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Rhyssocolpus arcticus n. sp. (Nematoda: Nordiidae) from Ellesmere Island and a Redescription of *Lindseyus costatus* Ferris and Ferris, 1973 (Nematoda: Roqueidae) from Quebec, Canada

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Abstract: A new species of *Rhyssocolpus* from Ellesmere Island in the Canadian arctic is described and illustrated. Its distinctive features are the set off head and the extensively striated cuticle in the vulval area with well-developed vulval flaps. The male has small spindle-shaped sperm 4–5 μm in length, and the adanal supplement is separated from the anterior series of 7–11 supplements by a distinct gap. A key to the species of *Rhyssocolpus* is provided. *Lindseyus costatus* from the St. Lawrence River, Quebec, is also redescribed. Notable differences from the original description are the irregular muscle bands of the sinistrally spiraled esophageal sheath, smooth exocuticle, longer prerectum, shorter male tail, and longer spicules. New information on the esophageal gland nuclei and sperm size and shape is also provided.

Key words: taxonomy, new species.

A new species of *Rhyssocolpus* Andrássy, 1971 collected in 1962 during a scientific expedition to Ellesmere Island in the Canadian arctic is described. Additionally, specimens of *Lindseyus costatus* Ferris and Ferris, 1973 are redescribed from St. Lawrence River bottom samples collected near Montreal in 1982. The discovery of representatives of *Rhyssocolpus* and *Lindseyus* in Canada constitute new Canadian records for these genera. All specimens were fixed in formalin and mounted in dehydrated glycerine following the procedures detailed by Seinhorst (3).

Rhyssocolpus arcticus n. sp.
(Figs. 1, 2)

Holotype (female): L = 1.84 mm; a = 32; b = 6.5; c = 37; c′ = 1.5; V = 50.

Paratypes (10 females): L = 1.9 mm (1.4–2.2); a = 33 (28–37); b = 6.7 (5.9–7.9); c = 34 (31–37); c′ = 1.5 (1.3–1.6); V = 49 (46–52); odontostyle 10 μm (8–12).

Description of female: Body an open spiral. Head subtruncate anteriorly, 12.5 μm (11–13) wide, slightly set off by a shallow depression from body (Fig. 1A). Cuticle 2–3 μm thick. Exocuticle smooth, endocuticle with fine transverse striae. Odontostyle needle-like, less than 1 μm wide. Odontophore difficult to observe, about 21 μm long and surrounded by a muscular bulb which is set off from the esophagus by a slight constriction (Fig. 1A). Guiding ring double, slightly less than one head width posterior to head apex. Esophagus uniformly muscular, gradually expanding at 66% of esophagus into 90–128-μm-long postcorpus. Dorsal and subventral esophageal gland nuclei respectively positioned at 64% and 28% of postcorpus length. Cardia hemispherical. Intestinal cells oligocytotic. Ovaries paired, reflexed. Spermatheca present, filled with sperm (Fig. 1F). Vulva a transverse slit with cuticle anterior and posterior to orifice marked by coarse, transverse striae (Fig. 1B). Total length of vulval striae 83 μm (60–93). Vulval area bordered laterally by well-developed vulval flaps extending the full length of vulval striae (Fig. 1B). Vulval plates sclerotized, triangular with rounded apices. Vagina symmetrical. Prerectum (Fig. 1C) 101 μm (72–118) long, 2.8 (2.3–3.2) times anal body width. Rectum 45 μm (38–54) long, 1.4 (1.2–1.5) times anal body width. Tail (Fig. 1D, E) strongly concave ventrally, tapered with a finely rounded to rounded terminus.

Allotype (male): L = 1.88 mm; a = 39; b = 7; c = 32; c′ = 1.5; spicules 54 μm.

Paratypes (10 males): L = 1.8 mm (1.7–2.0); a = 40 (36–43); b = 6.6 (6–7); c = 33 (29–37); c′ = 1.3 (1.1–1.6); spicules 54 μm (50–58).

