotization in the form of two thick dots on optical section. Uterus symmetrical. The ventrosublateral walls

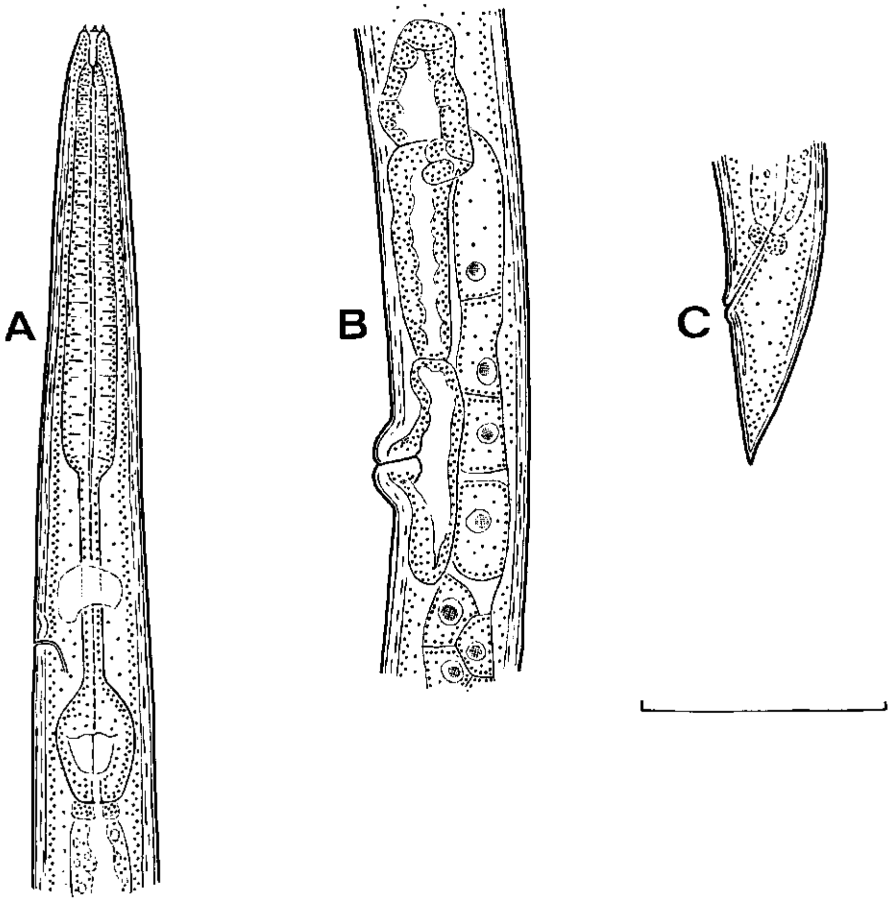


FIG. 5. *Panagrolaimus papillosus* n.sp., female. A: neck region; B: vulva; C: tail.

of the posterior chamber are thickened; in ventral view this chamber appears indented terminally. No further gonad tissue is attached to this posterior uterus. The anterior uterus bears a normal panagrolaimid gonad, in which no sperm was found; at the flexure there is a large empty spermatheca. The postvulval part of this gonad occupies usually 65–75% of the vulva-anus distance. Rectum about as long as anal body width. Tail plump, convex-conoid to acute terminus, about two anal body diameters long. Posterior anal lip large: behind it the tail is constricted ventrally. Dimensions of four intra-uterine eggs (one per female): 50–62 × 20–23 μ; one female bears two eggs, size 36 × 18 μ and 46 × 19 μ.

Holotype: Female on slide WT 1101. Paratypes: 44 females (five with end-on view of head) on slides WT 1102–1125.

Type habitat and locality: Sample 50. Found also in samples 59 and 60.

This species resembles *P. subelongatus* (Cobb, 1914), from which it differs by the strongly protruding labial papillae, longer isthmus, plumper tail and absence of males. The structure of the posterior uterus of *P. subelongatus* is not known. From *P. heterocheilus* Steiner, 1935, which species also possesses protruding labial papillae, *P. papillosus* differs by the lateral lips being not lower than the submedian ones, by the symmetrical uterus (in *P. heterocheilus* the anterior chamber is much longer than the posterior one), by the strongly protruding vulva lips and probably by less conspicuous body annulation.

Family Teratocephalidae

Teratocephalus decarinus Anderson, 1969 (Fig. 6, A–C)

Dimensions of ten females: L = 0.52–0.56 mm; a = 23–24; b = 3.7–3.9; c = 4.8–5.7; V = $^{13-18}$54–58. First two annules behind lip region small and compressed; the next four to six are directed anteriad. Vulva depressed; a short postvulval sac is present. The tail measures 9–11 anal body diameters; vulva-anus distance is 138–145% of tail length.

Samples 62, 66 and 67.

The distinction between this species and *T. costatus* Andrássy, 1958 is somewhat problematical. A population from New Galloway, Scotland, is clearly *T. costatus* because of the shape of the neck annules, but the cervical expansion characteristic of that species is absent, as in *T. decarinus*. Specimens from the island of Terschelling, The Netherlands, have the characters of *T. decarinus*, but a juvenile has the neck annules shaped as in *T. costatus*. Clear differences in tail tip and shape of body annules could not be found between all these populations. So for the moment the only established difference is the shape of the neck annules: directed anteriad in *decarinus*, not so in *costatus*. Whether this difference is really of specific importance remains to be seen. *T. decarinus* is now known from northern Canada, Spitzbergen, Sweden (Flommen) and Scotland; *T. costatus* from Bulgaria and the Netherlands. The species has also been reported from Paraguay (Andrássy, 1968).

Teratocephalus lirellus Anderson, 1969 (Fig. 6 F)

Dimensions of 30 females: L = 0.37–0.54 mm; a = 31–43; b = 4.1–5.6; c = 2.3–3.5; V = $^{9-18}$39–50.

Body slender, curved ventrad in death, most strongly in the anal region, whereas the distal part of the tail in many specimens curves to dorsal side. Transverse striae of cuticle 1.3–1.4 μ apart. Lateral field distinctly demarcated, ending at level of intestine-rectum junction. Lip region offset by constriction, about 8 μ wide and 5 μ high; width of neck immediately behind it about 6 μ. Cheilorhabdions rather long and thin. Oesophagus of uniform thickness till the oval terminal bulb which occupies one-eighth to one-ninth of its length. Nerve ring and excretory pore about middle of neck. Gonad with only few oocytes; no sperm; a structure resembling an empty spermatheca is present at the flexure. Rectum twice anal body width long. Tail filiform, distally curved into half a circle or more, usually dorsolaterad; its length equal to 19–35 anal body dia-

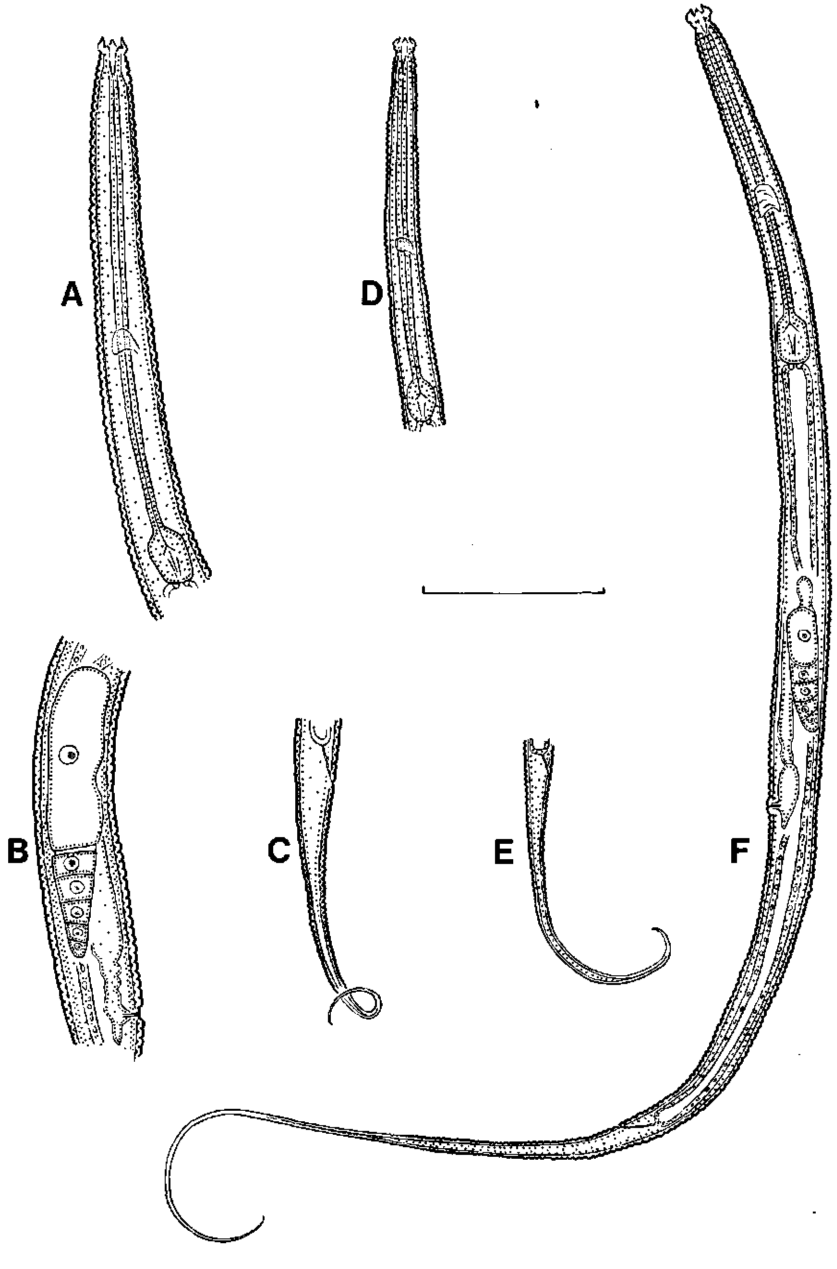


Fig. 6. A-C: *Teratocephalus decarinus* Anderson, female. A: neck region; B: gonad; C: tail. D-E *T. terrestris* (Bütschli), female. D: neck region; E: tail. F: *T. lirellus* Anderson, female, entire specimen.

meters. Vulva inconspicuous; a short postvulval sac is present.

This species is extremely widespread on Spitzbergen; it was found in samples 2, 3, 6, 8, 11, 15, 16, 17, 20, 21, 23, 24, 25, 27, 28, 29, 31, 33, 35, 37, 39, 40, 41, 43, 44, 46, 47, 48, 49, 53, 54, 55, 56, 57/58, 60, 61, 62, 64, 65 and 66.

The very long tail and pre-equatorial vulva immediately distinguish this species from *T. terrestris* (Bütschli, 1873), (cf. Fig. 6 D–E).

Euteratocephalus crassidens (de Man, 1880) Andrássy, 1958 (Fig. 7)

Dimensions of seven females: L = 0.42–0.48 mm; a = 20–22; b = 4.0–4.4; c = 7.1–8.1; V = $^{9-13}53\text{–}54^{9-13}$. Amphids 5 μ in diameter or 40% of the corresponding body width, located at 18–20% of neck length from head end or about 1.6 × width of lip region. These specimens differ from those described by Andrássy (1958) through larger size and through the lip region being definitely broader than the adjacent body. The edges of the lips are very conspicuously sclerotized. Phasmids are definitely present, one anal body width or less behind the anus. The Spitzbergen specimens differ from de Man's types from the Netherlands in having a longer tail, five to six anal body widths against five. The tail is curved strongly to the dorsal side.

An interesting point is the location of the nerve ring. According to de Man it is very broad, located at level of posterior part of isthmus. Andrássy (1958), however, states that the nerve ring lies about halfway the neck. The excretory pore in the Spitzbergen specimens lies as indicated by de Man and Andrássy. The nerve ring undoubtedly lies anterior to the excretory pore, in accordance with the observations of Andrássy; however, there is a definite structure around the isthmus agreeing in location and shape with what de Man described as the nerve ring. This structure is rather transparant and its nature is unknown. It is also present in specimens from Scotland and the Netherlands. Opposite the excretory pore is a small but distinct hemizonid.

Samples 8 and 41.

Family Tylenchidae

Tylenchus davainei Bastian, 1865.

Dimensions:

Females (n = 15) :L = 0.78–1.00 mm; a = 28–37; b = 6.1–7.4; c = 5.1–6.4; V = $^{22-42}59\text{–}63^{1-3}$.

Males (n = 15): L = 0.77–1.00 mm; a = 30–50; b = 5.6–7.8; c = 5.2–6.4; T = 43–57.

Spear length = 15–18 μ. Spicule length 21–27 μ, gubernaculum 7–8 μ. Tail length is equal to 8–11 anal body widths in both females and males. Dimensions of two intra-uterine eggs: 61–73 × 20–22 μ. The median bulb lies at 42–46% of neck length from the head end. The Spitzbergen specimens have conspicuously longer tails than those described by Andrássy (1954) from Hungary. In connection with this the vulva is located more anteriorly.

Whether this species is the true *davainei* of Bastian is more than doubtful: Bastian gives vulva position as 68%, the tail is straight conoid, *Ditylenchus*-like,

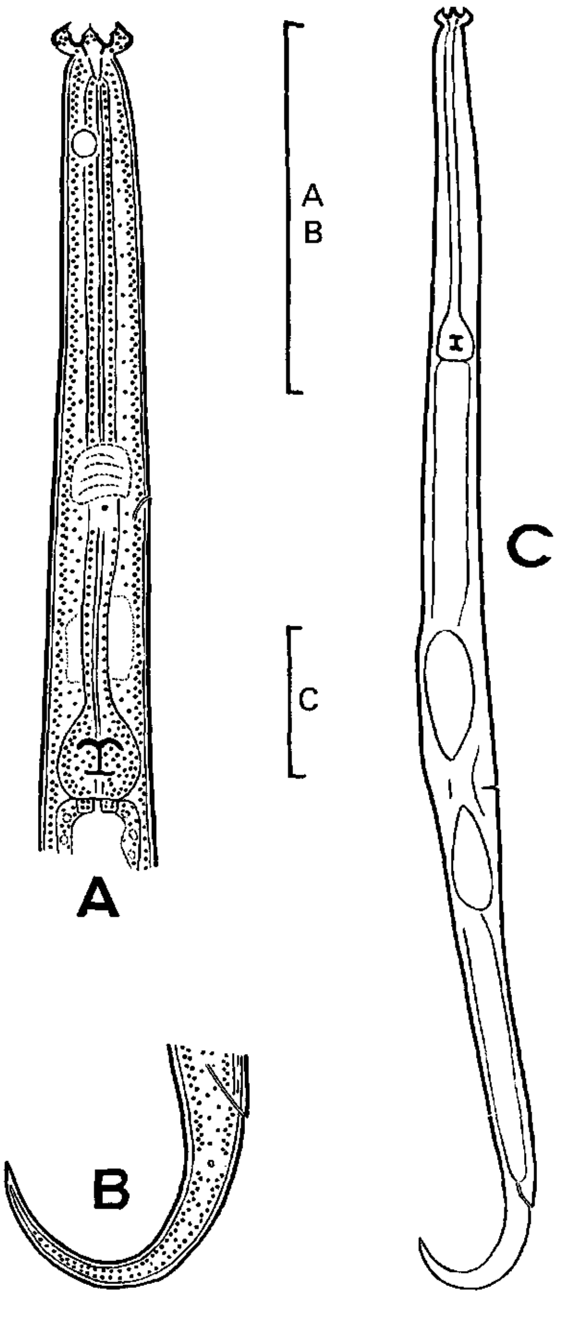


FIG. 7. *Euteratocephalus crassidens* (de Man), female. A: neck region; B: tail; C: entire specimen.

and the bursa occupies one-third of the tail. Andrássy's (1954) neotype is invalid, being collected in Hungary.

This species is very widespread on Spitzbergen. Found in samples 1, 15, 16, 18, 19, 20, 21, 24, 27, 28, 34, 37, 39, 40, 42, 46, 48, 50, 52, 54, 55, 57/58, 61, 62, 63, 67, 68 and 69.

Tylenchus costatus de Man, 1921.

Dimensions of 28 females: L = 0.46–0.75 mm; a = 26–36; b = 5.1–7.1; c = 5.0–5.9; V = $^{18-37}$63–68. Spear length = 11–13 μ. Males were not found. The median bulb lies at 46–49% of neck length from head end. On the whole the Spitzbergen specimens tend to be somewhat larger than those from more southern countries.

This species, too, is common on Spitzbergen. Found in samples 16, 20, 21, 28, 36, 38, 52, 56, 61, 63, 65, 66 and 67.

Tylenchus bryophilus Steiner, 1914.

Dimensions:

Females (n = 16): L = 0.37–0.45 mm; a = 21–27; b = 4.9–5.5; c = 3.9–4.8; V = $^{26-36}$61–66; spear = 10–11 μ.

Males (n = 5): L = 0.41–0.44 mm; a = 28–30; b = 4.9–5.7; c = 3.7–4.0; T = 39–46; spear = 10 μ; spicule length = 14–15 μ.

The median oesophageal bulb lies at 47–51% of neck length from head end. The body annulation is very conspicuous; it is not coarse but deep. Lateral field with two longitudinal lines. Excretory pore and hemizonid opposite anterior part of terminal bulb. Tail length equal to 9–12 anal body widths in the female, 11–14 in the male.

This species is more locally distributed. Samples 61, 62 and 66.

Tylenchus thornei Andrássy, 1954 (Fig. 8, D–E).

Tylenchus specimens resembling *T. thornei* were found in the majority of the samples. They evidently represent more than one species, but as generally the spear knobs have become indistinct through processing, proper evaluation was not possible. As the true *thornei* I regard the species which is described as follows:
Females (n = 50): L = 0.78 mm (0.63–0.94); a = 38 (32–47); b = 6.1 (5.4–6.8); c = 4.5 (4.1–5.0); V = 60 (58–62); G_1 = 26 (22–46).
One male: L = 0.70 mm; a = 36; b = 6.1; c = 4.1.

Lip region broad, resembling that of *T. davainei*; lips rather distinct. Spear heavy with large round knobs; its length rather variable, usually 14–17 μ, but sometimes 11–13 μ. Median bulb located at 40–44% of neck length from head end. Annulation of cuticle fine but distinct. Four lateral lines. Female tail 170 μ long (141–195), its length equal to 13 (11–16) anal body widths; tail tapering to acute, sometimes slightly mucronate terminus, not filiform. Male tail 171 μ long or 16 anal body widths. Length of spicules 17 μ.

This species was very numerous in samples 9, 10 and 11. The specimens in samples 3, 17, 25, 30, 32, 34, 44, 53, 54, 56, 57/58, 60, 61, 62, 67 and 69 probably also represent this species.

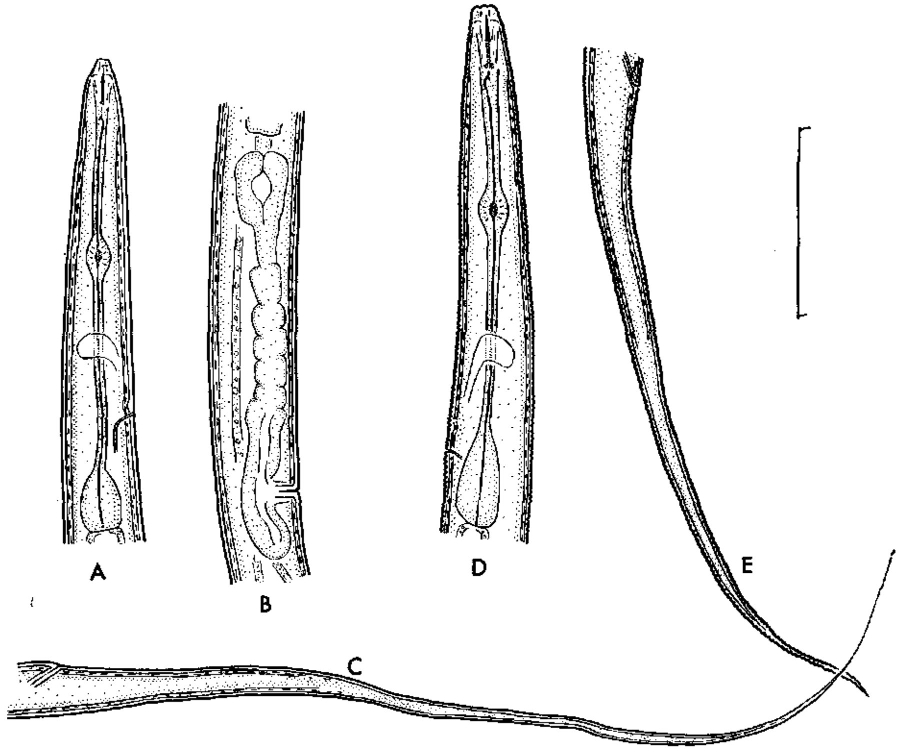


FIG. 8. A-C: *Basiria dolichura* n.sp., female. A: neck region; B: vulva region; C: tail. D-E: *Tylenchus thornei* Andrássy, female. D: neck region; E: tail.

Tylenchus leptosoma de Man, 1880.

Females (n = 30): L = 0.61 mm (0.46–0.75); a = 52 (38–64); b = 6.1 (5.4–7.4); c = 2.6 (2.2–3.0); V = 47 (43–52).

Males (n = 2): L = 0.59–0.74 mm; a = 70–75; b = 5.5–5.8; c = 2.7.

Body annulation extremely fine, perceptible only in anterior part of neck. Lip region smooth, nearly semiglobular. Spear very indistinct. Median bulb of oesophagus located at 38–45% of neck length from head end. Isthmus very long and thin. A distinct hemizonid is present just behind middle of isthmus. Vulva tranverse; vaginal walls not thickened. No posterior uterine branch. Vagina directed obliquely anteriad. Dimensions of an intra-uterine egg: 79 × 9 μ. Anus indistinct, very difficult to detect in specimens that do not lie exactly in lateral position. The tail measures 22–41 anal body widths in the female, 30–35 in the male.

This species too is very common and widespread on Spitzbergen. Found in samples 3, 7, 8, 10, 15, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38, 39, 40, 41, 43, 44, 46, 47, 48, 49, 52, 53, 54, 55, 61, 62, 63, 64, 68, 66 and 69.

Basiria dolichura n.sp. (Fig. 8, A–C).
Dimensions:

Females (n = 6): L = 0.82–0.93 mm; a = 37–48; b = 6.4–7.2; c = 3.1–4.0; V = $^{13-27}52-57^{1-2}$.

Female, holotype: L = 0.93 mm; a = 48; b = 7.1; c = 3.6; V = $^{14}55^{2}$.

Male not found.

Body slender, nearly straight in death, tail in some specimens curved to ventral side. Cuticular annulation 1 μ wide, distinct. Lateral field one-quarter as wide as body, with four longitudinal lines. Lip region narrowed, conoid, with distinct slit-like amphid apertures. Spear about 11 μ long, with narrow lumen and very small basal knobs. Dorsal oesophageal gland orifice 3.5 μ behind base of spear. Median oesophageal bulb ovate, located at 40–42% of neck length from head end. Isthmus very long and thin, terminal bulb pyriform. Nerve ring anterior to middle of isthmus. Excretory pore at about three-quarter of isthmus. Hemizonid narrow, two annules long, located one to three annules anterior to excretory pore. Tail tapering proximally, filiform distally, its length 220–276 μ or 16–23 anal body widths. Vulva transverse, vagina one-half of body width deep. Rudiment of posterior gonad about one body width long. Anterior gonad outstretched, uterus long and thin, spermatheca oval to rectangular, empty.

Holotype: Female on slide WT 1215. Paratypes: Five females on slides WT 1216–1218.

Type habitat and locality: Sample 8. Paratypes from samples 7, 40 and 57/58.

This species shares the anterior location of the median bulb with *B. tumida* (Colbran, 1960), *B. duplexa* (Hagemeyer & Allen, 1952) and *B. flandriensis* Geraert, 1968 (see key of Geraert, 1968). From *B. tumida* it differs by the filiform tail, from *B. duplexa* by much longer tail (T/ABW being 12 in *duplexa*), anterior vulva position (against 64–73%) and empty spermatheca and absence of males; from *B. flandriensis* by larger and slenderer body, anterior vulva (against 63–71%) and much longer tail (T/ABW being 10 in *flandriensis*).

Tetylenchus joctus Thorne, 1949 (Fig. 9).
Females (n = 11): L = 0.52–0.62 mm; a = 28–37; b = 5.1–6.1; c = 8.5–10.2; V = $^{23-35}50-55^{24-29}$.
One male: L = 0.50 mm; a = 33; b = 5.0; c = 7.7; T = 47; spicule = 22 μ.

The identity of these specimens is not wholly sure, chiefly because the spear, although very indistinct, appears to be only 9–10 μ long or 1.6 × width of lip region. Cuticular annulation fine but conspicuous. Lip region continuous, very low. Valves of median bulb located at 44–47% of neck length from head end. Tail length 4.3–5.2 anal body widths. In some specimens the distal part of the tail is curved slightly ventrad. Occasionally the striation continues till the terminus which may appear slightly mucronate; this is in accordance with the description of Ferris & Ferris (1967). Ovaries consisting of single row of oocytes except in the multiplication zone; certainly there is no rhachis.

Numerous in sample 21; found also in sample 34.

In sample 21 also one female was found, conspicuously larger than the others,

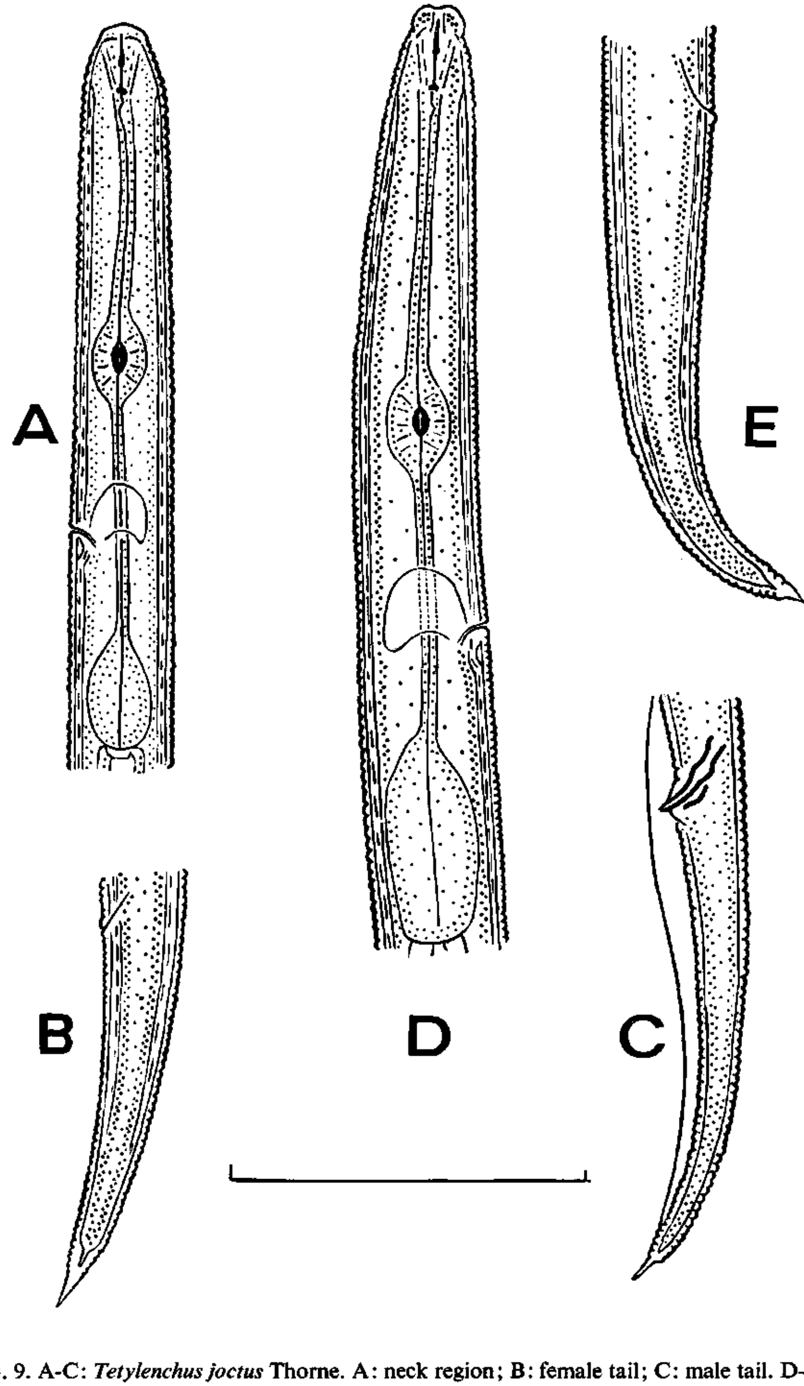


FIG. 9. A-C: *Tetylenchus joctus* Thorne. A: neck region; B: female tail; C: male tail. D-E: **T.** spec., female. D: neck region; E: tail.

with much higher lip region offset by slight constriction. Tail curved to ventral side. Dimensions: L = 0.78 mm; a = 36; b = 5.9; c = 10.1; V = $^{35}52^{34}$; spear length = 12 μ (Fig. 9, D–E).

Tylenchorhynchus leptus Allen, 1955.

Dimensions of 30 females: L = 0.79 mm (0.64–0.91); a = 28 (25–31); b = 5.5 (5.0–6.2); c = 11.6 (10.4–12.8); V = 54 (51–58); G_1 = 27 (24–31); G_2 = 26 (23–30); spear = 26 μ (24–28).

These specimens agree well in length with the types from Colorado, but they are smaller and especially stouter than those described from Sweden by van Rossen & Loof (1962); in accordance with this the tail measures only 3.5 (3.2–3.9) anal body widths against 4–5 in the Swedish specimens. The empty spermatheca is conspicuous here too. In most specimens the ovaries have a small digitiform process at the blind ends. The median bulb lies at 55% (52–58) of neck length from head end; the phasmids lie at 36% (24–46) of tail length from the anus.

This species is common and widespread on Spitzbergen. Found in samples 1, 3, 4, 18, 21, 23, 24, 25, 26, 27, 28, 43, 44, 50, 52, 53, 55 and 56. It is widely distributed in Europe: apart from Sweden and Spitzbergen it has been found in Switzerland (Brienz, Furkastrasse, Dischmatal, Airolo), Austria (Lechtal, Gneis) and Italy (Dolomites).

Tylenchorhynchus microdorus Geraert, 1966.

Dimensions:

Females (n = 25): L = 0.62 mm (0.58–0.71); a = 24 (22–26); b = 5.0 (4.5–5.7); c = 12.3 (10.6–14.8); V = 56 (54–59); G_1 = 34 (27–38); G_2 = 30 (25–36); spear = 13 μ (12–15).

Males (n = 25): L = 0.61 mm (0.52–0.73); a = 27 (23–31); b = 5.1 (4.3–5.7); c = 10.7 (9.5–11.4); T = 55 (47–62); spear = 14 μ (12–15); spicules = 23 μ (21–26).

This species strongly resembles *T. nanus* Allen, 1955. It is, on the average, longer and less slender, the spear in the male is distinctly longer, and the phasmids lie more posterior, in the Spitzbergen females at 49% (41–60) of tail length. Moreover the tail is relatively shorter; in the Spitzbergen females it measures 2.8 (2.5–3.5) anal body widths, in the males 3.6 (2.9–4.8). The lateral field shows the punctation described as differentiating character by Geraert, but it should be noted that occasionally this may be found in isolated specimens of other nematode species as well. It is difficult to say whether in the Spitzbergen females the tail tip is striated or not; at any rate it is not so conspicuously smooth as in *T. brevidens*, but distinct annules were not visible either. The median bulb lies just anterior to the middle of the oesophagus (47 (43–49)%). This species seems further to differ from *T. nanus* by the lower lip region with less than seven annules; in fact, the lip region is conspicuously low, more so than in *T. nanus* judging after Allen's illustration.

Samples 30 (one specimen), 53 and 54 (dominant in both).

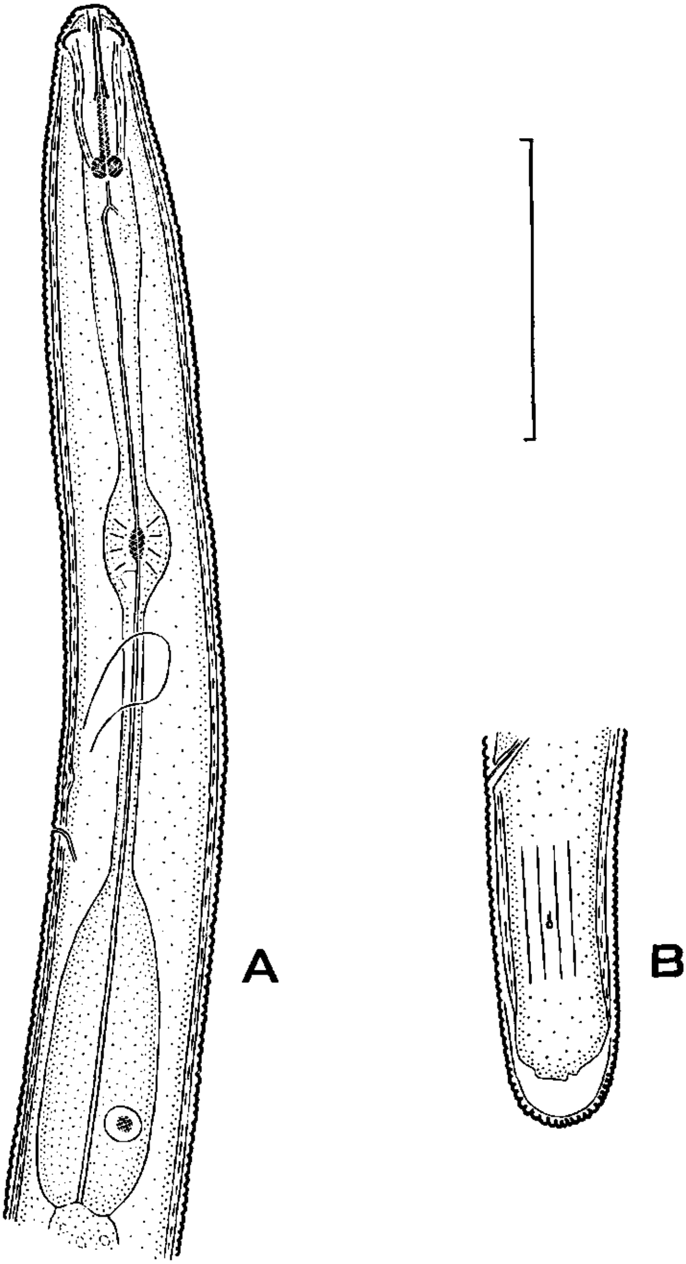


FIG. 10. *Tylenchorhynchus magnicauda* (Thorne), female. A: neck region; B: tail.

In sample 17 one female was found agreeing generally with *T. microdorus*, but with a spear length of 17 μ, which might suggest that it belongs to *T. nothus* Allen, 1955. Dimensions: L = 0.69 mm; a = 28; b = 5.7; c = 13; V = $^{27}52^{29}$; median bulb at 48% of neck length; T/ABW = 3.2. The only difference is the anterior position of the phasmids (35% of tail length) which is different from both *nothus* and *microdorus*.

Tylenchorhynchus magnicauda (Thorne, 1935) Filipjev, 1936 (Fig. 10).
Dimensions of nine females: L = 0.68–0.92 mm; a = 25–30; b =4.0–4.7; c = 15–18; V = $^{19-27}57–61^{21-28}$; spear = 25–28 μ.

These specimens differ in some minor details from the original description. The excretory pore lies more anterior, viz. opposite the posterior part of the isthmus. The phasmids lie also more anterior, 43% (38–55) of tail length from the anus. Contrary to Allen's (1955) illustration the cuticle of the terminus is strongly thickened.

Tail 2.1–2.8 anal body widths long, with 34–42 annules. Median bulb located at 46–48% of neck length from head end. Terminal bulb very long, slightly overlapping. The large dorsal gland nucleus lies close to the base of the bulb. Vulva a transverse slit 11 μ long. Male not found, female gonads without sperm. Body straight in death.

This species is strongly reminiscent of the genus *Pratylenchoides* through shape of lip region, stout spear with very heavy basal knobs, posterior position of vulva, and cylindroid tail with broadly rounded, annulated terminus. So far it has been known only from the Rocky Mountains, U.S.A.

Samples 18, 26, 56 and 66.

Tylenchorhynchus arcticus Mulvey, 1969 (Fig. 11).
Dimensions:

Females (n = 14): L = 0.99–1.25 mm; a = 31–38; b = 5.9–7.6; c = 13–21; V = $^{21-35}48–55^{22-33}$; spear = 34–37 μ.

Males (n = 11): L = 0.88–1.22 mm; a = 35–45; b = 5.7–7.9; c = 14–16; T = 42–49; spear = 32–35 μ.

Body nearly straight in death, only male tail curved slightly to ventral side. Cuticle with peculiar punctation which may be a fixation artefact; composed of two well-demarcated layers. Annulation very fine (1 μ, on tail occasionally even less) but distinct. Lateral field with six longitudinal lines, the inner ones originating about level of base of oesophagus. The lateral field is very indistinct owing to the punctation. Deirids not visible. No longitudinal striation outside the lateral field.

Lip region offset, knob-shaped, with six to seven annules; offset by a deep constriction. Perioral disc slightly raised, not refractive. Internal sclerotization of lips moderately developed, cheilorhabdions more distinct than in many other species of this genus. Spear very thin, with basal knobs directed posteriad. Orifice of dorsal oesophageal gland about 3 μ behind base of spear. Median bulb large, broadly oval, in the male slightly narrower; measuring 17–20 ×

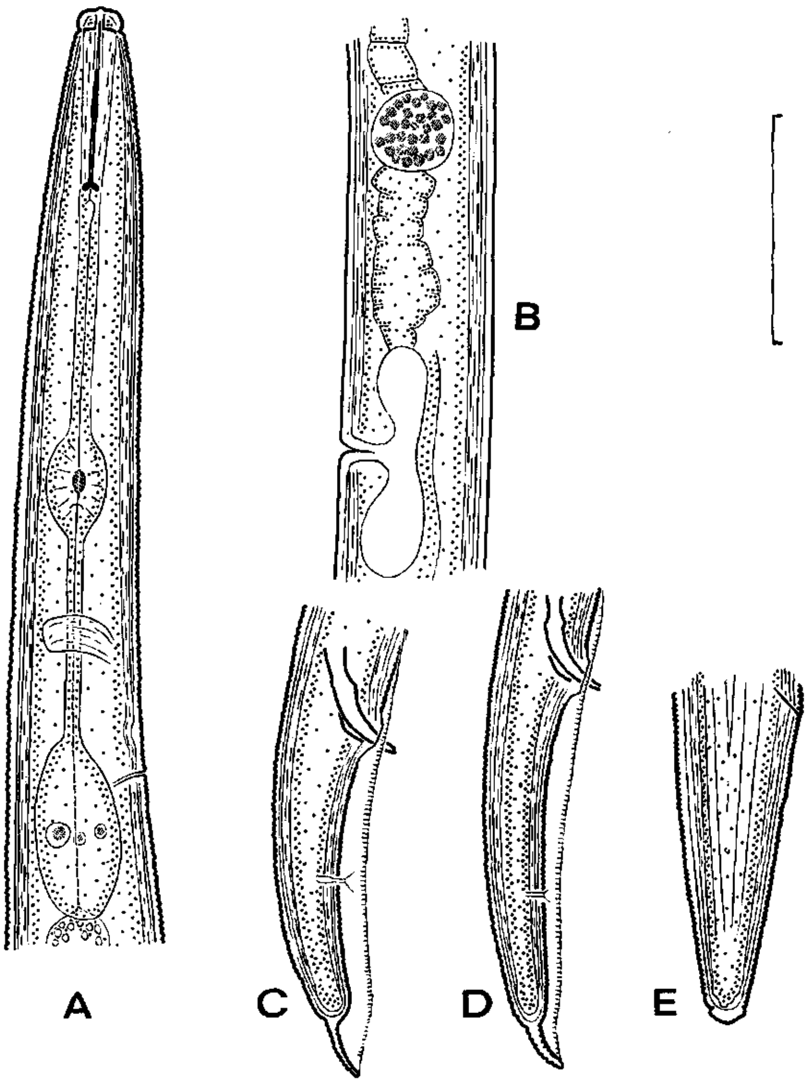


FIG. 11. *Tylenchorhynchus arcticus* Mulvey. A: neck region; B: vulva region; C-D: male tails; E: female tail.

12–16 μ in the female, 16–20 × 10–12 μ in the male. Valves central, distinct, located at 51–55% of oesophagus length from head end. Isthmus very long and thin. Terminal bulb large, saccate, slightly overlapping the mid-intestine. The nerve ring surrounds the middle of the isthmus. Hemizonid located slightly anterior to the end of the isthmus; the excretory pore lies 5–10 annules behind the hemizonid.

Female. Vulva transverse. Gonads with round spermathecas filled with sperm. No eggs. Tail conoid with round, almost smooth terminus, its length equal to 2.3–3.3 anal body widths; with 54–74 annules. Phasmids located at 33–48% of tail length.

Male. Testis outstretched. Spicules tylenchoid, 26–29 μ long. Gubernaculum curved, 9 μ long. Bursa with crenate edge, enveloping tail. Just before the terminus the tail is constricted distinctly on the ventral side, slightly so on the dorsal side, thus resembling the tail of *Pratylenchoides*; its length equal to 3.5–4.7 anal body widths.

Samples 3, 11, 18, 25, 40, 48, 52, 64 and 66.

These specimens differ from the Canadian type specimens by the much stronger constriction of the male tail and by the higher number of tail annules in the female, Mulvey's illustration giving 46; however, five paratypes had 60–70. From *Geocenamus* this species differs by the absence of a refractive perioral disc.

Family Hoplolaimidae

Pratylenchoides crenicauda Winslow, 1958.

Females (n = 2): L = 0.60–0.63 mm; a = 27–33; b = 4.2–4.7; c = 14–16; V = $^{24-25}57-58^{22-27}$; spear = 20 μ.

Male (n = 1): L = 0.69 mm; a = 29; b = 5.3; c = 17; T = 43; spear = 20 μ; spicules = 23 μ. The outline of the oesophageal gland lobe in this species rather resembles that of *Tylenchorhynchus magnicauda*, but the ventrosublateral gland nuclei lie more anterior.

Sample 56.

Helicotylenchus spitsbergensis n.sp. (Fig. 12).

Dimensions:

Females (n = 8): L = 0.79–1.08 mm; a = 28–38; b = 6.5–8.1; c = 36–42; V = $^{21-29}56-68^{18-24}$.

Female, holotype: L = 0.91 mm; a = 38; b = 7.3; c = 42; V = $^{23}62^{24}$.

Male not found.

Body usually coiled into more than one convolution. Transverse striation distinct, about 1.5 μ apart on middle of body. Lateral field one-third as wide as body, with four longitudinal lines. Lip region continuous, hemispheroid, composed of four to five rather indistinct annules. Spear length 27–31 μ (holotype 28 μ), the two parts of almost equal length- Spear knobs indented anteriorly. The dorsal oesophageal gland orifice lies 8–9 μ behind the base of the spear. The median bulb lies at 64–71% of total oesophagus length from head end (measured till junction of lumen with mid-intestine). The oesophageal glands overlap the mid-intestine on all sides over fair distance, the ventrosublateral glands generally sligthly farther than the dorsal one. The excretory pore lies about six annules anterior to the oesophago-intestinal junction; the hemizonid is two annules long and lies one to two annules anterior to the excretory pore.