Description of male: Similar to female except for the following: Tail region more strongly coiled ventrally (Fig. 2G). Testes two, opposed; sperm spindle-shaped, 4–5

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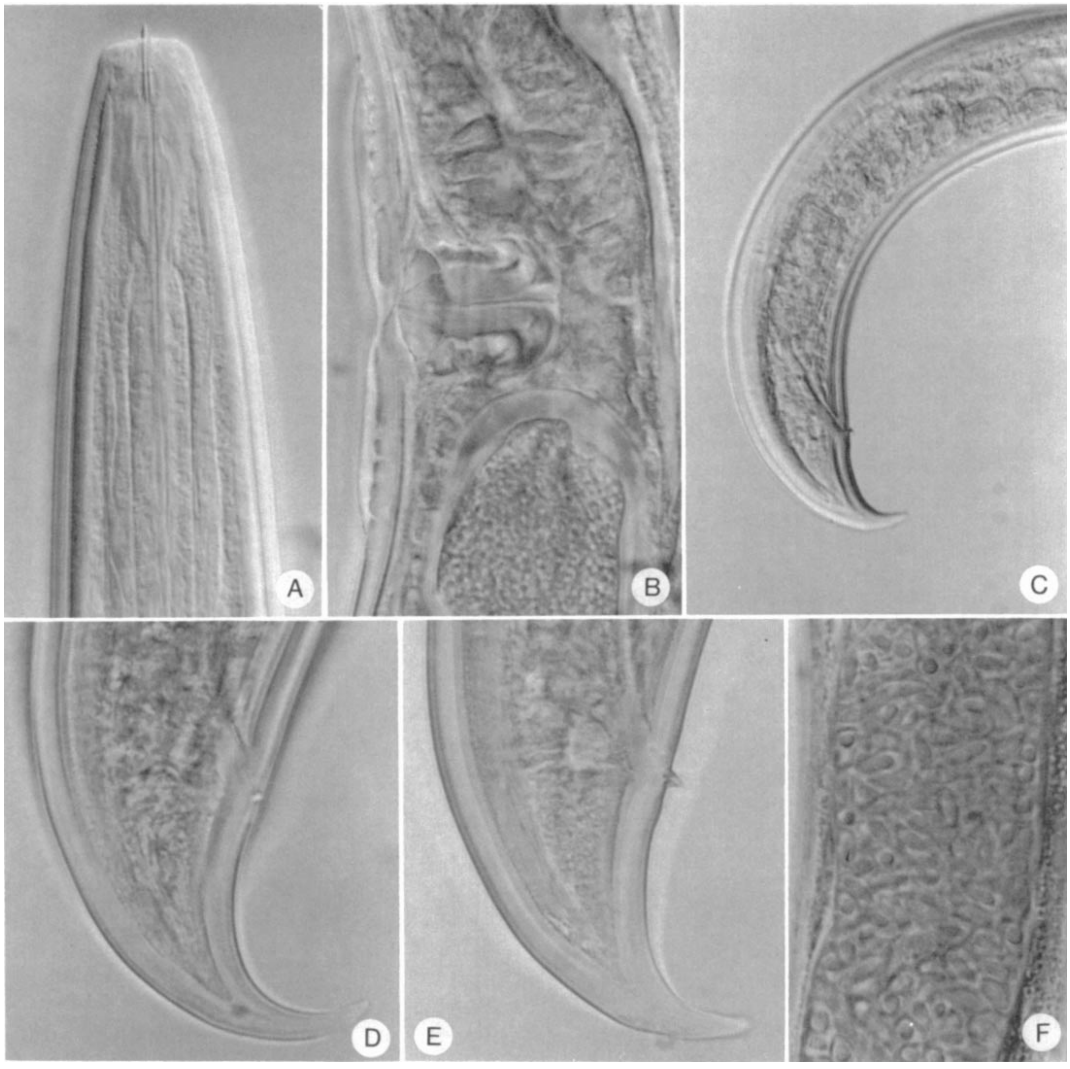

FIG. 1. *Rhyssocolpus arcticus* n. sp. female. A) Head region showing the subtruncate apex with stylet and muscular bulb set off from the esophagus by a constriction. B) Vulva region showing the transverse striae and vulval flaps bordering the orifice. C) Tail region showing the rectum and prerectum. D, E) Tail regions. F) Spermatheca with spindle-shaped sperm.

μm long. Spicules dorylaimoid. Supplements 8–12 consisting of a single adanal supplement separated by a distinct gap of 50 μm (41–59) from an anterior series of 7–11 nearly equally spaced supplements.

Type deposition: Holotype female and allotype male on slides 275 and 275a, respectively, and deposited in the Canadian National Collection of Nematodes type collection, Ottawa. Twenty-four female and twenty male paratypes in the type series on slides 275b–275o, deposited as above. Two paratype females and one male, slide 275p, deposited in the United States Department of Agriculture Nematode Collection at Beltsville, Maryland.