Vulva transverse. Vagina one-half of body width deep, with conspicuously cuticularized walls. Gonads paired, opposed and outstretched, each with an

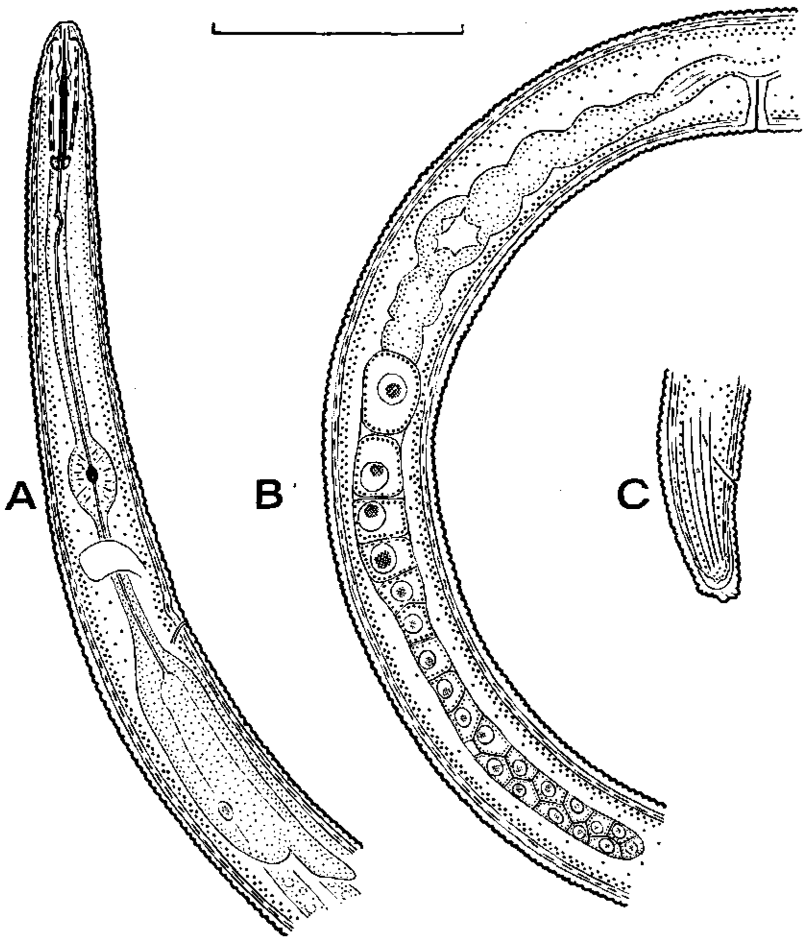


FIG. 12. *Helicotylenchus spitsbergensis* n.sp., female. A: neck region; B: part of reproductive system; C: tail.

empty spermatheca which lies within the gonad, not dorsally of it. No eggs. Tail trapezoid to conoid, 1.3–1.4 anal body widths long, the posterior margin usually truncate; there are about 13 annules between anus and ventral terminal angle. Posterior margin distinctly, sometimes irregularly, striated. Tail slightly curved to ventral side. The cuticle is composed of two well-demarcated layers. Phasmids distinct, located from two annules before to three behind the anus.

Holotype: Female on slide WT 1126. Paratypes: Seven females on slides WT 1127–1131 and 1139.

Type habitat and locality: Sample 40. Paratypes also from samples 23, 25, 43 and 44. Juveniles found in sample 18.

This species is very close to *H.platyurus* Perry, 1959, from which it is distinguished by the spermatheca not being offset. From *H.cavenessi* Sher, 1966 (Nigeria) it differs by the same character and by being much longer and having a longer spear. From *H.serenus* Siddiqi, 1963 (India) it differs by larger body size, relatively shorter oesophagus and truncate tail.

Family Criconematidae

Criconemoides hemisphaericaudatus Wu, 1965 (Fig. 13, A–B).

One female. Dimensions: $L = 0.51$ mm; $a = 13$; $b = 3.4$; $c = 28$; $V = {}^{54}93$. Spear length = 84 µ. Rex = 36; RV = 10; Ran = 6; R = 116. Tail very bluntly rounded, posterior end of body tapering hardly, almost cylindroid. The annules 98–115 show lateral indentations. There are occasional anastomoses, one to three together. Head end rounded, submedian lobes very small. The posterior margin of the annules is very finely crenate. Vulva apparently slightly open; the vagina runs almost transversely in its distal part. The posterior edge of the prevulvar annule is modified slightly, suggesting a small ornamentation on the anterior vulva lip in agreement with Wu's fig. 14.

Two very small juveniles (L–2 or L–3), one damaged. $L = 0.23$ mm; spear = 37–40 µ; gonad primordium = 11 µ; Rex = 42, R = 127 (n = 1). Annules crenate with rather many anastomoses.

This species is very close to *C.morgensis* (Hofmänner & Menzel, 1914) with which it was considered identical by de Grisse, 1968. However, I prefer to keep it apart because of the shape of the posterior body end (in *morgensis* tapering, truncate) and the appearance of the vulva: in *morgensis* it is distinctly closed in lateral view, situated on the middle of the annule; in *hemisphaericaudatus* it appears slightly open in lateral view (ventral view shows it to be closed really) and lies between two annules. In *morgensis* the vagina runs obliquely to the vulva, in *hemisphaericaudatus* almost transversely. Finally the crenation of the posterior margins of the annules appears more coarse in *morgensis* than in *hemisphaericaudatus*.

Whether *C.annulatus* Taylor, 1936 is identical with *morgensis* or with *hemisphaericaudatus* cannot be decided for the moment: vagina direction suggests the former, tail shape the latter (Cf. Raski & Golden, 1966, fig. 4 D–E).

Female in sample 26; juveniles in 26 and 62.

Criconema? spec. (Fig. 13 C).

Two juveniles. Dimensions: $L = 0.16–0.19$ mm; $a = 8–10$; $b = 2.5–2.6$; $R = 70–71$; spear = 33–38 µ. Annules with eight alternating rows of broad, rounded scales. This would point rather to the genus *Hemicriconemoides* (see de Grisse & Loof, 1965) but this is a mainly tropical genus and in the Spitzbergen specimens head shape is more reminiscent of *Criconema* and *Nothocriconema*. Tail tapering, acute.

Sample 27.

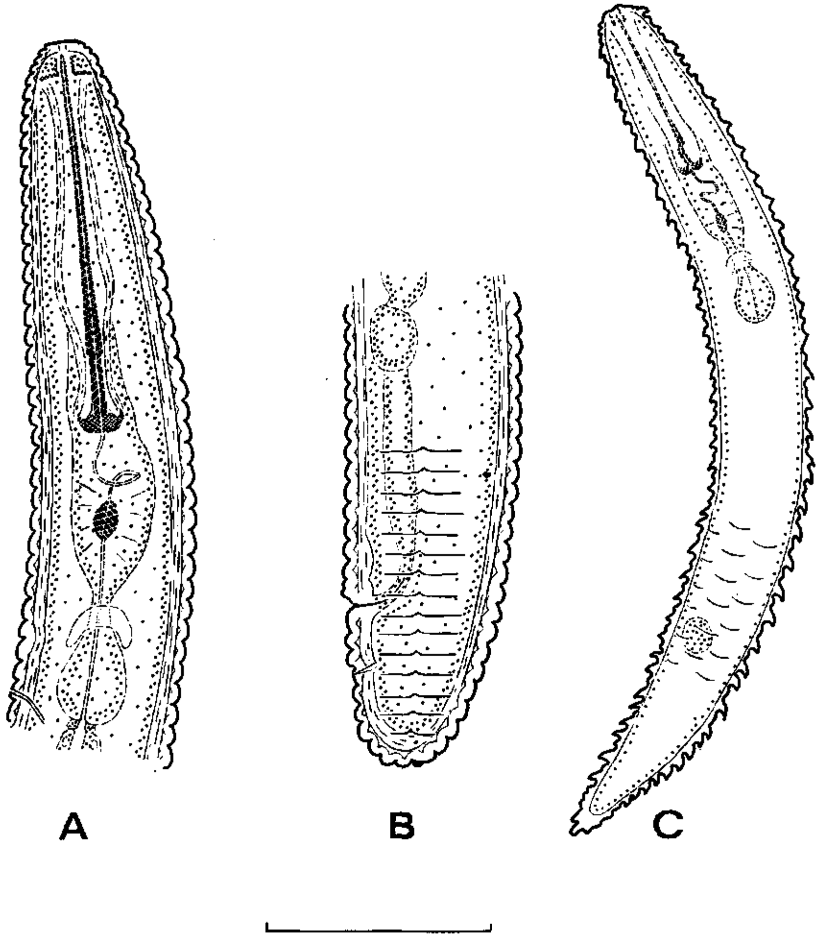


FIG. 13. A-B: *Criconemoides hemisphaericaudatus* Wu, female. A: neck region; B: posterior part of body. C: *Criconema*(?) spec., juvenile.

Family Plectidae

Plectus parietinus Bastian, 1865.

Two females. Dimensions: L = 1.12–1.29 mm; a = 18–22; b = 4.8–5.3; c = 10–11; V = $^{11-13}45-47^{10-17}$.

This cosmopolitan species, easy to recognize, is apparently less common on Spitzbergen than several other species of this genus. Depth of stoma 28 μ. Amphids located just anterior to middle of stoma, their diameter 2.5 μ or one-eighth of corresponding body width. Excretory pore located at 56% of neck length from head end. Hemizonid immediately anterior to excretory pore. Tail length equal to 3.1–3.4 anal body diameters.

Samples 4 and 63; juveniles in samples 1, 23 and 51.

Plectus assimilis Bütschli, 1873 (Fig. 14).

Dimensions of five females: L = 0.61–0.73 mm; a = 14–15; b = 4.0–4.7; c = 10–12; V = $^{8-12}46-51^{8-13}$.

This rather aberrant species can be recognized easily by its very plump body, tapering hardly towards the head end, strongly so towards tail end. Amphids 2.5 μ wide or 15% of corresponding body width; located only 0.4 head widths from anterior end. Depth of stoma 22–25 μ. Corpus and isthmus of oesophagus very broad. Cephalic setae 4 μ long, directed anteriad. Vulva transverse, vagina only about one-quarter of body width deep. Tail length 3.6–4.0 anal body widths; tail almost straight.

Samples 3, 4, 64 and 67. Juveniles in 27, 39 and 65.

Plectus inquirendus Andrássy, 1958 (Fig. 15, A–B).

One female. Dimensions: L = 0.62 mm; a = 30; b = 3.8; c = 4.7; V = $^{8}44^{9}$. Amphids cryptospiral, measuring 35% of corresponding body width; located 16 μ or two lip region widths from head end, behind middle of mouth cavity, which is 23 μ deep, tapering in cheilostome, then narrow, tubular. Cephalic setae 4 μ long, directed anteriad, located rather far backward (7 μ from head end). Lip region somewhat conoid. Cardia long, the posterior part of peculiar structure. This species is conspicuous for its slender body, very narrow stoma, by the corpus of the oesophagus being thicker than the isthmus, and by its very slender tail, measuring 12.2 anal body widths in the Spitzbergen specimen. Known so far only from Bulgaria.

Sample 37.

Plectus longicaudatus Bütschli, 1873.

Dimensions of 14 females: L = 0.56–0.71 mm; a = 25–31; b = 3.9–4.4; c = 4.9–5.8; V = $^{7-11}44-47^{6-10}$.

The amphid measures 2.4–3.6 μ or 22–31% of corresponding body width. The tail measures 8.6–10.9 anal body widths. One intra-uterine egg: 47 × 19 μ. This species is sometimes difficult to separate from long-tailed specimens of *P. rhizophilus*.

Samples 15, 16, 21 and 65.

Plectus acuminatus Bastian, 1865.

Dimensions of 16 females: L = 0.58–0.75 mm; a = 19–26; b = 3.9–4.3; c = 7.4–9.2; V = $^{9-12}47-50^{4-13}$.

The amphids measure 2.5 μ or 20–25% of corresponding body diameter. The tail measures 4.6–5.7 anal body widths. The body is curved strongly to the ventral side in death, sometimes into half a circle or more. By this feature this species can be distinguished from large specimens of *P. parvus*.

Samples 3, 4, 16, 19, 25, 38, 40, 57/58 and 67.

Plectus parvus Bastian, 1865.

Dimensions of five females: L = 0.39–0.50 mm; a = 17–24; b = 3.5–3.9; c = 7.7–9.4; V = $^{10-14}51-53^{8-12}$.

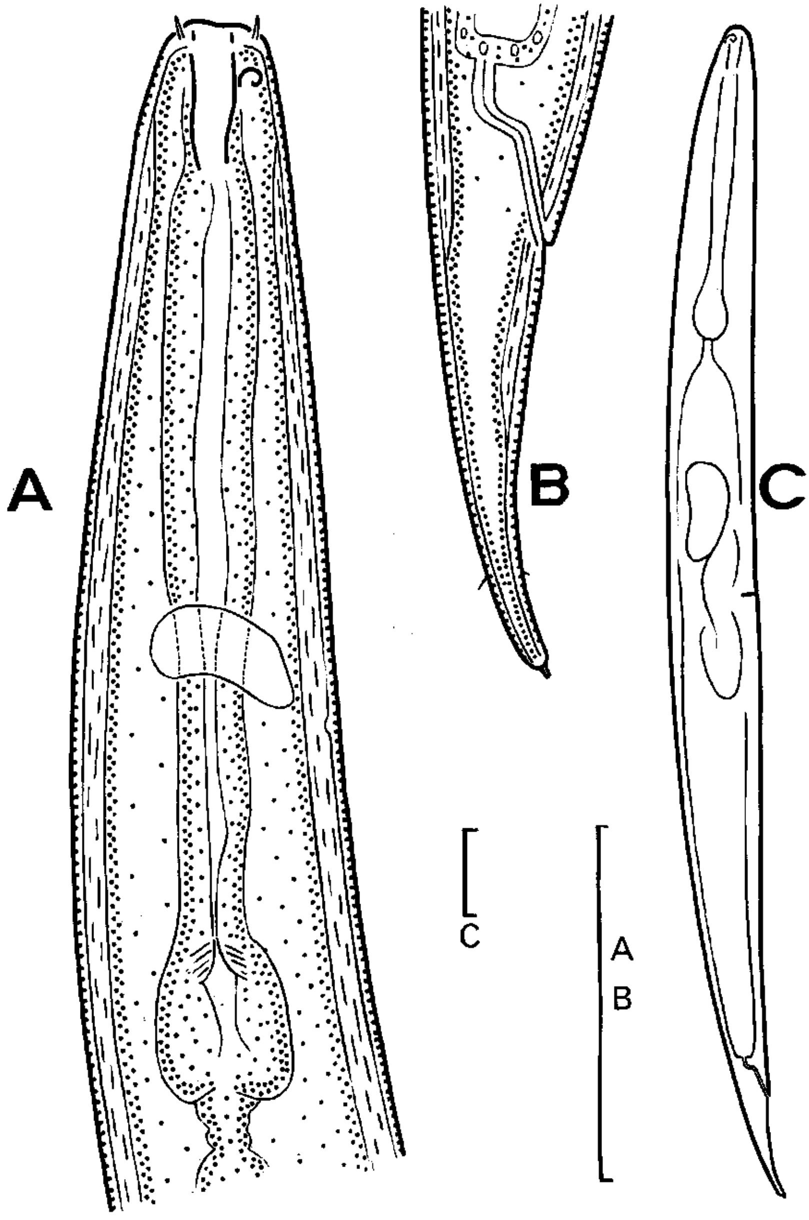


FIG. 14. *Plectus assimilis* Bütschli, female. A: neck region; B: tail; C: entire specimen.

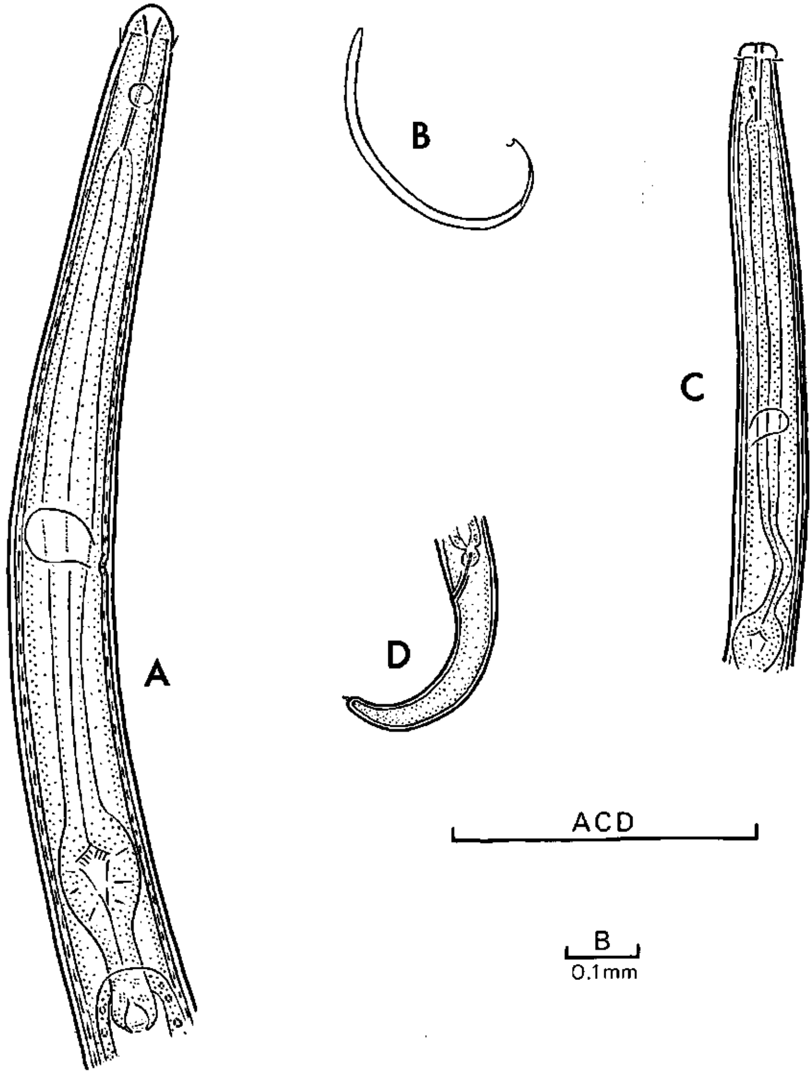


FIG. 15. A-B: *Plectus inquirendus* Andrássy, female. A: neck region; B: entire specimen. C-D: *P.geophilus* de Man, female. C: neck region; D: tail.

This species is recognized easily by its straight posture in death, except the tail which is bent to the ventral side; tail length is equal to 4.3–5.7 anal body widths. The post-equatorial vulva position is also characteristic.

Samples 7, 18, 19, 25, 31, 32, 43, 53, 55, 57/58, 62, 64, 65, 67 and 70.

In sample 4 a population was found, brought provisionally to *P.parvus*, but the body is larger and the vulva lies equatorial. The amphids measure 20–23% of corresponding body width; tail length is equal to 4.0–5.3 anal body widths. Dimensions of 16 females: L = 0.49–0.66 mm; a = 20–24; b = 3.6–4.2; c = 9.1–11.8; V = $^{7-11}49-51^{6-12}$.

Plectus geophilus de Man, 1880 (Fig. 15, C–D).

Two females. Dimensions: L = 0.37–0.42 mm; a = 29–31; b = 3.6; c = 10.2–11.1; V = $^{10-13}53-54^{10-12}$.

This species generally resembles *P.parvus*, with which it shares the post-equatorial vulva position. It is, however, easily distinguished by the much slenderer body and the curved posture in death. Lips round, appearing slightly inflated. Amphids measuring 1.5 μ or 17% of corresponding body diameter, located 10 μ behind head end. Cephalic setae 2 μ long, directed laterad. Tail length 4.8–5.0 anal body widths.

Samples 19 and 62.

Plectus cornus Maggenti, 1961.

Dimensions of seven females: L = 0.49–0.55 mm; a = 26–31; b = 3.6–4.0; c = 7.7–8.6; V = $^{7-8}48-50^{7-8}$.

Body curved generally throughout, though less strongly than in *P. acuminatus*. Cephalic setae 6 μ long, i.e. as long as width of lip region; directed anteriad, the tip bent outward. Lip region somewhat truncate, lips distinct. Ampids question-mark shaped, 1.9–2.4 μ in diameter or 20–25% of corresponding body width; located about halfway the mouth cavity. The latter is cylindrical throughout, prostom not widened; 18–19 μ long. Cuticular annulation distinct and rather deep, especially on the tail. Tail length is equal to five or six anal body widths; the tail is bent ventrad in the proximal half, almost straight in the posterior half. These specimens, apart from being smaller, correspond well to the type specimens from Sweden.

Sample 44.

Plectus cf. *armatus* Bütschli, 1873.

Two females. Dimensions: L = 0.52–0.61 mm; a = 18–19; b = 4.1–4.3; c = 8.5–10.0; V = $^{8-12}50^{8-10}$.

Through small body size, value of 'a' and by the normal location of the amphids these specimens differ from *P. assimilis*, which they resemble in the general body shape and the short, conoid tail. They resemble *P. armatus*, but the cephalic setae do not have the typical shape and direction of that species as redescribed by Maggenti (1961): they are directed obliquely sideward and are not thickened at the base.

Sample 33, 42 and 67.

Plectus rhizophilus de Man, 1880.
Dimensions of 20 females: L = 0.60–1.10 mm; a = 20–27; b = 4.0–5.0; c = 6.3–8.6; $V = {}^{9-13}46-50^{7-15}$.

The amphids measure 20–35% of the corresponding body diameter. Tail length is equal to five to seven anal body widths. One intra-uterine egg measures 56 × 24 μ. Body rather large and slender, curved ventrad in death.

Samples 5 and 19.

Several populations were found which share characters of *P. rhizophilus* and *P. longicaudatus*. Generally these specimens have the body measurements and proportions of *longicaudatus*, but large amphids as found in *rhizophilus*. Samples 1, 7, 8, 10, 48, 68 and 69.

Finally, several *Plectus* specimens were found which could not be assigned with certainty to any described species, nor did they clearly represent undescribed ones. Samples 10, 19, 40, 46 and 67.

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

Dimensions:

Females (n = 4): L = 1.22–1.28 mm; a = 28–34; b = 4.5–5.0; c = 15–16; $V = {}^{14-16}51-53^{12-17}$.

Males (n = 2): L = 0.83–1.14 mm; a = 29–35; b = 5.3–5.5; c = 14.

Length of tail equal to 3.0–3.7 anal body widths in the female, 2.3–2.5 in the male. Both males with three supplements, the distance between the two anterior ones distinctly longer than that between the second and third; the anterior supplement lies 1.1–1.4 tail lengths from the anus. The spicules measure 36–40 μ (along axis), the head is knobbed, distinctly wider than the following part. In spite of all these characteristics, the identity of these specimens is not wholly sure, because the lip region is not offset by constriction; it is low, continuous, composed of two annules, the anterior one narrower than the second (cf. Allen & Noffsinger, 1968).

Samples 2, 4, 64 and 65.

Anaplectus porosus Allen & Noffsinger, 1968.

Dimensions:

Females (n = 5): L = 1.17–1.46 mm; a = 22–30; b = 4.9–5.3; c = 14–16; $V = {}^{15-18}49-51^{16-18}$.

Males (n = 2): L = 1.14–1.22 mm; a = 29; b = 4.9–5.2; c = 14.

Length of tail equal to 2.5–3.3 anal body widths in the female, 2.4 in the male. One male with four, the other with five supplements; distances from anus 0.1 – 0.4 – 1.0 – 1.7 and 0.1 – 0.5 – 1.0– 1.2 – 1.9 tail lengths, respectively. Length of spicules along axis 48–50 μ. Shape of spicules and gubernaculum as described by Allen & Noffsinger. Number of median cervical pores rather variable: in the females there are 4–10 dorsal and 4–9 ventral pores; in the males 9 dorsal and 5–7 ventral ones.

Samples 53 and 60.

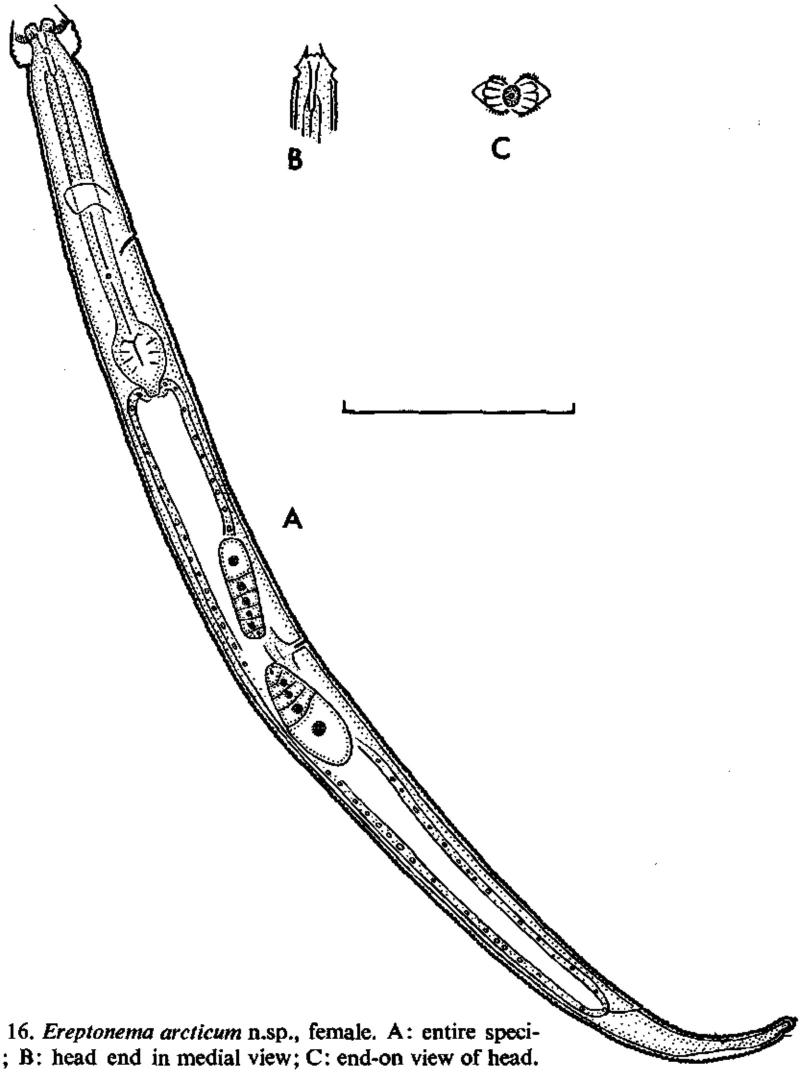


FIG. 16. *Ereptonema arcticum* n.sp., female. A: entire specimen; B: head end in medial view; C: end-on view of head.

Ereptonema arcticum n.sp. (Fig. 16).
Dimensions of 44 females: L = 0.28–0.34 mm; a = 16–18; b = 3.4–3.8; c = 7.0–8.9; $V = {}^{7-15}48-53^{6-10}$.

Female, holotype: L = 0.30 mm; a = 16; b = 3.7; c = 8.1; $V = {}^{11}50^{10}$.

Male not found.

Body straight in death except the tail being curved to ventral side. Anteriorly the body is subcylindroid till the anterior third of the neck, then convex to just anterior to the base of the cervical expansions; anterior to this point the outline of the inner tissues becomes concave. Transverse striae very fine, 0.8 μ apart, except on the ventral side of the tail where they are 1.2 μ apart .Lateral field with two distinct longitudinal lines. The structure of the cephalic ornamentations appears much similar to that of *E. fimbriatum* Anderson, 1966, but the fringe along the anterior margins is shorter and the expansions bear cornua much longer than the fringe. Cuticular expansions with coarse annulation. Stoma expanded somewhat anteriorly, but not globular. Depth of stoma 11 μ. Amphids round, 1.5 μ in diameter, located anterior to the base of the expansions. Isthmus of oesophagus as thick as corpus. The nerve ring surrounds the oesophagus just before its middle. Deirids conspicuous, behind nerve ring. Tail 3.6–4.6 anal body diameters long; its cuticle thickened dorsally as in *E. fimbriatum*. A pair of subventral setae halfway the tail, a subdorsal pair just before the terminus.

Holotype: Female on slide WT 1144. Paratypes: 31 females (three with end-on view of head) on slides WT 1145–1164; nine females deposited with Dr. A. Morgan Golden, Beltsville, Maryland, U.S.A.; six females with Dr. R. V. Anderson, Ottawa, Canada.

Type habitat and locality: Sample 70; the species is dominant here. Found also in samples 16, 17, 19, 21, 34, 53, 54, 55, 60, 62, 65 and 69.

This species is close to *E. fimbriatum*, the only other species of the genus. It differs by the cornua protruding distinctly beyond the fringe, by the shorter fringe, by the shape of the anterior part of the mouth cavity and by the presence of only two pairs of caudal setae (four in *E. fimbriatum*).

Rhabdolaimus terrestris de Man, 1880.
Dimensions of nine females: L = 0.34–0.40 mm; a = 24–37; b = 5.3–5.7; c = 2.4–3.0; V = $^{6-9}37\text{–}41^{6-11}$.

Amphids invisible. Stoma tubular. Cuticle with fine transverse striae. Details of gonads not visible. Two intra-uterine eggs measure 40–59 × 10–11 μ. Spinneret tube 6–10 μ long. These specimens differ from those described by Goodey (1951) in being smaller and slenderer, in having a shorter oesophagus and a longer tail, viz. 11–20 anal body widths against 9.5. The vulva lies more anterior, but its position falls within the range given by W. Schneider (1939).

Samples 61, 62 and 66.

Family Cyatholaimidae

Odontolaimus chlorurus de Man, 1880.

One female. Dimensions: L = 0.67 mm; a = 34; b = 5.3; c = 4.5; V = $^{13}49^{18}$. Cuticle with distinct transverse striae 1.2 μ apart. Head rounded. Amphids crypto-spiral, 3.6 μ in diameter or one-third of corresponding body width; located 15 μ or 1.5 head width from anterior end. Vulva inconspicuous; gonads paired, each with a full-grown oocyte. Tail length equal to 12 anal body widths; the tail does not show the typical colour which gave the species its name. A ventral seta 4 μ long at 10 μ behind the anus.

Sample 61.

Achromadora cf. *semiarmata* Altherr, 1952 (Fig. 17, A–B).
Dimensions of seven females: L = 0.38–0.51 mm; a = 23–26; b = 5.2–6.0; c = 5.5–8.2; V = 42–45.

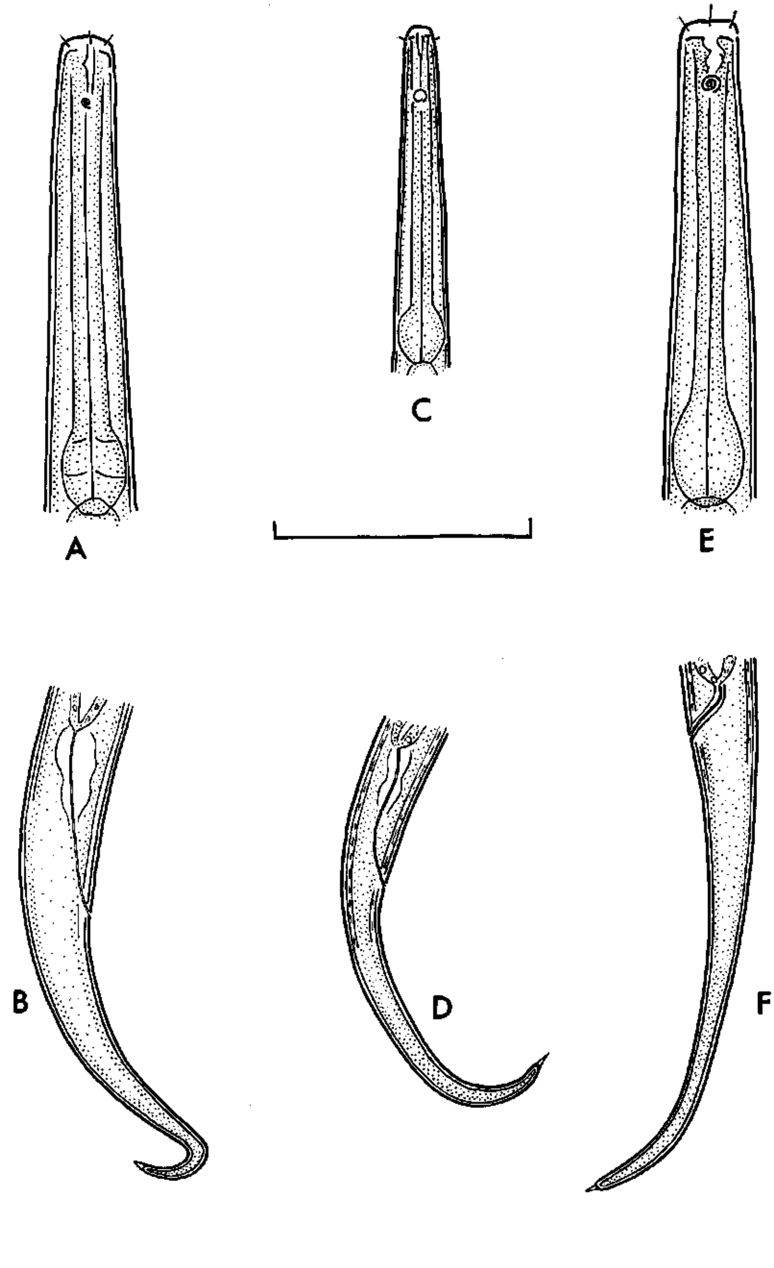


FIG. 17. A-B: *Achromadora semiarmata* Altherr, female. A: neck region; B: tail. C-D: *A.tenax* (de Man), female. C: neck region; D: tail. E-F: *A.ruricola* (de Man), female. E: neck region; F: tail.

These specimens differ from Altherr's description in that the rectum measures three instead of two anal body diameters. From *A. ruricola* (de Man, 1880), which they resemble in general dimensions and in the structure of the mouth cavity, they differ by the amphids containing 1.5 convolution against 2.5; by the long rectum, the anterior half of which is strongly inflated, the lumen remaining distinct; shorter cephalic setae; and by the tail being bent laterad or laterodorsad in its distal part. (Cf. Fig. 17, E–F).

Samples 1, 27, 28, 33, 34, 37, 66 and 68.

Achromadora tenax (de Man, 1876) Micoletzky, 1925 (Fig. 17, C–D).
Dimensions of 15 females: $L = 0.38-0.42$ mm; $a = 23-27$; $b = 5.7-6.3$; $c = 6.1-7.3$; $V = 46-48$.

Head end more rounded, less obviously truncated than in most other species of this genus. Mouth cavity weakly sclerotized, its details indistinct. Amphids rather inconspicuous, spiral; located about 14 μ (more than two head widths) from anterior end. Cuticular annulation resolvable into dots. Terminal bulb of oesophagus strongly developed. Vulva lips somewhat protruding. Cephalic setae very short and inconspicuous, directed almost laterad. Tail bent strongly ventrad, often 180°; its length equal to 5.5–7.3 anal body widths. Rectum 2.3–3.1 anal body widths long, its anterior half strongly inflated. Spinneret tube tapering, about 2 μ long.

Samples 3, 7, 8, 10, 21, 26, 27, 29, 30, 31, 32, 37, 38, 40, 41, 55, 62, 66 and 69.

Generally *A. tenax* is regarded a synonym of *A. dubia* (Bütschli, 1873). However, the identity of the latter is wholly uncertain, because the original description is totally inadequate. Bütschli did not give any dimensions; he only gave an illustration of the head end, showing a transversely oval amphid with central spot; and rather long cephalic setae, directed obliquely anteriad. Transverse striation of cuticle strongly developed. I regard this species as *species dubia.* Micoletzky's redescription (1925) states that the mouth cavity possesses three teeth, the amphids are apparently round, but really spiral. Cephalic setae short and fragile. It is better to call this species by the next available synonym, *tenax* (de Man, 1876). The Spitzbergen specimens conform rather well to de Man's description except that the head end is less truncate.

Family Monhysteridae

Monhystera villosa Bütschli, 1873.
Dimensions of eleven females: $L = 0.78-1.18$ mm; $a = 38-51$; $b = 4.5-5.7$; $c = 6.5-7.8$; $V = {}^{29-37}78-81$.

All specimens possess long submedian body setae and thus belong to the typical form. These setae reach a length of 7 μ in mid-body, or nearly one-third of the corresponding body width. The head end bears six distinct lips. The cephalic setae, directed anteriad, measure 2.5 μ; the longer subcephalic setae 10 μ or 0.8 head widths; the shorter subcephalic ones are 6 μ long. Diameter of amphids 4–6 μ or one-third of corresponding body width. The distance from the amphids to the head end is 21–28 μ or 1.5–1.9 head widths. The posterior third of the oesophagus is sligthly thicker than the remainder. The rectum is two anal body widths long, the anterior half is inflated. Bütschli (1873) and de Man, (1921, illustration) already noted the long rectum. The anal lips are slightly protruding, rounded. The tail measures 8–10 anal body widths. The vaginal walls are thickened. Oocytes in single row. The vulva-anus distance is 35–42% of tail length.

Samples 1, 3, 4, 21 and 27.

Monhystera cf. *dispar* Bastian, 1865.

Two females. Dimensions: L = 0.57–0.61 mm; a = 22–25; b = 5.2–5.9; c = 5.6–5.9; V = $^{33-36}$59–60.

The amphids measure 2.5 μ or 20–25% of the corresponding body diameter; they are located 1.6–2.0 head widths from the anterior end. Cephalic setae very short. Width of head slightly more than one-third of body width at base of oesophagus. The head is devoid of lips. The oesophagus is widened slightly distally. The tail measures 5.8–6.5 anal body widths; it is conoid in the anterior half, cylindroid in the posterior. Anus and vulva inconspicuous, the lips not protruding. Rectum two-thirds of anal body width. Vulva-anus distance equal to 121–142% of tail length. In the anterior part of the gonad the oocytes are arranged into multiple rows. The identity of these specimens is not quite certain: the head is not conspicuously broad, the amphids lie too far backward. Amphid size is controversial in this species: 13% of corresponding body width after de Man (1884), 40–50% after Wieser (1956).

Sample 22.

Monhystera stagnalis Bastian, 1865.

Two females. Dimensions: L = 1.14–1.24 mm; a = 28; b = 5.1–5.5; c = 5.3–5.7; V = $^{32-33}$60–62.

Body stout, tapering hardly anteriorly, the head end very broadly truncate. Cuticle smooth. Length of subcephalic setae 6–7 μ or not quite one-third of corresponding body width. Body diameter at base of oesophagus 1.5 × width of lip region. Head end without distinct lips. Body with four rows of submedian setae measuring about one-sixth of body width. Diameter of amphids 6 μ; they are slightly wider than long and located 24 μ or 0.9 head width behind the anterior end. Oesophagus very thick, the posterior part slightly expanded, though not bulbiform; the posterior part filled with large branched glands. Width of amphids equal to one-quarter of corresponding body width. Distance from vulva to anus equal to 100–125% of tail length. Tail 8–9 anal body widths long, tapering in anterior half, cylindroid in posterior. Rectum measuring about 90% of anal body width, Spinneret present. Vulva lips somewhat protruding; body contracted ventrally behind vulva. Oocytes arranged into multiple rows anteriorly.

Sample 5.

Monhystera vulgaris de Man, 1880.

Many representatives were found of the *filiformis-vulgaris* complex. These two species are difficult to separate; Wieser in his list of species (1956) does not mention *M. vulgaris*; Micoletzky (1925) suggests that these species may be variants of a single species. The Spitzbergen material falls into two groups. The first has the amphids 1.0–1.6 head widths from the anterior body end and is here regarded as *M. vulgaris*. Dimensions of 23 females: L = 0.33–0.64 mm; a = 19–27; b = 4.7–6.9; c = 3.4–4.3; V = $^{23-33}$56–61. Diameter of amphids 2.0–2.5 μ or 18–20% of the corresponding body width. The tail measures 8–10 anal body diameters. Vulva-anus distance is 48–65% of tail length. Dimensions of two intra-uterine eggs: 38–42 × 14–16 μ.

Samples 5, 8, 27 and 65.

Monhystera filiformis Bütschli, 1873.

The second group of specimens has the amphids 1.4–2.7 head widths from the anterior end and is here regarded *M. filiformis*. Dimensions of 14 females: L = 0.29–0.50 mm; a = 27–37; b = 4.1–5.4; c = 3.5–4.7; V = $^{14-21}$52–59. Diameter of amphids 1.2–2.5 μ or 25–40% of corresponding body width. This form is slenderer than *M. vulgaris*. Length of tail equal to 9–14 anal body widths. The vulva-anus distance is 59–91% of tail length. The oesophagus in this form is relatively longer; the vulva on the average lies more anterior, contrary to the findings of Micoletzky (1914). A difference in development of lips between *vulgaris* and *filiformis* could not be observed.

Samples 16, 24, 26, 30, 31, 33, 34, 57, 60, 61, 65 and 66.

Monhystera spec.

One female. Dimensions: L = 0.37 mm; a = 44; b = 4.4; c = 3.7; V = ^{17}56. This female also stands close to the *filiformis-vulgaris* group, but differs chiefly by its very slender body. The amphids measure 2 μ or 27% of corresponding body width; they lie 2.4 head widths from the anterior end. The vulva-anus distance is 64% of tail length. The tail measures 17 anal body widths. It was not possible to identify this specimen with any described species; the position of the amphids might point to *M. similis* Bütschli, 1873. Sample 23.

Family Onchulidae

Prismatolaimus dolichurus de Man, 1880.

Dimensions of 20 females: L = 1.03–1.31 mm; a = 42–56; b = 4.1–5.1; c = 2.7–3.0; V = $^{5-9}$41–44$^{3-7}$.

Cuticular annulation broad, 1.8 μ on middle of body, but shallow and mostly indistinct; the cuticle may even appear smooth over large stretches of the body. Amphids opening through transverse slits 4 μ long, located at 32–38 μ or 2.5–3.0 head widths from the anterior end. Mouth cavity 11–15 μ deep. Length of the longer cephalic setae 8–11 μ. Cardia very large. Vulva inconspicuous, vagina with sclerotization resembling that of *Trichodorus primitivus*. Dimensions of an intra-uterine egg: 75 × 19 μ. Gonads paired, opposed. I never found developing eggs in both gonads simultaneously; usually the gonad containing one is larger and more distinct than the other; thus the gonads are in most

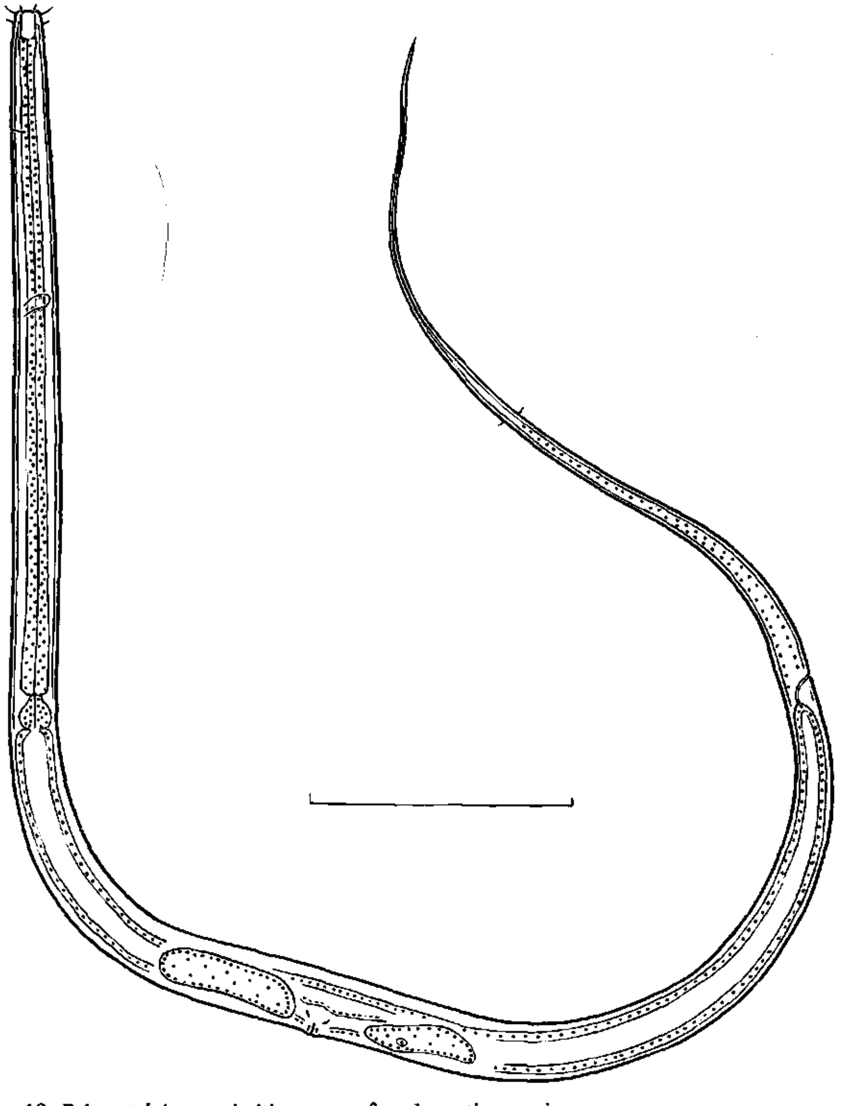


FIG. 18. *Prismatolaimus primitivus* n.sp., female, entire specimen.

specimens asymmetrically developed. Vulva a transverse slit. Tail measuring 22–29 anal body widths, with spinneret tube 1.2 μ long. Scattered submedian setae are present all over the body.