Type locality and habitat: Collected from moss and grass by R. H. Mulvey (retired) of the Biosystematics Research Institute in late June and early July 1962 from Skeleton Creek near the Hazen Lake area of Ellesmere Island, Northwest Territories, Canada.

Differential diagnosis: Rhyssocolpus arcticus n. sp. is most similar to *R. iuventutis* Andrássy, 1971 and *R. vulvostriatus* (Stefanski, 1924) Andrássy, 1971. The new species differs from *R. iuventutis* by having a more

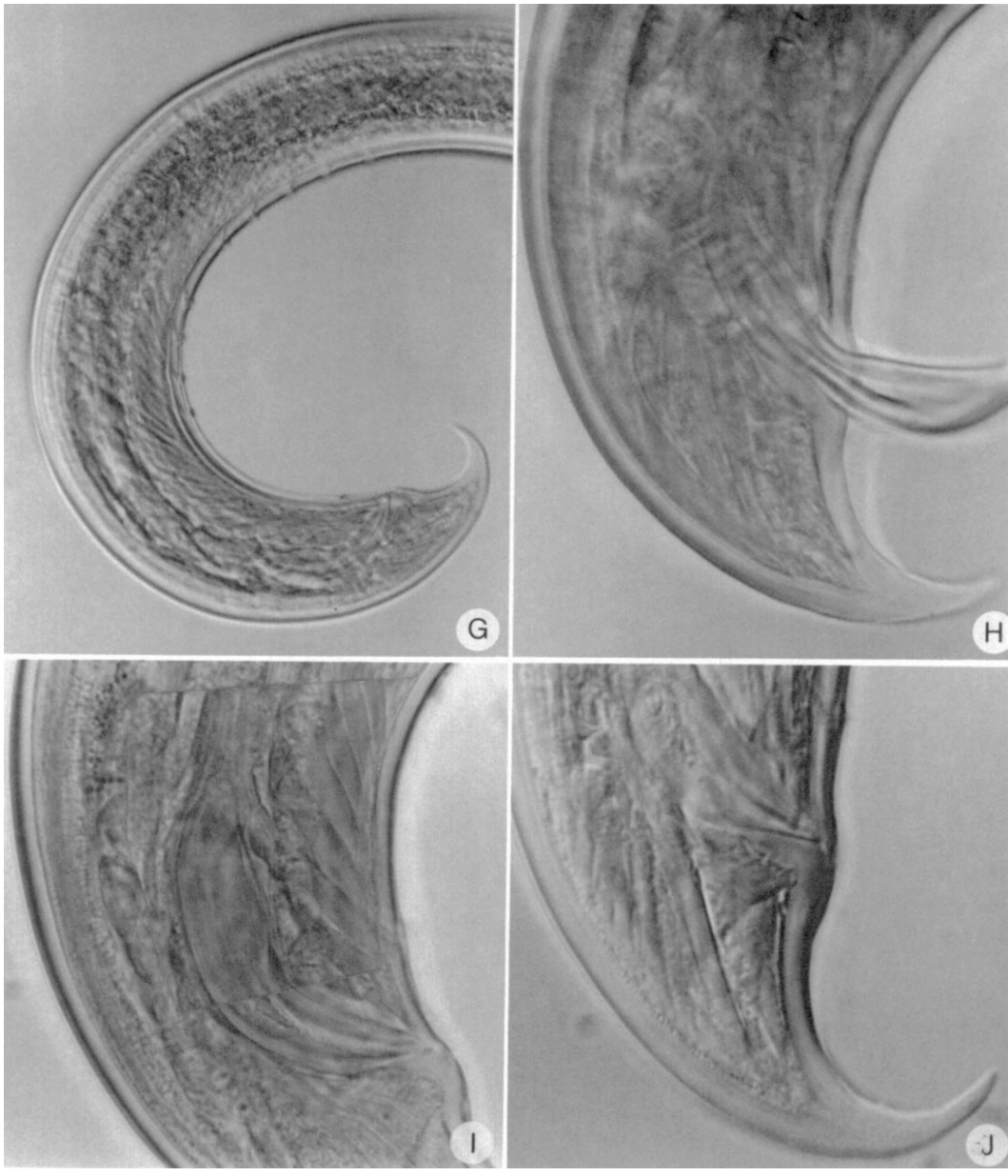

FIG. 2. *Rhyssocolpus arcticus* n. sp. male. G) Tail region showing the supplement placement. Note the distinct gap between the adanal supplement and the first supplement in the anterior series of nine supplements. H, I) Spicules. J) Tail region.