Very numerous and dominant in sample 36. Found also in samples 7, 8, 11, 21, 31, 37, 41, 57/58 and 69.

Prismatolaimus intermedius (Bütschli, 1873) de Man, 1880.

Dimensions of 20 females: L = 0.48–0.84 mm; a = 42–54; b = 3.4–4.1; c = 3.0–3.8; $V = {}^{9-18}52\text{–}58^{1-4}$.

Two females with exceptionally long tails (c = 2.5–2.8) had the vulva anterior to middle (46–49 %). In this species the body annulation is usually coarser than in the preceding one, and more distinct. Contrary to older statements (de Man, Micoletzky and others) this species has also ten cephalic setae. Depth of mouth cavity 7–12 μ. The amphids open at 24–33 μ from the anterior end. Length of cephalic setae 5–6 μ. The rudimentary posterior gonad varies in length from 8–32 μ. Dimensions of an intra-uterine egg: 53 × 14 μ. Tail length 16–28 anal body width. This species is very variable in size. Small specimens can be distinguished from *P. parvus* Milne, 1963 by the absence of the peculiar annulation on the tail characteristic for the latter species.

Samples 1, 3, 5, 6, 21, 26, 27, 28, 29, 38, 44, 52, 55, 64, 66 and 68.

Prismatolaimus primitivus n.sp. (Fig. 18).

Dimensions:

Females (n = 5): L = 0.51–0.74 mm; a = 42–51; b = 3.6–4.4; c = 3.0–4.0; $V = {}^{4-9}43\text{–}44^{6-9}$.

Female, holotype: L = 0.53 mm; a = 46; b = 3.9; c = 3.3; $V = {}^{7}43^{6}$.

Cuticular annulation not very conspicuous, best visible on the proximal part of the tail. Width of head at level of middle of stoma 6–7 μ. Body width at base of oesophagus 1.4–1.6 × width of head. The amphids open through a transverse slit located 23–28 μ or 3.3–3.8 head widths from the anterior end. Buccal cavity 7 μ deep, slightly more than twice as deep as wide. Around the vestibule there are six cephalic setae measuring 3.0–3.6 μ. Four slender subcephalic setae are placed distinctly behind the cephalic ones (2 μ behind them, at level of middle of stoma). Vulva transverse, inconspicuous. Gonads paired, opposed, generally asymmetrically developed. Dimensions of two itra-uterine eggs: 48 × 10 μ and 74 × 13 μ. Length of tail equal to 15–25 anal body widths.

Holotype: Female on slide WT 1165. Paratypes: Four females on slides WT 1166–1168.

Type habitat and locality: Sample 8. Found also in samples 9, 34 and 41.

This species is conspicuous for the position of the four subcephalic setae, which have not jointed the six cephalic ones to form a circle of ten, and thus show a primitive arrangement. In other respects it is a minor edition of *P. dolichurus*.

Prismatolaimus stenolaimoides n.sp. (Fig. 19).

Dimensions:

Females (n = 4): L = 0.37–0.39 mm; a = 32–41; b = 3.8–4.1; c = 3.3–3.5; $V = {}^{6-12}44\text{–}46^{5-7}$.

Female, holotype: L = 0.37 mm; a = 39; b = 3.8; c = 3.3; $V = {}^{6}46^{7}$.

Buccal cavity 4 μ long, 1.2 μ wide, relatively very narrow. Head end somewhat rounded; width of head 5 μ. Amphids opening 20 μ behind the head end.

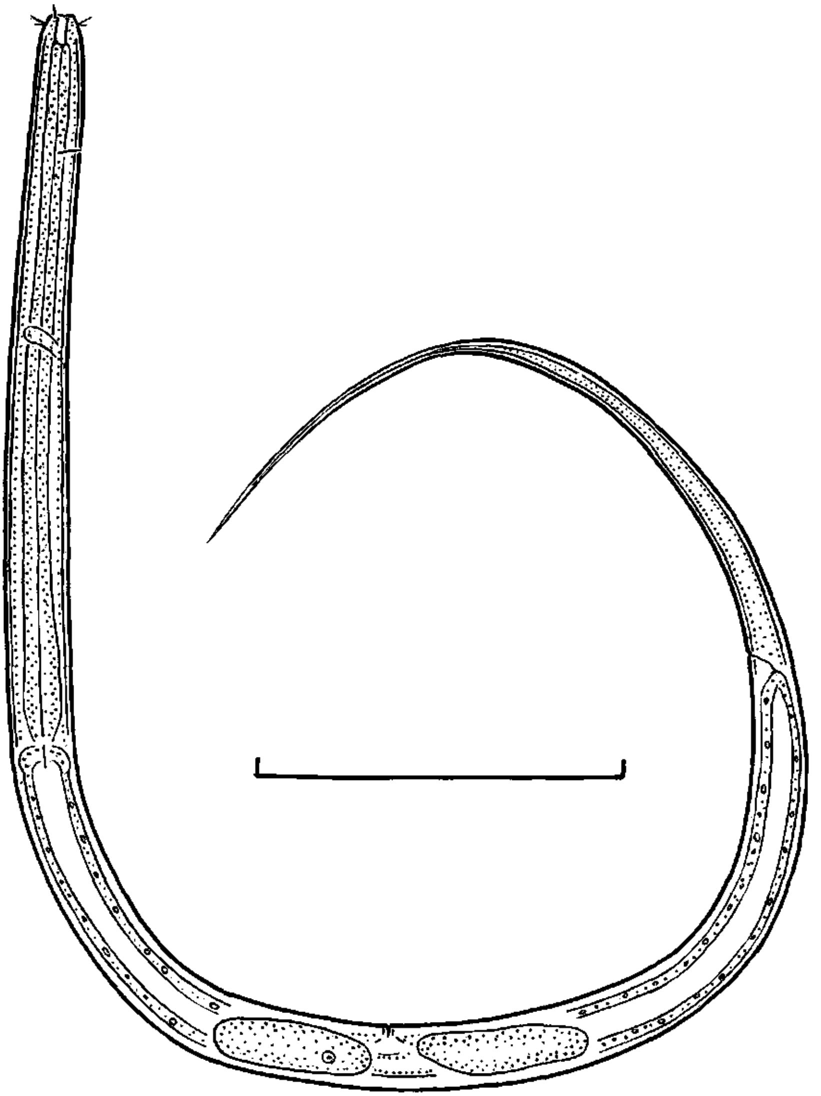


FIG. 19. *Prismatolaimus stenolaimoides* n.sp., female, entire specimen.

Cephalic setae arranged into a circle of ten; about 4 μ long. Gonads paired, opposed, usually asymmetrical. Tail length equal to 15–18 anal body widths.

Holotype: Female on slide WT 1169. Paratypes: Three females on slides WT 1170–1171.

Type habitat and locality: Sample 34.

This species shares the very narrow mouth cavity with *P. stenolaimus* de Man, 1921. This species is insufficiently known, because de Man did not give any indications about vulva position or number of gonads. *P. stenolaimus* is much longer (0.67 mm) and slenderer (a = 70), with relatively shorter oesophagus (b = 4.5–4.6) and longer tail (c = 2.5–2.75).

Family Alaimidae

Alaimus parvus Thorne, 1939.

Dimensions of five females: L = 0.51–0.57 mm; a = 30–44; b = 3.5–4.1; c = 8.3–8.8; V = $41–45^{12-20}$.

Length of tail equal to 7–8 anal body widths. Tail curved strongly to ventral side; terminus narrowly rounded.

Samples 26 and 27.

Alaimus depressus n.sp. (Fig. 20).

Dimensions:

Female, holotype: L = 0.86 mm; a = 44; b = 3.9; c = 12; V = 43^{16}.

Female, paratype: L = 0.94 mm; a = 46; b = 4.3; c = 13; V = 43^{13}.

Body coiled into spiral shape in death. Excretory pore 11 μ from head end. Amphidial sensillae located 51–56 μ behind head end, or 65–70% of the distance from head end to nerve ring. Cuticle smooth, 1 μ thick. Oesophagus widened in posterior seventh. The nerve ring surrounds the oesophagus at 36–37% of its length from head end. Gonad single, posterior. Vagina perpendicular to body axis. The outstanding feature of this species is the peculiar depression of the ventral cuticle immediately behind the vulva. Tail 7 anal body widths long, curved ventrad, terminus subdigitate. Walls of rectum heavily cuticularized.

Holotype: Female on slide WT 1219. Paratype: One female (broken) on slide WT 1220.

Type habitat and locality: Sample 63.

Alaimus arcuatus Thorne, 1939.

One female. Dimensions: L = 1.02 mm; a = 35; b = 4.9; c = 18; V = 38^{21}. Tail length equal to four anal body widths; anus very indistinct. Tail tapering strongly over the proximal two-thirds; distal part curved strongly to ventral side; terminus narrowly rounded. Body tapering markedly from middle to both ends. An intra-uterine egg measures 76 × 28 μ.

Sample 26.

Family Tripylidae

Tripyla papillata Bütschli, 1873.

Two females and two juveniles. Dimensions of females: L = 1.87–1.98 mm; a = 36–39; b = 6.5–6.6; c = 6.7–7.3; V = $^{11-13}55–56^{14-16}$.

Width of annules in mid-body 3.0–3.6 μ. Amphid aperture 6 μ or nearly one-quarter of corresponding body width, located 13–15 μ from head end, well anterior to the dorsal tooth which lies 21–22 μ or 0.8 head widths from the head end. Cardia large, globoid. Vagina slightly less than one-half the corresponding body diameter deep, strongly sclerotized. Length of rectum 0.9 anal body widths,

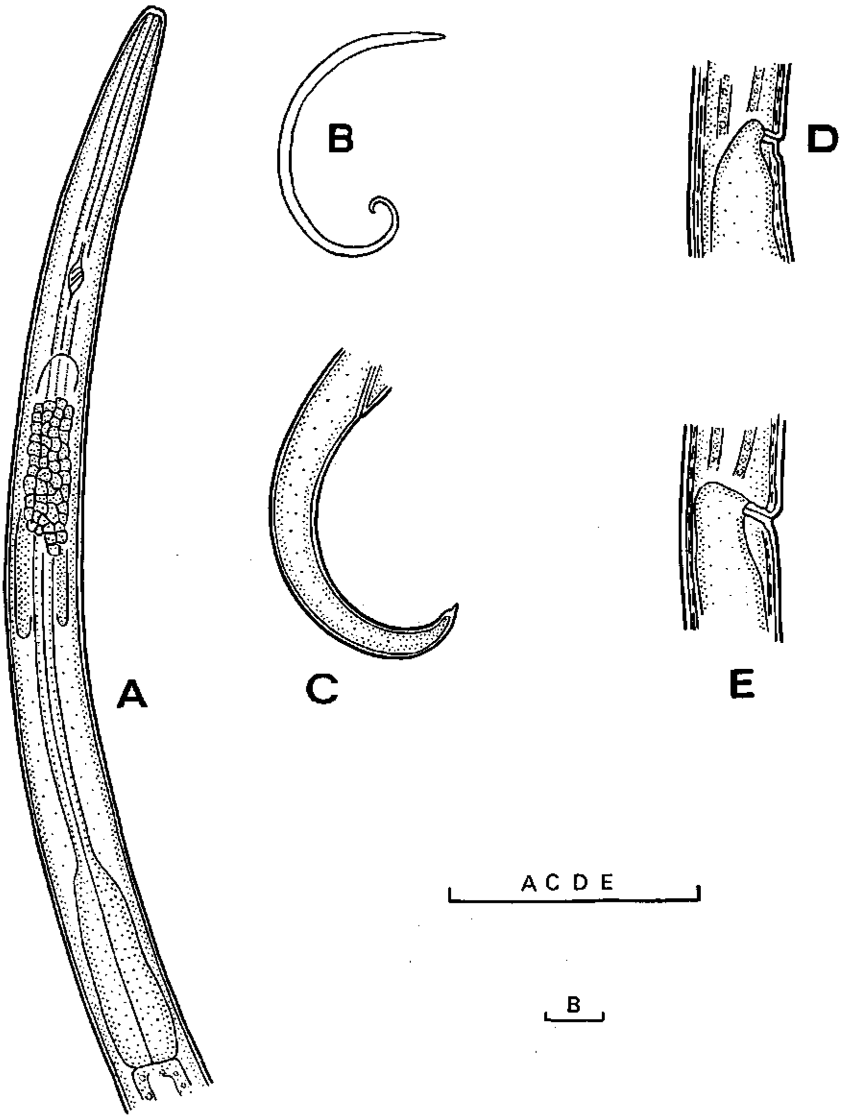


FIG. 20. *Alaimus depressus* n.sp., female. A: neck region; B: entire specimen; C: tail: D-E: vulva.

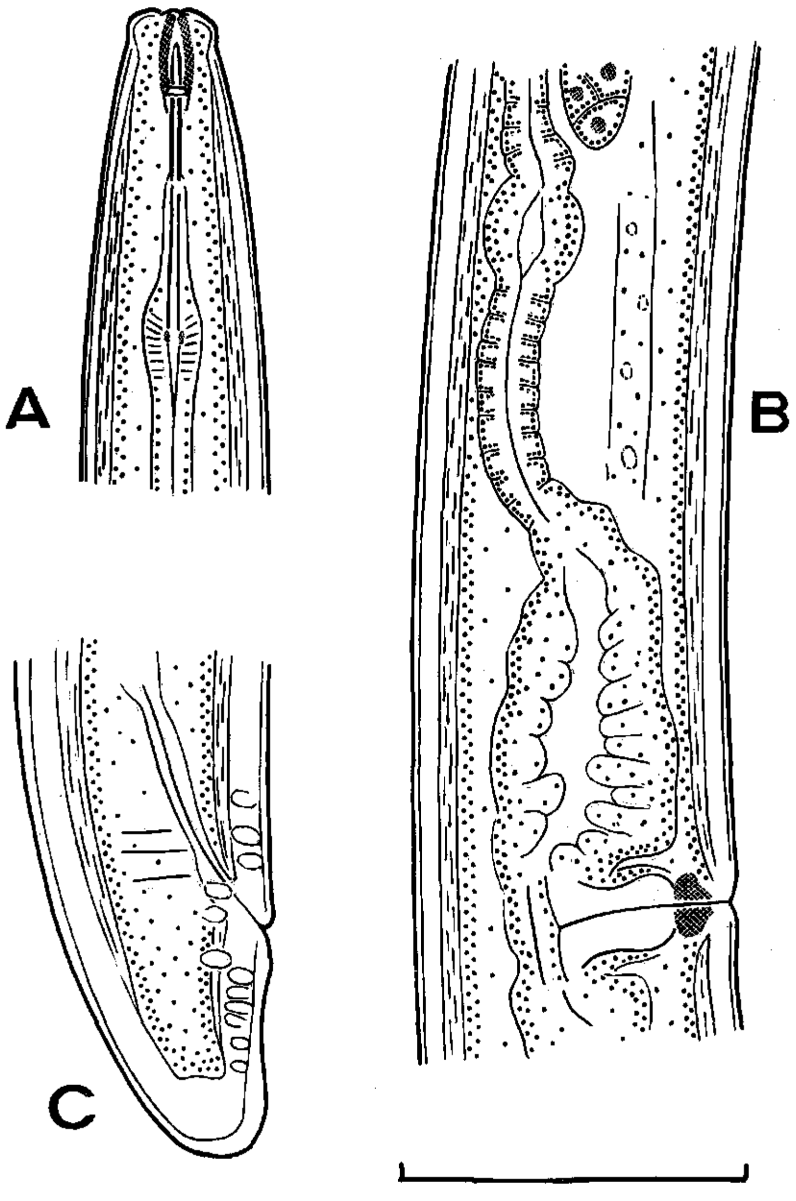


FIG. 21. *Enchodelus conicaudatus* (Ditlevsen), female. A: head end; B: part of reproductive system; C: tail.

of tail 7.4–8.9. The papillae of the second circle are slightly larger than in the specimens from de Man's collection (Loof, 1961).

Sample 5.

Family Dorylaimidae (*sensu lato*)

Enchodelus conicaudatus (Ditlevsen, 1927) Thorne, 1939 (Fig. 21; Diagram 1).

Dimensions:

Females (n = 6): L = 1.80–2.15 mm: a = 33–42; b = 6.0–7.8; c = 52–67; V = $^{14-17}41–47^{15-20}$.

Fourth—stage juveniles (n = 5): L = 1.33–1.55 mm; a = 33–35; b = 6.5–7.3; c = 43–58; V = 43–48.

One female has V = 53.

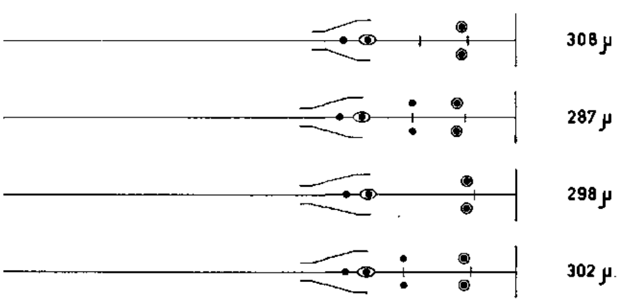
Lip region offset by depression. Cuticle 4 μ thick, increasing to 6 μ on tail. Outer layer sharply demarcated. Lateral chord one-fourth to one-fifth of body width in mid-body. Length of odontostyle 18–19 μ in adults; the L–4 have an odontostyle of 15–17 μ and a spare one of 18–19 μ. Posterior portion of spear 24 μ long in adults. Oesophagus anteriorly with distinct, somewhat muscular swelling.

Oesophageal characters (four females). The oesophagus begins to widen at 59–61 % and attains its full width at 68–69 % of its length from head end. DO lies a short distance anterior to the latter level, the distance DO–DN is 12–14 μ. S_1N rather indistinct, located about halfway between DN and S_2N; the S_2N are well developed. Locations:

DO 65–67 %; S_1N 78–80 %; S_2N 89–91 %;
DN 70–71 %; S_1O 78–80 %; S_2O 90–92 %;
DO–DN 4.0–4.8 %;

Vulva transverse, vagina more than one-half body width deep, with distinct sclerotization. Uterus very spacious. Oviduct with distinct sphincter. No sperm. On the ventral side the tail contains 'saccate bodies' which may extend to one anal body width anterior to the anus. Tail 1.1–1.2 anal body widths long. Rectum 1.0–1.2 anal body widths long, prerectum two to three times as long as rectum. Body tapering markedly anteriorly, the diameter at the base of the

1. Enchodelus conicaudatus ♀



oesophagus being almost four times the width of the lip region. Dimensions of three intra-uterine eggs: 85–90 × 34–38 μ.

The specimens agree well with Ditlevsen's description. As he gives a body length of 2.0 mm and a tail length of 33 μ, the value of 'c' is 61, not 30 as stated in the text.

Females in samples 1,46 and 68; juveniles in samples 3, 7, 27, 29, 31, 34, 37, 39, 49, 52, 66 and 69.

Enchodelus analatus (Ditlevsen, 1927) Thorne, 1939 (Fig. 22; Diagram 2). Dimensions:

Females (n = 7): L = 1.11–1.44 mm; a = 20–26; b = 4.3–5.2; c = 40–44; V = $^{18-23}47-57^{15-25}$.

Fourth-stage juveniles (n = 3): L = 0.93–1.13 mm; a = 21–26; b = 4.1–5.1; c = 36–39; V = 50–52.

Body much stouter than in the preceding species, which it much resembles in other respects. Lip region offset by depression, walls of stomatal cavity very thick. Length of adult odontostyle 30–34 μ, of basal portion 42–46 μ; the L–4 has an odontostyle length of 20–22 μ, and a spare odontostyle of 30–32 μ. Basal part of spear sclerotized, but not flanged.