extensively striated vulval area (60–93 μm vs. 47–64 μm) with well-developed vulval flaps (absent in *R. iuventutis*). The tail of *R. arcticus* is longer (50–67 μm vs. 31–35 μm), the c ratio is smaller (29–37 vs. 43–55), the c′ ratio is greater (1.3–1.6 vs. less than 1), the sperm are smaller (4–5 μm vs. 7–8 μm), and there are more supplements in the male (8–12 vs. 5–7). *R. arcticus* differs from *R. vulvostriatus* by having the head set off from the body; a more ventrally curved, pointed, tapered tail; larger c′ ratio (1.3–1.6 vs. less than 1); rounded triangular, vulval plates (irregular ovoid in *R. vulvostriatus*); and by the smaller sperm (4–5 μm vs. 7–8 μm). Both species have males with 8–12 supplements; however, *R. arcticus* has a distinct gap of 41–59 μm between the adanal sup-

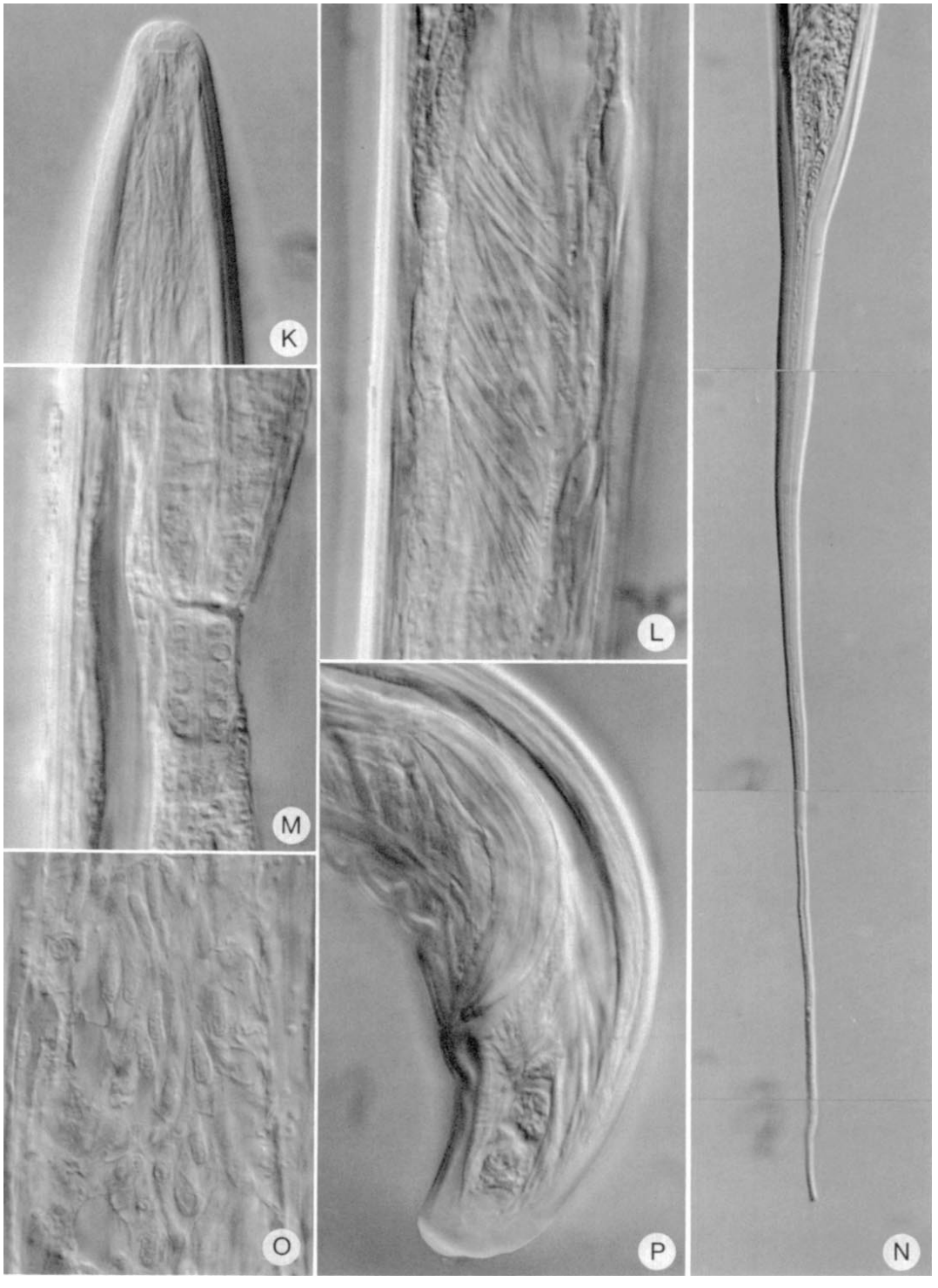

FIG. 3. *Lindseyus costatus.* Female K–O, Male P. K) Head. L) Sinistrally spiraled esophageal sheath. Note the irregular musculature. M) Cardia showing the well-developed nuclei. N) Tail region. O) Spindle-shaped sperm in spermatheca. P) Male tail showing the general shape and spicules.

plement and the anterior series while *R. vulvostriatus* has a supplement midway between the adanal and anterior supplement series.

KEY TO THE SPECIES OF *RHYSSOCOLPUS* ANDRÁSSY, 1971

1. Females 2
1. Males 5
2. Vulval region with lateral vulval flaps 3
2. Vulval region without lateral vulval flaps 4
3. Head set off from body, c′ 1.3–1.6 ..... *arcticus* n. sp.
3. Head not set off from body, c′ less than 1 ..... *vulvostriatus* (Stefanski, 1924)
4. Length less than 1.0 mm ..... *microdorus* (Schiemer, 1965)*
4. Length more than 1.4 mm ..... *iuventutis* Andrássy, 1971
5. Adanal supplement and anterior supplement series not separated by a distinct gap ..... *vulvostriatus* (Stefanski, 1924)
5. Adanal supplement and anterior supplement series separated by a distinct gap 6
6. Length less than 1.0 mm ..... *microdorus* (Schiemer, 1965)
6. Length more than 1.2 mm 7
7. Supplements numbering 8–12; sperm 4–5 μm long ..... *arcticus* n. sp.
7. Supplements numbering 5–7; sperm 7–8 μm long ..... *iuventutis* Andrássy, 1971

Lindseyus costatus Ferris and Ferris, 1973 (Fig. 3, Canadian specimens)