Oesophageal characters (three females): The oesophagus begins to widen at 66–67 %, very abruptly, and attains its full width at 70–73 % of its length from head end; the posterior part is very wide. DO lies at, or slightly anterior to, the latter level, the distance DO–DN is 12–13 μ. Both S_1N extremely indistinct, located about halfway between DN and S_2N; the S_1O are also less conspicuous than in most other dorylaims. The S_2N are well developed. Locations:

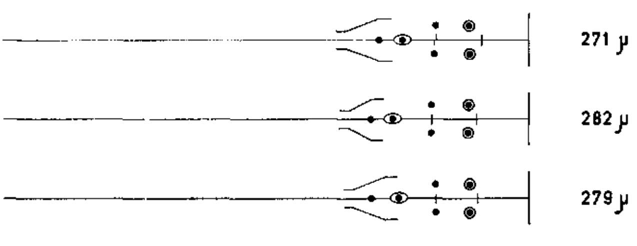
DO 70–71 %;	S_1N 82–83 %;	S_2N 88–89 %;
DN 74–76 %;	S_1O 82–83 %;	S_2O 90–91 %;
DO–DN 4.2–4.9 %;		

Vulva transverse, vagina one-half body width deep. Oviduct long, with distinct sphincter. No sperm. Dimensions of three intra-uterine eggs: 54–89 × 33–34 μ. Tail broadly convex-conoid, with saccate bodies ventrally; its length 0.8–1.1 anal body widths. Rectum 1.0–1.3 anal body widths, prerectum two to four times as long as rectum.

Samples 17, 19, 21, 25, 28, 29, 33, 34, 36, 63, 68 and 69.

These specimens differ from Ditlevsen's description in being smaller (against

2. Enchodelus analatus ♀



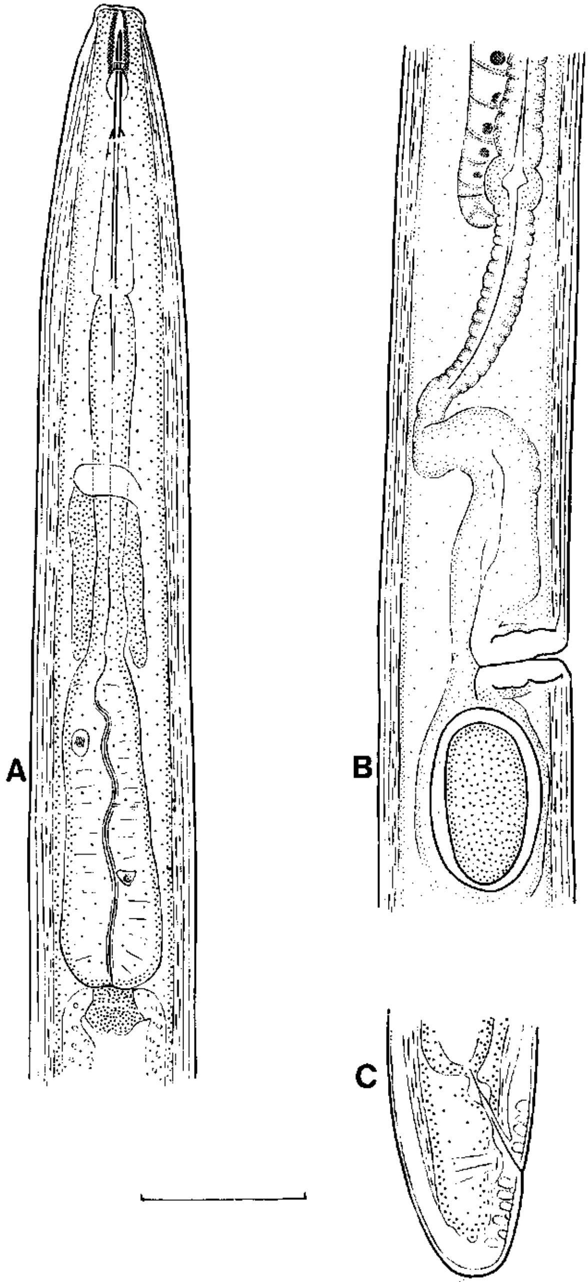


FIG. 22. *Enchodelus analatus* (Ditlevsen), female. A: neck region; B: part of reproductive system; C: tail.

1.8 mm) and having a relatively longer tail (c = 55). Ditlevsen did not mention the saccate bodies in the tail, but neither did he in the description of *E. conicaudatus*, so this does not amount to much. The shorter spear and more posterior vulva distinguish this species from *E. macrodorus* (de Man, 1880); the smaller body (against 2.5 mm), posterior vulva and non-flanged basal part of the spear from *E. groenlandicus* (Ditlevsen, 1927).

Enchodelus parvus n.sp. (Fig. 23; Diagram 3).

Dimensions:

Females (n = 5): L = 0.59–0.79 mm; a = 18–22; b = 3.9–4.7; c = 37–45; V = $^{12-17}52-54^{14-19}$.

Female, holotype: L = 0.70 mm; a = 22; b = 4.0; c = 41; V = $^{16}54^{15}$.

Body curved ventrad about 90° in death. Cuticle consisting of two sharply demarcated layers of equal thickness; total thickness 1.5 μ, increasing to 2 μ in neck region and to 3.5 μ (chiefly through thickening of the inner layer) on the tail. Outer layer with fine but distinct transverse striation. Lateral chord one-quarter of body width. Lip region slightly offset by a shallow constriction: lips somewhat separate, the papillae protruding slightly. Walls of buccal cavity not conspicuously thick. Length of odontostyle 8–10 μ, of basal portion 9–11 μ; aperture short. Length of odontostyle about equal to width of lip region. Basal portion linear, weakly sclerotized. The nerve ring surrounds the oesophagus at 43% of its length from head end. Cardia small.

Oesophageal characters (one female): The oesophagus begins to widen at 66% and attains its full width at 74% of its length from head end, DO lies anterior to the latter level; the distance DO–DN is 7 μ. The S_1N are invisible, but the S_1O are distinct, located halfway between DN and S_2N. The latter are well developed. Locations:

DO 72%;	S_1O 82%;	S_2N 98%;
DN 76%;		S_2O 92%.
DO–DN 4.1%;		

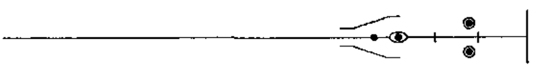
Vulva depressed, probably not quite transverse. Vagina slightly sclerotized, one-half body width deep. Gonads two, opposed, reflexed; uteri without sperm. A distinct sphincter is present. An intra-uterine egg measures 78 × 27 μ. Ovaries with few oocytes. Tail elongate-hemispheroid, as long as anal body width, with a few saccate bodies. Rectum as long as anal body width, prerectum about twice as long.

Holotype: Female on slide WT 1229; paratypes: Four females on slides WT 1230–1231.

Type habitat and locality: Sample 28. Paratypes also from samples 16 and 63.

This species resembles *E. vesuvianus* (Cobb, 1893), from which it differs by the longer tail, shorter odontostyle and posterior vulva.

3. Enchodelus parvus ♀



179 μ

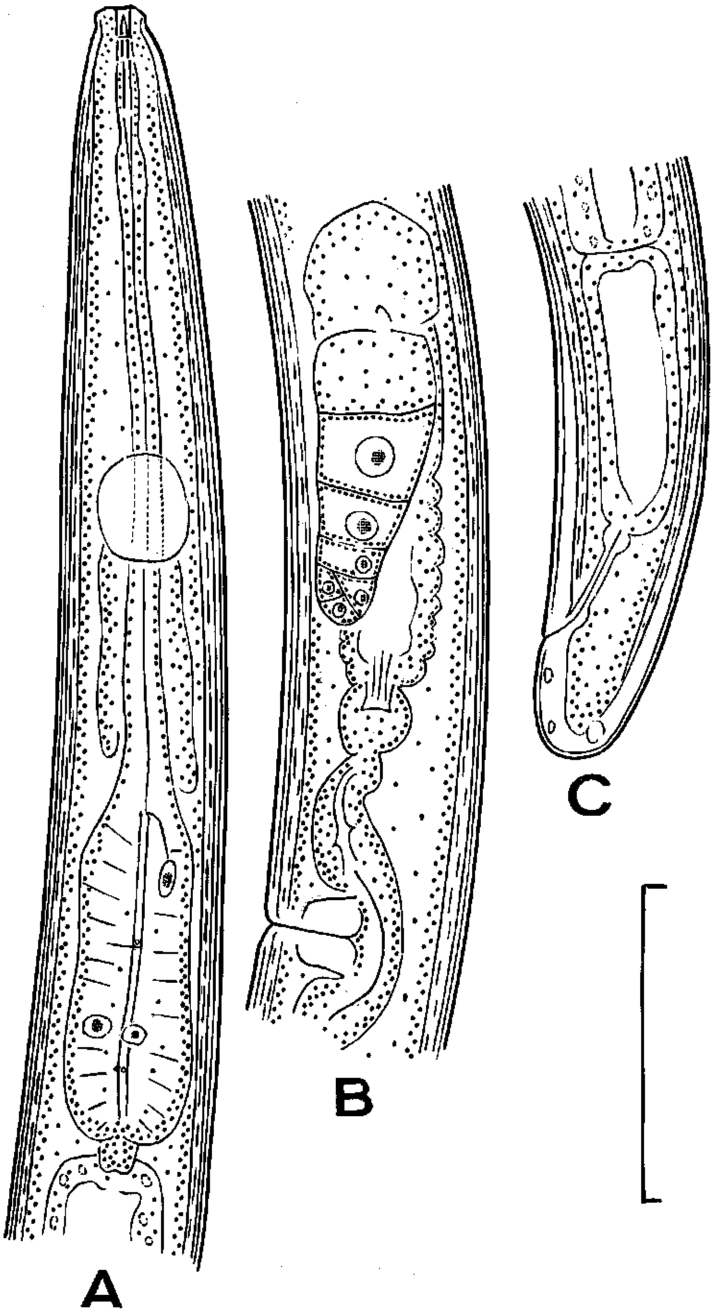


FIG. 23. *Enchodelus parvus* n.sp., female. A: neck region; B: part of reproductive system; C: tail.

Enchodelus macrodorus (de Man, 1880) Thorne, 1939.
One female. Dimensions: L = 2.00 mm; a = 28; b = 5.3; c = 69; V = $^{9}42^{10}$; odontostyle = 48 μ; basal portion = 55 μ.

Four moulting fourth-stage juveniles: L = 1.54–1.63 mm; a = 25–26; b = 5.0–5.3; c = 46–66; V = 42–44; odontostyle = 39–40 μ; spare odontostyle = 45–48 μ.

Female prerectum very long, 279 μ or five times rectum.

Sample 55.

Enchodelus cf. *macrodoroides* (Steiner, 1914) Thorne, 1939.
Dimensions:

Females (n = 3): L = 1.42–1.47 mm; a = 24–28; b = 5.2–5.6; c = 24–29; V = $^{20-21}49\text{–}53^{17-22}$; odontostyle = 23–24 μ; basal portion = 30–31 μ.

Odontostyle length equal to 1.6–1.8 × width of lip region. The latter is offset by a shallow constriction. Tail length equal to 1.8–2.0 anal body widths. Rectum as long as anal body width, prerectum about four times as long. Gonads with sperm. A male, still within the juvenile cuticle, has seven supplements.

Samples 17, 18, 26, 27, 34, 40 and 42.

E. macrodoroides is *species inquirenda* (Jairajpuri & Loof, 1968). The present specimens resemble the tropical species *E. constrictus* Jairajpuri & Loof, 1968, but apart from the improbability that this species should occur in the arctics, the higher supplement number makes me keep them apart from that species.

Eudorylaimus subjunctus n.sp. (Fig. 24; Diagram 4)
Dimensions:

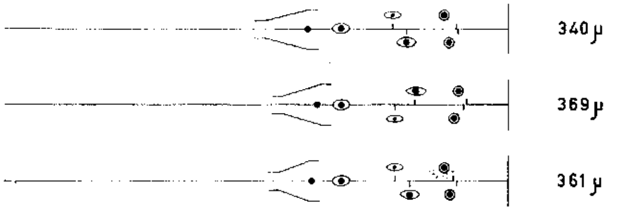
Females (n = 10): L = 1.01–1.19 mm; a = 26–28; b = 2.8–3.6; c = 21–25; V = $^{10-15}55\text{–}60^{10-14}$.

Female, holotype: L = 1.12 mm; a = 27; b = 3.1; c = 23; V = $^{11}58^{10}$.

Male unknown.

Body curved slightly in death, tail bent more strongly, to ventral side. Cuticle 2 μ thick, increasing to 3 μ on tail; distinctly layered, the outer layer with fine but distinct transverse striation. Lateral chord one-sixth of body width. Lip region offset by constriction, its width 40% of body diameter at base of oesophagus, its height 40% of its width; lips well developed, separate, somewhat

4. Eudorylaimus subjunctus ♀



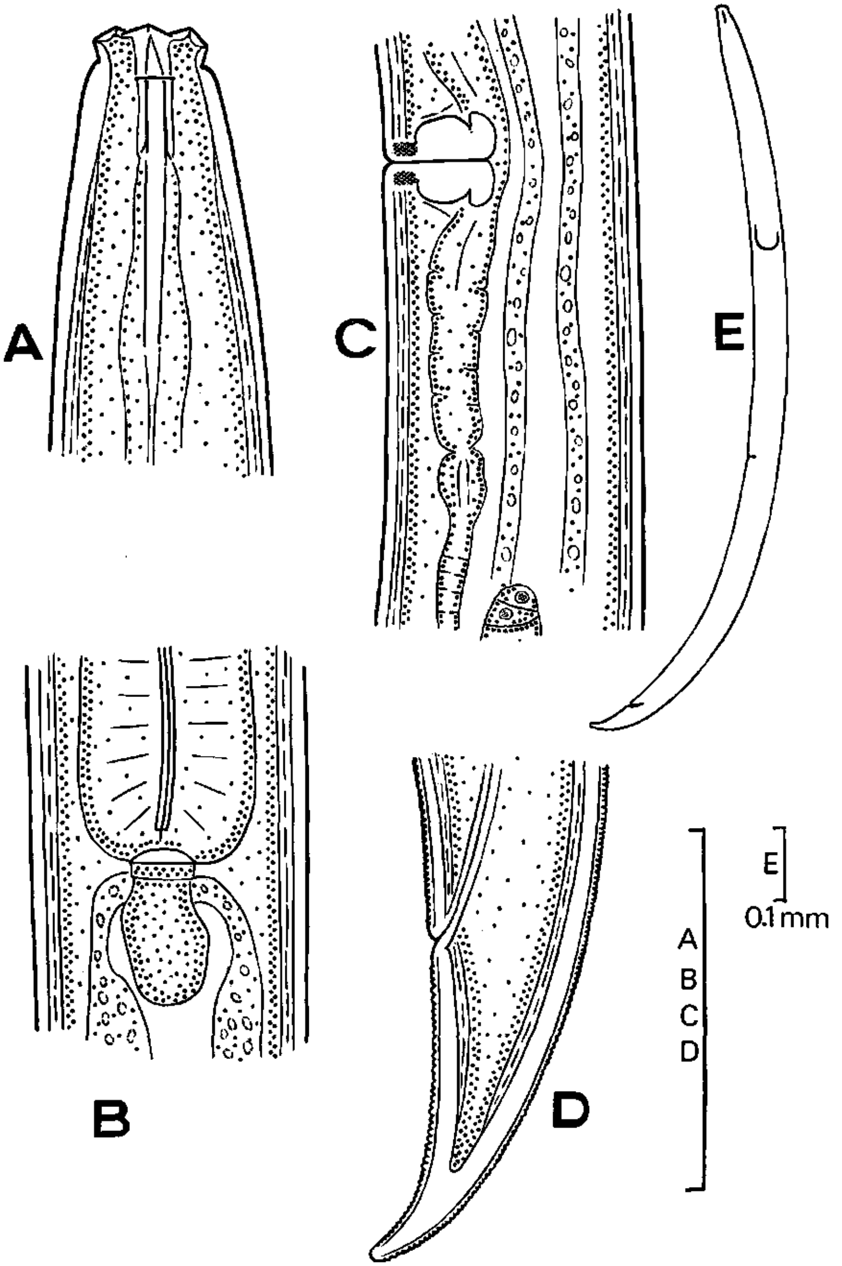


FIG. 24. *Eudorylaimus subjunctus* n.sp., female. A: head end; B: oesophagus base; C: vulva; D: tail; E: entire specimen.

angular, the papillae not protruding. Amphids half the corresponding body width. Odontostyle 15–18 μ long or 1.0–1.3 × width of lip region, the aperture occupying one-third of its length. Basal portion 24–26 μ long, linear. Guiding ring 'single'. The nerve ring surrounds the oesophagus at about two-fifths of its length from head end. Hemizonid not seen. Cardia bulky, ovoid, 25 μ long.

Oesophageal characters (three females): The oesophagus begins to widen at 52–55% and attains its full width at 60–63% of its length from head end. DO lies at the latter level, the distance DO–DN is 13–22 μ. The S_1N lie a small distance apart, far behind the middle of the distance DN–S_2N; the anterior one is smaller. The S_2N are well developed. DN measures 10 × 4 μ, nucleolus 3 μ; S_1N_1 4 × 1.5 μ, nucleolus 1 μ; S_1N_2 7 × 3 μ, nucleolus 2.5 μ; S_2N 5 μ, nucleolus 2.5 μ. Locations:

DO 61–62%;	S_1N_1 77%;	S_2N 88–90%;	K = 71–78;
DN 67%;	S_1N_2 78–82%;	S_2O 89–92%;	K' = 78–87.
DO–DN 4.4–6.4%;	dist. 0.8–3.8%;		

Vulva of the transverse type, vagina distinctly sclerotized, less than half body width deep. Gonads two, opposed, reflexed, with a distinct sphincter in the oviduct. No sperm. Tail conoid with blunt tip; slightly bent to ventral side, 2.1–2.4 anal body widths long. Rectum slightly longer than anal body diameter, prerectum 1.5–2.5 × as long as rectum.

Holotype: Female on slide WT 1172. Paratypes: Nine females on slides WT 1173–1179.

Type habitat and locality: Sample 64. Paratypes also from samples 34,37, 48 and 52. Found furthermore in samples 9, 10, 11, 42 and 46. The population from sample 9 has slightly different dimensions: it is slenderer and the vulva lies more anterior. Dimensions of three females: L = 1.10–1.30 mm; a = 29–37; b = 3.4–3.9; c = 25–35; V = $^{9-11}50-52^{9-12}$.

Through the blunt, conoid-arcuate tail this species resembles *E. junctus* (Thorne & Swanger, 1936) Andrássy, 1959. It differs from that species by the much shorter odontostyle (against 23 μ), longer aperture, post-equatorial vulva, and more distinct lips. From *E. santosi* (Meyl, 1957) it differs by the striated cuticle and blunt terminus, from *E. nodus* (Thorne & Swanger, 1936) by the well separate lips and more anteriorly expanded oesophagus; from *E. allgéni* (Andrássy, 1958), of which only the male is known, by the longer tail (T/ABW = 1 in *allgéni*).

Eudorylaimus circulifer Loof, 1961.

Syn. *Dorylaimus intermedius* apud Thorne & Swanger, 1936 nec de Man, 1880. Two females. Dimensions: L = 1.16–1.22 mm; a = 28–31; b = 4.0; c = 53–67; V = $^{10}47-49^{10-11}$. Length of odontostyle 11 μ or 0.9 × width of lip region; the aperture occupying almost one-half of its length. Lip region continuous. Tail hemispheroid, shorter than anal body width, with saccate bodies. Rectum as long as anal body width, prerectum 1.4 × as long. These specimens are smaller and stouter than those described by Thorne & Swanger. They differ from *E.*

paracirculifer Brzeski, 1962 by the shorter odontostyle with longer aperture, and by the presence of saccate bodies in the tail.
Sample 63.

Eudorylaimus agilis (de Man, 1880) Loof, 1969.
Syn. *Dorylaimus lugdunensis* apud Steiner, 1916 nec de Man, 1880.
Dimensions of four females: L = 1.38–1.56 mm; a = 28–32; b = 4.1–4.6; c = 11–15; V = $^{12-13}44-47^{10-13}$. Lip region offset by a deep constriction, lips well developed with conspicuously protruding papillae. Length of odontostyle 17 μ or 1.2 × width of lip region, the aperture occupying about two-fifths of its length. Distance DO–DN 4.8–5.0% of oesophagus length. Vulva longitudinal. Tail curved to ventral side, its length 3.6–5.0 anal body widths. Rectum 1.0–1.6 x anal body width, prerectum 1.3–2.4 × as long as rectum. This species is easily distinguished from *E. lugdunensis* (de Man, 1880) by its larger size and stouter body.
Samples 1, 29, 37 and 55.

Eudorylaimus lugdunensis (de Man, 1880) Andrássy, 1959.
Six females. Dimensions: L = 0.71–0.94 mm; a = 25–34; b = 3.7–4.3; c = 7.8–8.5; V = $^{7-10}44-47^{8-12}$. Body tapering but little anteriorly, the diameter at the base of the oesophagus being just over twice the width of the lip region. The latter is offset by constriction; lips well developed. Length of odontostyle = 9–11 μ. Oesophagus expanded distinctly behind its middle. Vulva transverse. Tail curved strongly to ventral side, over more than 180°; its length equal to 7–9 anal body widths. Rectum 1.0–1.5 anal body widths long, prerectum 1.5–3.5 × as long as rectum. The specimens agree very well to de Man's 1884 illustration. This species differs from *E. agilis* not only by its smaller size, but also by the shorter odontostyle which measures 0.9–1.1 lip region widths; by the body tapering much less anteriorly and by the much slenderer and more strongly curved tail.
Samples 1, 25, 27 and 61.

Eudorylaimus parvus (de Man, 1880) Andrássy, 1959.
Six females. Dimensions: L = 0.69–0.83 mm; a = 28–33; b = 3.5–3.8; c = 15–19; V = $^{9-11}53-57^{11-13}$; odontostyle = 11–12 μ.
One male: L = 1.00 mm; a = 32; b = 3.7; c = 27; VD = $^{15}41^{13}$; odontostyle = 13 μ; spicules = 32 μ; supplements = 4.
Lip region offset by a shallow constriction. Length of spear slightly more than width of lip region. Oesophagus expanded about halfway. Body diameter at base of oesophagus about 2.5 × width of lip region. Vulva transverse. Tail length 3.2–3.6 anal body widths in the female, 1.7 in the male. Rectum slightly longer than anal body width, prerectum in the female 1.5–2.0 × rectum.
Sample 17.