Females (3): L = 5.09 mm (4.9–5.4); a = 85 (77–88); b = 16.6 (16.3–16.9); c = 13.3 (12.7–14); c′ = 11.8 (10.8–13); V = 39 (38–40).

Description of female: The terminal portion of the tail was broken in the females examined; the length and related length ratios are therefore undervalued. Body slender, exocuticle smooth, endocuticle finely striated. Lip region rounded, 10 μm wide, continuous with body (Fig. 3K). Lip region with a faint basket-like framework structure. Amphids two-thirds head width. Stylet odontostyle 6–7 μm, odontophore 23–26 μm long. Esophagus expands at 58–64% into 120-μm-long (118–126) postcorpus which is surrounded by a thick, sinistrally spiraled, irregularly muscled sheath (Fig. 3L). Dorsal and subventral esophageal gland nuclei at 78 μm and 46–49 μm, respectively, from esophagus base. Cardia massive, 20 μm long by 10 μm wide, with well-developed nuclei (Fig. 3M). Intestinal microvilli present. Ovaries paired, opposed, reflexed. Vulva a transverse ellipse. Spermatheca present, filled with 7–8-μm-long, spindle-shaped sperm (Fig. 3O). Prerectum 256 μm (210–306) long or 7.6–10 times anal body width. Rectum 30 μm (20–40) long. Tail (termini missing) 382 μm (352–425) long, filamentous (Fig. 3N).

Male: L = 4.17 mm; a = 83; b = 14.6; c = 122; c′ = 1.05.

Description of male: Similar to female but differing in the short, 36-μm-long rounded tail (Fig. 3P). Spicules 56 μm long, lateral guiding pieces tapered. Supplements not observed due to cuticular wrinkling.

Locality and habitat: Collected April 1982 by the Quebec Ministry of the Environment from St. Lawrence River bottom samples near Montreal, Quebec.

The Canadian specimens of *Lindseyus costatus* differ slightly from the original specimens described by Ferris and Ferris (1). These differences include a smooth exocuticle with finely striated endocuticle (vs. striated), irregularly muscled (vs. uniformly muscled) sinistrally spiraled esophageal sheath, longer prerectum in both sexes, shorter male tail (36 μm vs. 47 μm) and longer spicules (56 μm vs. 47 μm). New information on the esophageal gland nuclei and sperm size and shape is provided.

* Female information is based on Vinciguerra and de Francisci (4); Schiemer (2) described this species from males only.

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