Eudorylaimus megodon n.sp. (Fig. 25; Diagram 5).

Dimensions:

Females (n = 4): L = 2.01–2.64 mm; a = 24–30; b = 3.9–4.0; c = 27–41; V = $^{6-11}45-51^{13-16}$.

Female, holotype: L = 2.64 mm; a = 25; b = 4.0; c = 34; V = $^{6}49^{16}$.

Male not found.

Body very robust, large, curved to ventral side, especially in the posterior part. Cuticle very thick: 7 μ in neck, 8 μ in mid-body, 10–12 μ on base of tail; with thin, sharply demarcated outer layer. About ten ventral and three dorsal pores in oesophageal region; two more ventral ones opposite anterior part of mid-gut. Lateral chords one-sixth of body diameter.

Lip region offset by a shallow constriction, its width about one-quarter of body diameter at base of oesophagus. Lips with amalgamated bases; the papillae of the inner circle protrude distinctly. Amphids nearly two-thirds of corresponding body width.

Odontostyle large and robust, 31–38 μ long; in five fourth-stage juveniles the adult odontostyle measures 28–39 μ. The length of the odontostyle is 1.2–1.7 × width of lip region. The aperture occupies about one-third of its length. Basal portion linear, 48–63 μ long. Guiding ring 'single'.

Oesophageal characters (one female): The oesophagus begins to widen at 47% and attains its full width at 59% of its length from head end. DO lies about the latter level, the distance DO–DN is 30 μ. The S_1N lie a small distance apart, distinctly behind the middle of the distance DN–S_2N; both are distinct, the anterior one somewhat smaller. S_2N well developed. Locations:

DO 59%;	S_1N_1 77%;	S_2N 88%;	K = 85;
DN 63%;	S_1N_2 79%;	S_2O 90%;	K' = 87.
DO–DN 4.4%;	dist. 2.4%;		

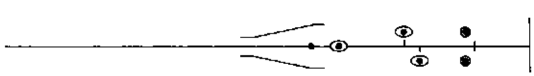
Cardia conoid, 48 μ long, 20 μ wide at base.

Vulva of the transverse type, vagina heavily sclerotized. Gonads two, opposed, reflexed, without sperm; in the holotype the anterior gonad is reflexed to past the vulva. Dimensions of two intra-uterine eggs: 82–93 × 43 μ. Tail ventrally arcuate, with blunt tip, the distal part usually slightly finger-shaped; tail length 1.2–1.8 anal body widths. Cuticle on tail with fine transverse striae. Distinct saccate bodies ventrally in the tail. Papillae: two pre-anal subdorsal pairs; one lateral post-anal pair. Tail in some specimens with distinct terminal core. Rectum as long as anal body width, prerectum twice to thrice as long.

Holotype: Female on slide WT 1225. Paratypes: Three females on slides WT 1226–1228.

Type habitat and locality: Sample 1. Paratypes from samples 42 and 62. Juveniles found also in samples 3, 5, 11, 15, 25, 41, 54 and 67.

5. Eudorylaimus megodon ♀



672 μ

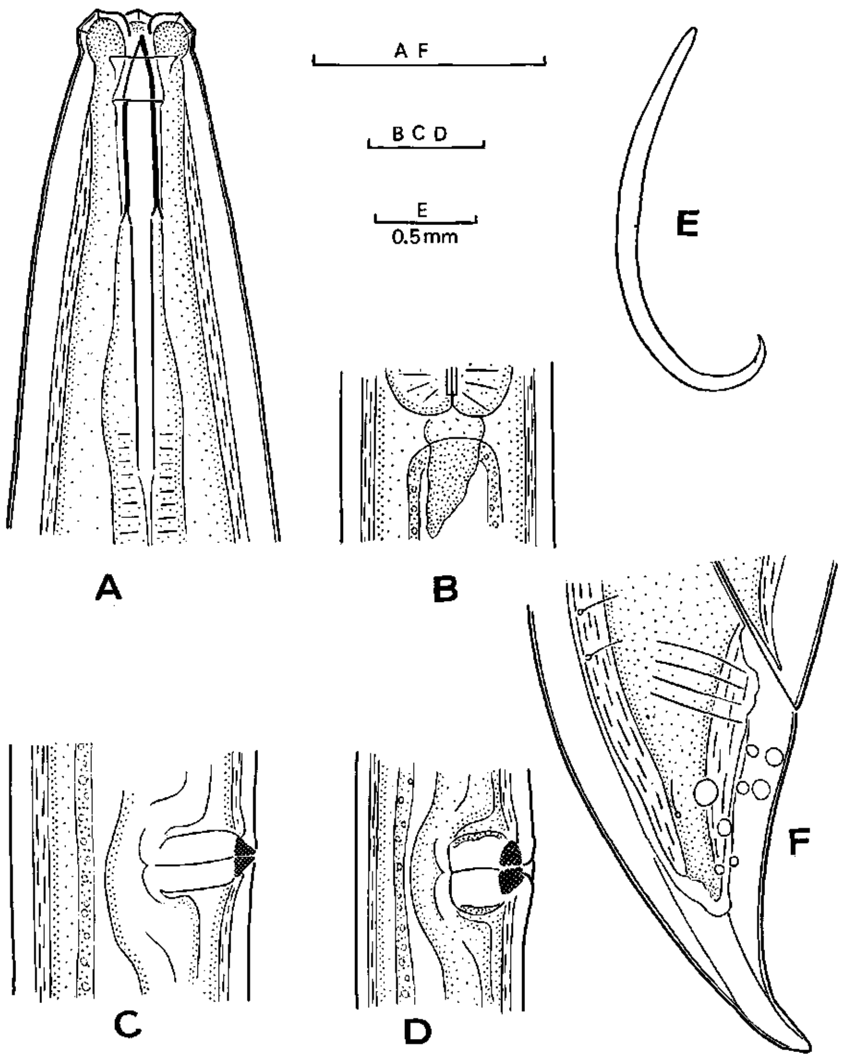


FIG. 25. *Eudorylaimus megodon* n.sp., female. A: head end; B: oesophagus base; C-D: vulva; E: entire specimen; F: tail.

Discussion. – This is one of the group of large *Eudorylaimus* species recorded chiefly from mountainous or arctic regions, comprising *E.uniformis* (Thorne, 1929), *E.acuticauda* apud Steiner, 1916; *E.vestibulifer* (Micoletzky, 1922); *E.vestibulifer* apud Thorne & Swanger, 1936 and *E.alleni* Brzeski, 1962. See Fig. 26.

E.uniformis was described from the Rocky Mountains and has been repeatedly reported from Northern Europe (Filipjev, vide Thorne & Swanger, 1936;

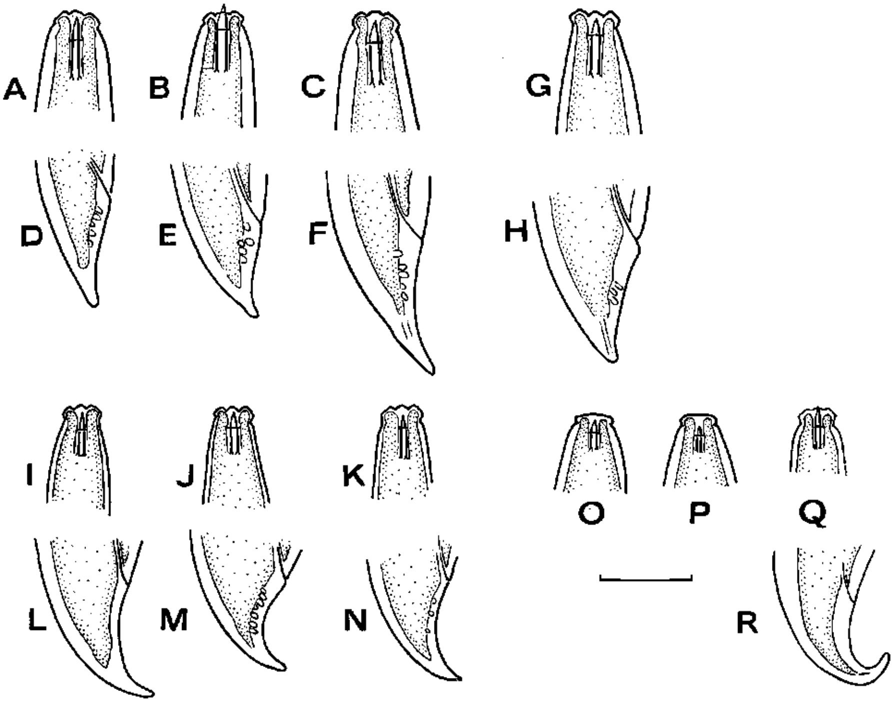


FIG. 26. A-F: *Eudorylaimus megodon* n.sp., female. A-C: head end; D-F: tail. G-H: *E.?megodon*, female. G: head end; H: tail. I-N: *E.uniformis* (Thorne), female type specimens. I-K: head end; L-N: tail. O-P: *E.vestibulifer* (Micoletzky), male type specimens, head end. Q-R: *E.alleni* Brzeski, female. Q: head end; R: tail.

van Rossen & Loof, 1962.) Thirteen type specimens were available for study. Dimensions:

Females (n = 8): L = 2.41–2.79 mm; a = 23–31; b = 4.3–5.2; c = 31–46; V = $^{18-21}48-52^{16-20}$; odontostyle = 23–26 μ; basal portion = 37–41 μ.

Males (n = 5): L = 2.27–2.66 mm; a = 22–28; b = 4.0–4.5; c = 25–38; spicules = 90–109 μ; odontostyle = 23–27 μ; supplements = 12–16.

Odontostyle 1.1–1.3 × width of lip region. This species resembles *E.megodon*, but differs clearly in some details, especially the much thinner cuticle (3–4 μ in neck and mid-body, 6–7 μ on base of tail), the shorter odontostyle and basal portion. Furthermore the labial papillae of the second circle protrude more strongly; the tail never has distinct saccate bodies, at most there are some small ones laterally or subventrally; and the tail is curved regularly to the terminus, the distal part never being offset finger-like.

E.uniformis apud van Rossen & Loof has a thick cuticle, slightly finger-shaped distal part of the tail and an odontostyle of 29 μ and thus must be regarded *E. megodon*.

E.acuticauda apud Steiner, 1916, described from Novaya Zemlya, was identified with *E. uniformis* by Thorne & Swanger (1936). As odontostyle length is 26 μ, this may be correct.

E. vestibulifer was described from the Austrian Alps. Two male type specimens were available. Dimensions: L = 2.38–2.42 mm; a = 27–29; b = 5.9–6.2; c = 40–46; spicules = 94–99 μ; supplements = 21–22. This species is distinguished clearly by the narrow, cap-like lip region, offset by a deep constriction and narrower than the adjoining neck; by the relatively very short oesophagus; and by the short odontostyle: 15 μ or 0.8 × width of lip region.

E. vestibulifer apud Thorne & Swanger, 1936, described from the Rocky Mountains, U.S.A., clearly differs from *E. vestibulifer* by the long odontostyle: 24 μ. This species is herewith renamed *E. coloradensis* nom. nov.

E. alleni was described from Spitzbergen. Distinguished by an odontostyle length of 21 μ (a paratype had 22 μ) or 0.9 lip region widths; the tail is curved very strongly and the vulva appears longitudinal.

These five species can be distinguished as follows:

1.	Lip region narrow, cap-like; odontostyle length 15 μ	*vestibulifer.*
	Lip region not cap-like, odontostyle longer.	2.
2.	Length of odontostyle 28–39 μ; cuticle very thick	*megodon.*
	Length of odontostyle under 27 μ	3.
3.	Tail curved to nearly 180°; odontostyle length 21–23 μ	*alleni.*
	Tail curved only weakly; odontostyle length 23–27 μ.	4.
4.	Supplement series begins within reach of spicules	*uniformis.*
	Supplement series begins anterior to spicules	*coloradensis.*

In sample 28 a female was found coming close to *E. megodon*, but differing by larger size, posterior vulva and the presence of sperm in the gonads. Dimensions: L = 3.12 mm; a = 31; b = 4.3; c = 45; V = $^{15}54^{20}$; odontostyle = 33 μ. Tail with saccate bodies, curved very weakly (Fig. 26, G–H).

Eudorylaimus alleni Brzeski, 1962. (Fig. 26, Q–R).

Two females. Dimensions: L = 2.09–2.12 mm; a = 25–27; b = 4.0–4.3; c = 26–46; V = $^{15}49^{17}$; odontostyle length 22–23 μ. In addition to the differences listed above, this species has a much shorter cardia than *E. megodon* (20 μ).

Samples 4 and 65.

Eudorylaimus vanrosseni n.sp. (Fig. 27; Diagram 6).

Dimensions:

Females (n = 8): L = 1.03–1.25 mm; a = 23–29; b = 3.5–4.3; c = 35–40; V = $^{13-18}54–57^{13-18}$.

Female, holotype: L = 1.05 mm; a = 27; b = 3.6; c = 38; V = $^{13}56^{15}$.

Male unknown.

Body rather stout, curved ventrad slightly in death. Cuticle 2.5–3.0 μ thick, increasing to 6 μ on ventral side of tail; with thin, sharply demarcated outer layer which shows fine but distinct transverse striae. Lateral chord about 30%

of body width. Lip region offset by a shallow constriction; lips separate, angular. Amphid aperture about 60% of corresponding body width. Length of odontostyle 16–17 μ, i.e. slightly more than width of lip region, the aperture occupying about one-third of its length. Basal portion about 25 μ long. Guiding ring 'single'. The nerve ring surrounds the oesophagus at about 35% of its length from head end. Cardia conspicuous, subglobular, variable in size (12–20 × 15–27 μ).

Oesophageal characters (two females): The oesophagus begins to widen at 51–53% and attains its full width at 57–60% of its length from head end. DO lies at, or just anterior to the latter level, the distance DO–DN is 13–14 μ. The S_1N lie a small distance apart, behind the middle of the distance DN–S_2N; the anterior one is small and indistinct, the posterior one large and conspicuous. The S_2N are well developed and lie rather close to the base of the oesophagus. Locations:

DO 57–59%;	S_1N_1 77–78%;	S_2N 90–93%;	K = 85–93;
DN 62–63%;	S_1N_2 79–80%;	S_2O 92–93%;	K′ = 94.
DO–DN 4.6%;	dist. 1.6–2.7%;		

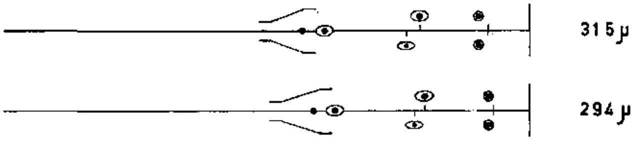
Vulva of the transverse type, vagina wide, half body width deep. Gonads two, opposed, reflexed, without sperm; with constriction between uterus and oviduct. Tail shaped as in *E. monohystera*: convex-conoid, indented dorsally, tip rounded; its length 1.0–1.3 anal body widths. Rectum 1.2–1.3 anal body widths long, prerectum one to two times as long as rectum. Tail with a row of (usually 6) small ventral saccate bodies.

Holotype: Female on slide WT 1134. Paratypes: Seven females on slides WT 1221–1224.

Type habitat and locality: Sample 55. Paratypes also from sample 53.

Diagnosis: This species resembles *E. pratensis* (de Man, 1880) in tail shape, but this species has a much longer and thinner odontostyle. From *E. nitidus* (Thorne & Swanger, 1936) it differs by the well-developed, separate lips; from *E. obesus* (Thorne & Swanger, 1936) by the distal part of the tail ventrally not being offset, and by the shorter odontostyle (against 22 μ) with shorter aperture; from *E. albionensis* (van der Linde, 1938) by the non-sinuate ventral tail contour, lower lip region, post-equatorial vulva and lower ratio odontostyle/lip region (1.5 in *albionensis*).

6. Eudorylaimus vanrosseni ♀



Eudorylaimus maksymovi Altherr, 1963 (Fig. 28; Diagram 7).

Two females. Dimensions: L = 1.69–1.83 mm; a = 36–40; b = 4.1–4.3; c = 17–19; V = $^{9}44$–46^{9}.

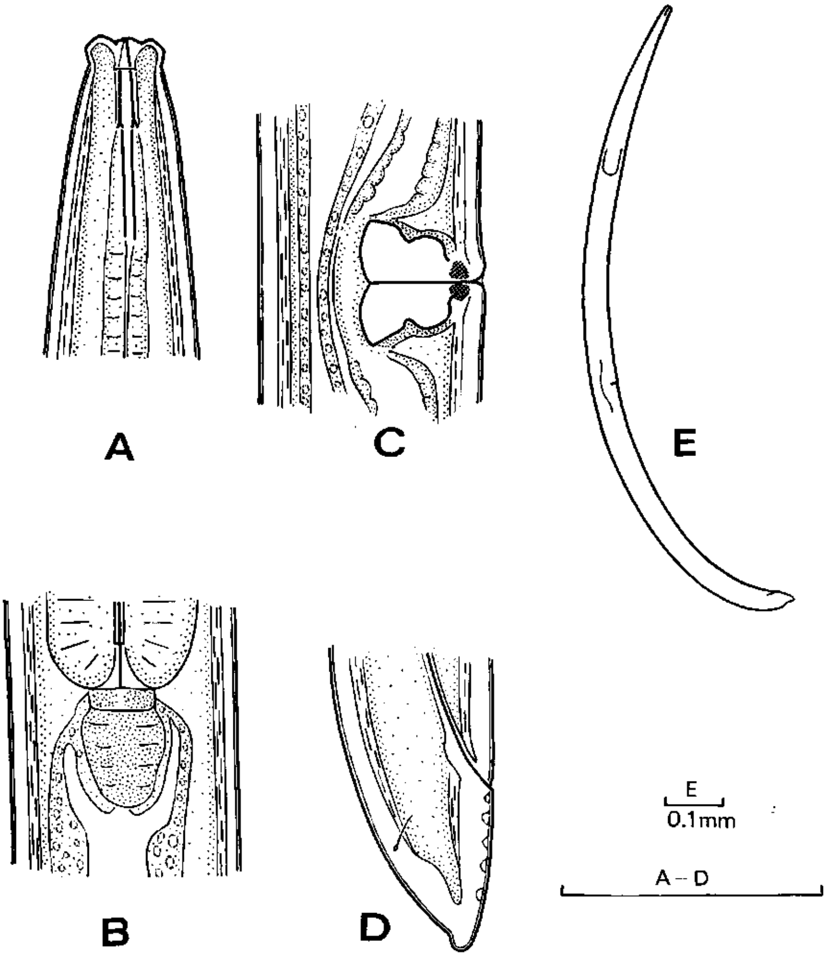
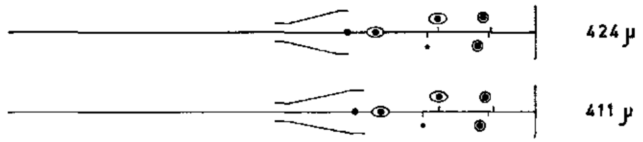


FIG. 27. *Eudorylaimus vanrosseni* n.sp., female. A: head end; B: oesophagus base; C: vulva; D: tail; E: entire specimen.

Cuticle thin, 2.5 – 3.0 μ; transverse striation very fine. Outer layer thin, sharply demarcated. Lip region offset by a shallow depression; the inner circle of papillae located rather far outward. Length of odontostyle 20 μ or 1.3 × width of lip region, the aperture occupying one-third of its length.

Oesophageal characters: The oesophagus begins to widen at 48 % and attains its full width at 58 – 60 % of its length from head end. DO lies slightly behind the latter level, the distance DO – DN is 20 μ. The S_1N lie a small distance apart; the anterior one is small and indistinct. S_2N well developed. Locations:

7. Eudorylaimus maksymovi ♀



DO 60–61%; S_1N_1 78–79%; S_2N 89–91%; K = 78–86;
DN 65–66%; S_1N_2 81–82%; S_2O 91–92%; K′ = 83–89.
DO–DN 4.9–5.0%; dist. 2.3–3.5%;

Cardia conoid, 18 µ long. In both specimens there is an elongate organ in the posterior part of the neck, extending to just past the end of the oesophagus; located laterally on the right side. Anteriad the organ soon becomes indistinct; it might be connected with the lateral chord.

Vulva depressed, transverse; vagina distinctly sclerotized. Gonads two, opposed, reflexed, with sphincter. No sperm. Tail length equal to 3.7–3.8 anal body widths; tail conoid the distal half curved to ventral side; in the proximal half there are some saccate bodies in the cuticle ventrally and subventrally. Rectum 1.2–1.3 anal body widths long, prerectum 1.3–1.8 as long as rectum.

Sample 69.

These specimens correspond well to Altherr's description. The species resembles *E. consobrinus* (de Man, 1917) but differs from it by the transverse vulva, the longer odontostyle (against 15–16 µ) and the slightly offset lip region (continuous in the type specimen of *consobrinus* in de Man's collection).

Longidorella magna n.sp. (Fig. 29; Diagram 8).
Dimensions:

Female, holotype: L = 1.05 mm; a = 21; b = 3.5; c = 21; $V = {}^{15}56^{14}$; odontostyle = 30 µ.

Female, paratype: L = 1.13 mm; a = 20; b = 3.5; c = 24; $V = {}^{17}58^{18}$; odontostyle = 35 µ.

Male not found.

Body stout, slightly curved ventrad in death. Cuticle 5 µ thick ventrally, 3 µ dorsally; with thin, sharply demarcated outer layer; transverse striation imperceptible. Lateral chord one-third of body width. Body tapering strongly anteriorly, the width at base of oesophagus being 4.5 × width of lip region; the shape of the anterior part reminiscent of *Paraxonchium*. Lip region offset by constriction; angular, but the papillae do not protrude. Amphid aperture half corresponding body width. Odontostyle thrice as long as width of lip region, the tip bent somewhat dorsad, with very small aperture. Basal portion not sclerotized, 20–24 µ long. The nerve ring surrounds the oesophagus just anterior to its middle. Cardia more or less round, one-quarter of body width long.

In the oesophageal region there are 9–12 ventral body pores; furthermore there are 4–5 between oesophagus base and vulva and 3–4 between vulva and

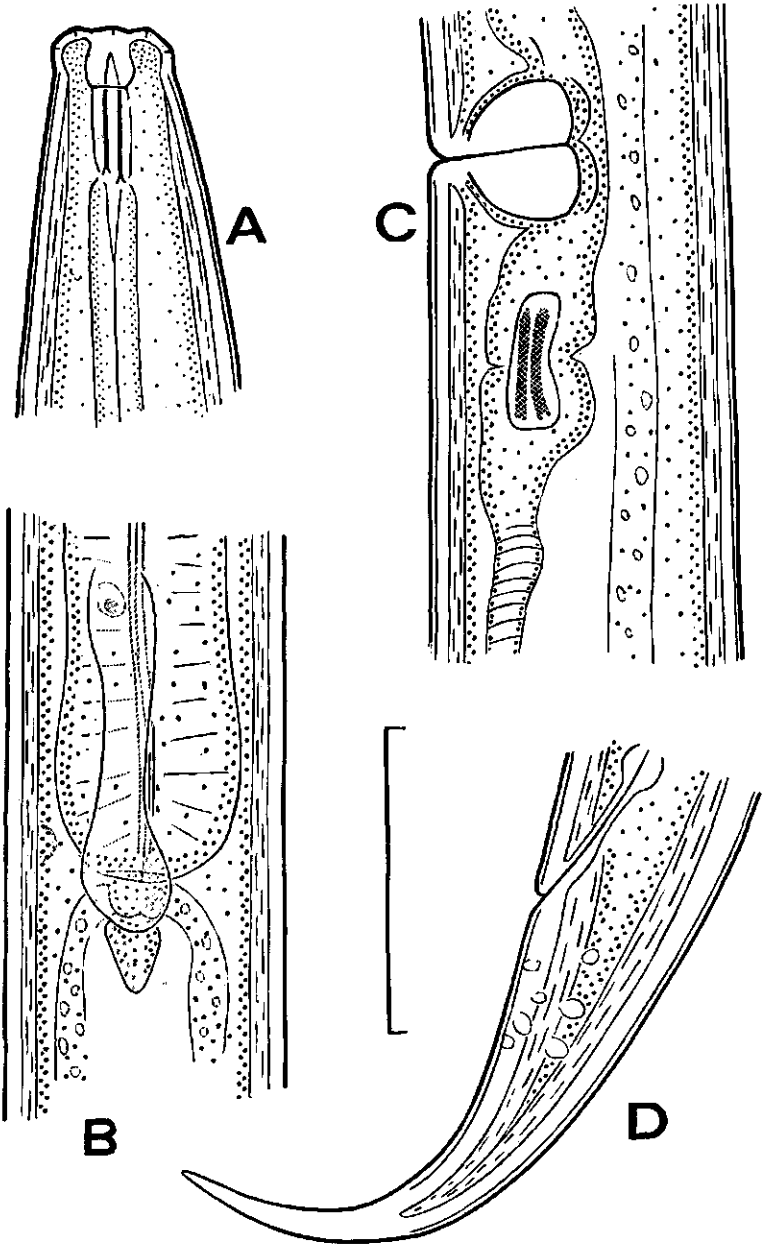


FIG. 28. *Eudorylaimus maksymovi* Altherr, female. A: head end; B: oesophagus base; C: vulva; D: tail.

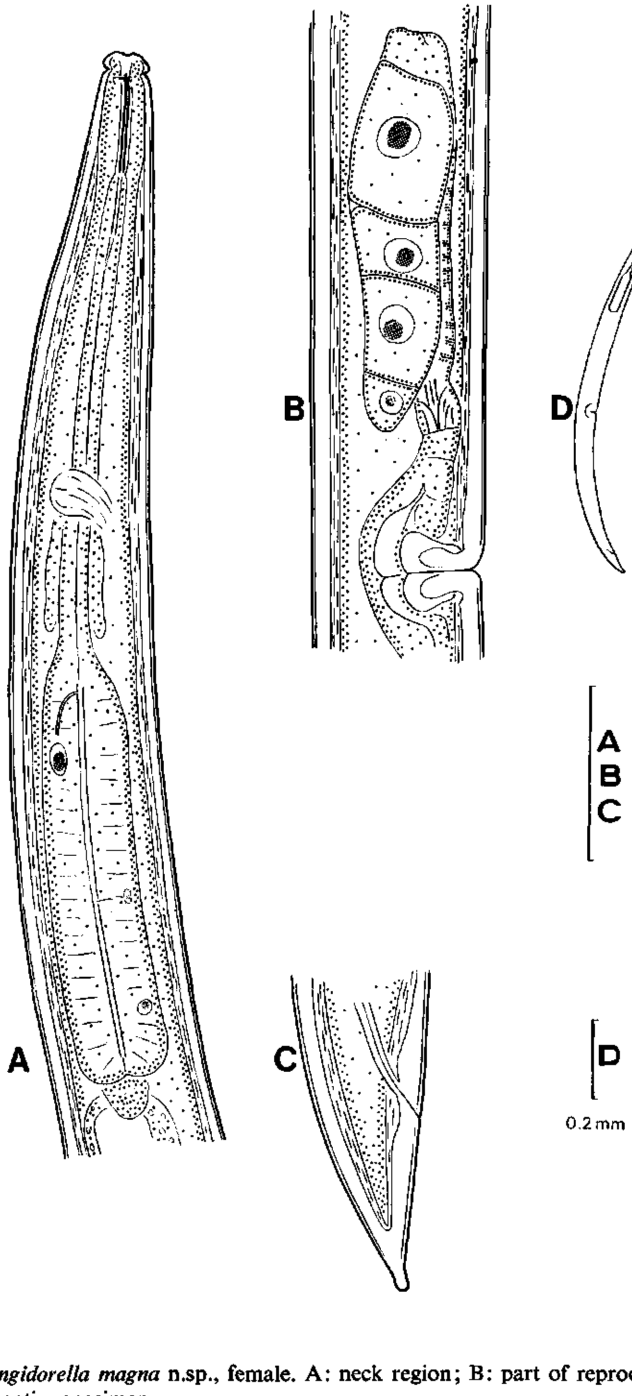
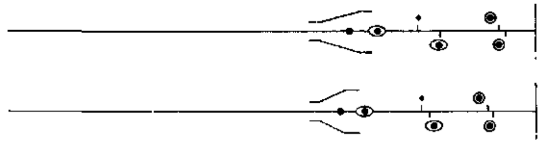


FIG. 29. *Longidorella magna* n.sp., female. A: neck region; B: part of reproductive system; C: tail; D: entire specimen.

8. Longidorella magna ♀



anus. Total number on one body side 16–21. In the anterior half of the neck there are 5–6 dorsal pores.

Oesophageal characters: The oesophagus begins to widen at 59% and attains its full width at 64–66% of its length from head end. DO lies slightly anterior to the latter level, the distance DO–DN is 16–18 µ. The S_1N lie a small distance apart, about halfway between DN and S_2N; the anterior one is very indistinct. Locations:

DO 63–65%;	S_1N_1 78–79%;	S_2N 89–93%;	K = 67–82;
DN 68–70%;	S_1N_2 81–82%;	S_2O 91–95%;	K′ = 76–91.
DO–DN 4.8–5.8%;	dist. 2.2–3.9%;		

Vulva probably not quite transverse, vagina one-half body width deep. Gonads two, opposed, reflexed, without sperm; a sphincter appears to be present. No eggs. Tail conoid-digitate, 1.7 anal body widths long. Rectum 1.0–1.4 anal body widths long, prerectum twice as long as rectum.

Holotype: Female on slide WT 1143. Paratype: Female on slide WT 1142.

Type habitat and locality: Sample 66. Juveniles in samples 17, 27 and 44.

The large body size distinguishes this species from all others.

Family Leptonchidae (sensu lato)

Tylencholaimus proximus Thorne, 1939 (Fig. 30).

Dimensions:

Females (n = 22): L = 0.59 mm (0.45–0.71); a = 18–24; b = 3.1–4.4; c = 23–31; V = $^{11-26}63-68$.

Male (n = 1): L = 0.56 mm; a = 24; b = 3.2; c = 27; VD = $^{10}36^{11}$.

Body nearly straight in death. Lip region offset by constriction, cap-like, the inner papillae protruding distinctly. Outer layer of cuticle smooth, inner with fine transverse striae and in mounted specimens somewhat irregularly wrinkled and loosened from outer layer. Oesophagus widened gradually at about 60% of its length from head end. Length of odontostyle 6–7 µ, of basal portion 8–10 µ. In some females a very short posterior uterine sac appears to be present. Tail symmetrically conoid in the female, with broadly rounded tip: its length 0.9–1.3 anal body widths. Rectum about as long as anal body width, prerectum thrice as long. No sperm in gonad.

Male body curved ventrad in posterior third. Testes two, dorylaimid, but possibly non-functional, as no sperm is present. Spicules dorylaimid, 28 µ long (along axis). Apart from the adanal pair there is a series of two ventromedian supplements, spaced 13 µ apart, the posterior one 42 µ or two tail lengths from

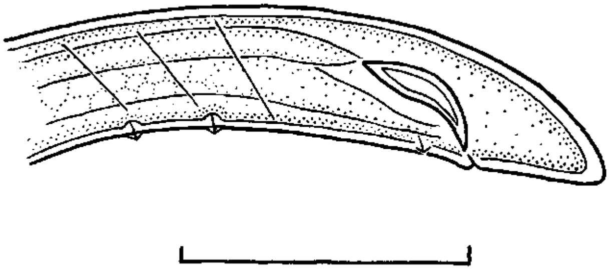


FIG. 30. *Tylencholaimus proximus* Thorne, male tail.

the anus. Tail dorsally conoid, tip round, less blunt than in the female. Lateral guiding pieces not seen.

Samples 17, 18, 25, 26, 38, 52 and 62; the male in sample 18.

Tylencholaimus teres Thorne, 1939.

Two females. Dimensions: L = 0.83–0.98 mm; a = 26–31; b = 3.9–4.1; c = 57–67; $V = {}^{15}59^{13-14}$.

Body slightly curved ventrad in death. Cuticle with conspicuous radial striae. Outer layer of cuticle smooth, inner with irrelugar transverse striae and in mounted specimens wrinkled, loosened irregularly from outer layer. Lateral chord broad, smooth, with a few marginal pores. Lip region cap-like with somewhat convex sides, offset by a shallow constriction; the inner papillae hardly protruding. Length of odontostyle 6 μ, i.e. about four-fifths of width of lip region, the aperture occupying one-third of its length. Basal portion 8.0–8.5 μ long, knobbed. Amphids relatively narrow. Oesophagus slender in its anterior part, expanding gradually at about 55–60% of its length; the posterior part is three-fifths as wide as body and 5–6 × as long as wide. The dorsal gland empties into the lumen anterior to the level where the oesophagus attains its full width, the distance DO–DN is 6 μ or 2.6–2.8% of neck length. Vulva transverse, vagina not sclerotized, nearly half body width deep. Gonads two, opposed, reflexed less than halfway; no sperm; in one specimen a constriction between oviduct and uterus is visible. Tail shorter than anal body diameter, broadly rounded. Rectum slightly longer than anal body width, prerectum twice as long as rectum.

Samples 56 and 66.

6. Ecological and geographical remarks

At the family level we note the complete absence of Rhabditidae, Diplogastridae, Aphelenchidae, Paraphelenchidae, Hemicycliophoridae, Mononchidae, Aporcelaimidae, Belondiridae (sensu lato), Diptherophoridae and Trichodoridae.

Genera commonly found in temperate Europe but not represented in these samples include *Rotylenchus* (curiously *Helicotylenchus* is represented), *Pratylenchus*, *Paratylenchus*, *Macroposthonia*, *Nothocriconema*, *Seinura*, *Tobrilus*, *Dorylaimus* and *Mesodorylaimus*. On the other hand several genera are much more dominating on Spitzbergen than in temperate regions: *Tylenchus*, *Teratocephalus*, *Cervidellus*, *Plectus*, *Ereptonema* and *Prismatolaimus*.

Generally there is not much diversity between these 65 samples. The pool sample 5 yields some typical freshwater species: *Monhystera stagnalis* and *Tripyla papillata*. *Helicotylenchus spitsbergensis* was found only in sites with vegetation of Phanerogamae. Noteworthy is the distribution of *Tylenchorhynchus microdorus*: apart from one odd specimen this species was found only on the small islands of Eskjeret and Juttahl, and in two of the four samples it was the dominant species (31 % in sample 53, 32 % in 54).

One gets the impression that on this remote and little accessible island accident plays a great part in the nematode distribution. In three of the four Fardalen samples *Tylenchus thornei* dominated to a very high extent: 88 %, 92 % and 96 % respectively. On the Longyearbyen slope *T. leptosoma* was most often dominant, in vegetation samples (25: 44 %; 29: 59 %; 33: 54 %; 35: 97 %; 37: 59 %) as well in bare soil sites (26: 28 %). But now and then other species dominate: *T. thornei* in 34 (66 %), *T. davainei* in 39 (72 %) and *Prismatolaimus dolichurus* in 36 (73 %). The dominance of the latter species in bare sand at 350 m altitude testifies to the moist condition of the soil. Spasmodically other species dominate: *Ereptonema arcticum* in 70 (49 %), *Cervidellus serratus* in 18 (38 %) and 44 (45 %), *Panagrolaimus papillosus* in 50 (84 %), *Teratocephalus lirellus* in 57/58 (72 %), and in 55 (28 %) together with *Rhabdolaimus terrestris* (30 %); in 66 the latter species dominates (29 %). In sample 19 a *Monhystera* species of the *filiformis-vulgaris* group dominates (45 %).

In 1916 Steiner published a paper on the nematode fauna of a moss sample on Novaya Zemlya. The species composition is rather like that of Spitzbergen: four *Plectus* species (incl. *Anaplectus*); two *Teratocephalus* (Steiner's female nr. 3 evidently is either *T. costatus* or *T. decarinus*), two *Achromadora* species, three *Tylenchus*, three *Monhystera*; further *Euteratocephalus*, *Bastiania*, *Alaimus*, *Eudorylaimus*, *Enchodelus*, *Bunonema*, *Aphelenchoides* and *Prismatolaimus*; most of the species being the same as those found on Spitzbergen. Steiner found three genera not represented in the Spitzbergen material: *Prionchulus*, *Mylonchulus* and *Mesodorylaimus*.

Marked affinities exist also to the nematode fauna of northern Canada, explored recently by Anderson (1969), Mulvey (1969-a, 1969-b) and Wu (1969-a, 1969-b). Common species are *Criconemoides hemisphaericaudatus*, *Teratocephalus lirellus*, *T. decarinus*, *Tylenchorhynchus arcticus* and *T. leptus*. The lastmentioned species has a wide distribution: it is known now from the U.S.A., Canada, Spitzbergen, Sweden, Switzerland, Austria and northern Italy. Probably it will be found on Iceland and Greenland too.

Of the 22 species reported from Greenland by Ditlevsen (1927) eight were found on Spitzbergen: *Tripyla papillata*, *Prismatolaimus dolichurus*, *Enchodelus* *analatus*, *E. conicaudatus*, *Eudorylaimus lugdunensis*, *Anaplectus granulosus*, *Tylenchus davainei* and *Monhystera filiformis* (= *pseudobulbosa*). Because of the large, stout body and tail shape *Dorylaimus acuticauda* of Ditlevsen might really be *Eudorylaimus megodon*.

The finding of *Tylenchorhynchus magnicauda*, known so far only from the Rocky Mountains, indicates that this species probably is widely distributed on northern mountainous regions.

Acknowledgements

For loan of comparison material the writer is indebted to Dr. M. W. Brzeski, Skierniewice, Poland; Dr. A. Morgan Golden, Beltsville, U.S.A.; Dr. G. Hartwich, Berlin, Germany and Dr. R. H. Mulvey, Ottawa, Canada.

References

Allen, M. W. (1955). A review of the nematode genus *Tylenchorhynchus*. *Univ. Calif. Publ. Zool. 61*, 129–166.

Anderson, R. V. (1968). Variation in taxonomic characters of a species of *Acrobeloides* (Cobb, 1924) Steiner & Buhrer, 1933. *Can. J. Zool. 46*, 309–320.

Anderson, R. V. (1969). Comparative morphology and descriptions of three new species of *Teratocephalus* from Canada. *Ibid. 47*, 829–840.

Andrássy, I. (1954). Revision der Gattung *Tylenchus* Bastian. *Acta zool. Acad. Sci. Hung. 1*, 5–42.

Andrássy, I. (1958). Erd- und Süsswassernematoden aus Bulgarien. *Ibid. 4*, 1–88.

Andrássy, I. (1968). Fauna Paraguayensis 2. Nematoden aus den Galeriewäldern des Acaray-Flusses. *Opusc. zool. Budap. 8* (2), 167–315.

Brzeski, M. W. (1962). *Eudorylaimus alleni* n.sp. (Nematoda, Dorylaimidae). *Ibid. 4* (2–4), 67–68.

Bütschli, O. (1873). Beiträge zur Kenntnis der freilebenden Nematoden. *Nova Acta Leopold-Car. 36*, 1–144.

Ditlevsen, H. (1927). Free-living nematodes from Greenland, land and freshwater. *Medd. Grønl. 23, Suppl.*, 159–198.

Ferris, V. R. & Ferris, J. M. (1967). Morphological variant of *Tetylenchus joctus* (Nemata: Tylenchida) associated with cultivated blueberries in Indiana. *Proc. helminth. Soc. Wash. 34*, 30–32.

Geraert, E. (1968). The genus *Basiria* (Nematoda – Tylenchina). *Nematologica 14*, 459–481.

Goodey, T. (1951). *Soil and freshwater nematodes*. London, Methuen, 390 pp.

Grisse, A, de (1968). *Bijdrage tot de morfologie en de systematiek van Criconematidae (Taylor, 1936) Thorne, 1949 (Nematoda)*. Diss., Gent, 141 pp.

Grisse, A. de & Loof, P. A. A. (1965). Revision of the genus *Criconemoides* (Nematoda). *Meded. LandbHogesch. Opzoekstns Gent 30*, 577–603.

Jairajpuri, M. S. & Loof, P. A. A. (1968). On some species of *Enchodelus* Thorne, 1939 from India (Nematoda: Dorylaimidae). *Nematologica 13*, 501–508.

Loof, P. A. A. (1961). The nematode collection of Dr. J. G. de Man I. *Beaufortia 8*, 169–254.

Loof, P. A. A. (1964). Free-living and plant-parasitic nematodes from Venezuela. *Nematologica 10*, 201–300.

Maggenti, A. R. (1961). Revision of the genus *Plectus* (Nematoda: Plectidae). *Proc. helminth. Soc. Wash. 28*, 139–166.

MAN, J. G. DE (1884). *Die frei in der reinen Erde und im süssen Wasser lebenden Nematoden der niederländischen Fauna.* Leiden, Brill, 206 pp.

MAN, J. G. DE (1921). Nouvelles recherches sur les nématodes libres terricoles de la Hollande. *Capita zool. 1* (1), 1–62.

MEYL, A. H. (1961). *Freilebende Nematoden.* Tierwelt Mitteleuropas 1 (5a), 164 pp.

MICOLETZKY, H. (1922). Die freilebenden Erd-Nematoden. *Arch. Naturgesch.* A *87*, 1–650.

MICOLETZKY, H. (1925). Die freilebenden Süsswasser- und Moornematoden Dänemarks. *K. Dansk. Vidensk. Selsk. Skr. 8* (10), 55–310.

MULVEY, R. H. (1969-a). Nematodes of the genus *Tylenchorhynchus* (Tylenchoidea: Nematoda) from the Canadian high Arctic. *Can. J. Zool. 47*, 1245–1248.

MULVEY, R. H. (1969-b). Nematodes of the family Neotylenchidae (Tylenchida: Nematoda) from the Canadian high Arctic. *Ibid. 47*, 1261–1268.

RASKI, D. J. & GOLDEN, A. M. (1966). Studies on the genus *Criconemoides* Taylor, 1936 with descriptions of eleven new species and *Bakernema variabile* n.sp. (Criconematidae: Nematoda). *Nematologica 11*, 501–565.

ROSSEN, H. VAN & LOOF, P. A. A. (1962). Notities over het voorkomen van enkele aaltjessoorten in Zweden. *Versl. Meded. PlZiekt. Dienst 136*, 185–192.

SCHNEIDER, W. (1939). *Würmer II: Fadenwürmer oder Nematoden I: Freilebende und pflanzenparasitische Nematoden.* Tierwelt Deutschlands *36*, 260 pp.

STEINER, G. (1916). Freilebende Nematoden von Nowaja-Semlja. *Zool. Anz. 47*, 50–74.

THORNE, G. (1925). The genus *Acrobeles* von Linstow 1887 (*sic*). *Trans. Amer. micr. Soc. 44*, 171–210.

THORNE, G. (1929). Nematodes from the summit of Long's Peak, Colorado. *Ibid, 48*, 181–195.

THORNE, G. & SWANGER, H. H. (1936). A monograph of the nematode genera *Dorylaimus* Dujardin, *Aporcelaimus* n.g., *Dorylaimoides* n.g. and *Pungentus* n.g. *Capita zool. 6* (4), 1–223.

WIESER, W. (1956). Free-living marine nematodes III. Axonolaimoidea and Monhysteroidea. *Acta Univ. lund. N.F. avd.* 2, 52, 115 pp.

WU, L. Y. (1969-a). Dactylotylenchinae, a new subfamily (Tylenchidae: Nematoda). *Can. J. Zool. 47*, 909–911.

WU, L. Y. (1969-b). Five new species of *Tylenchus* Bastian, 1865 (Nematoda: Tylenchidae) from the Canadian high Arctic. *Ibid. 47*, 1005–1010.