Four New Species of *Parasitylenchus* (Nematoda) from Scolytid Beetles

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During the writer's examination of bark beetles for nematode parasites four new species of *Parasitylenchus* were collected. The species herein described were recovered from *Scolytus ventralis* Leç., *Ips avulsus* (Eichh.) and *Ips pilifrons* Sw. Two of the newly described species were taken from the body cavity of the last-mentioned insect.

The genus *Parasitylenchus* was erected by Micoletzky in 1922 and was originally proposed as a subgenus of *Tylenchus*. The type species *Parasitylenchus dispers* was described by Fuchs in 1915 and placed in the genus *Tylenchus*. Fuchs later described several species that are now included in the genus *Parasitylenchus*. They are, namely: *Parasitylenchus ligniperdi* (Fuchs 1929), *Parasitylenchus morosus* (Fuchs 1929), *Parasitylenchus sulphureus* (Fuchs 1929), *Parasitylenchus chalcographi* (Fuchs 1938), *Parasitylenchus poligraphi* (Fuchs 1938), *Parasitylenchus pusilli* (Fuchs 1938). The latter three species were described as subspecies of *P. dispers*. In addition to the species described by Fuchs, Wuelker (1923-1929) described *Parasitylenchus hylastis* and *Parasitylenchus cossoni*, the former species within the genus *Tylenchus*. *Parasitylenchus scolyti* was described by Oldham in 1930. Ruhm described *Parasitylenchus grossmannae* in 1954. For a more complete listing of the species in this genus the reader is referred to Wachek (1955) and Ruhm (1956).

*Parasitylenchus elongatus*, n. sp. (Fig. 1)

**Eggs**: Hatch within uterus of living female.

**First Stage Larvae**: Length 0.30 mm.; width 0.03 mm.; spear not visible; lip region rounded; anal opening not visible; tail obtuse.

**Maturing Parasitic Females from Larval Insects**: Length 1.6-2.7 mm.; width 0.18 mm.; cuticle very finely striated, hypodermal cells with large nuclei; lip region rounded; spear moderately coarse knobbed; lumen of the esophagus visible for a considerable distance from the base of the spear; genital primordia apparent over approximately 1/2 of the body length; vulva and anal openings not visible.

**Immature Parasitic Females from Adult Beetles**: Length 5.0-6.2 mm.; width 0.25 mm.; body elongate; cuticle thick, smooth, hypodermis with large cells; lip region flattened; spear moderately knobbed; lumen of the esophagus visible for only a short distance from the base of the spear; ovary well developed, reaching almost to the base of the spear in some specimens, reflexed several times; uterus occupying a large portion of the body cavity, in this stage of development filled only with eggs; vulva and anal opening visible, slightly protuberant; tail obtuse. Figures 1 A and B.

**Mature Parasitic Females from Adult Beetles**: Length 4.7-4.9 mm.; width 0.25 mm.; body elongate becoming reduced in length because of the distortion of the body wall; cuticle thick wrinkled, appearing to be almost annulated; lip region flattened, in many specimens distorted and misshapen.

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spear moderately coarse, .011 mm. in length, often displaced by the development of the ovary; ovary large reflexed several times; uterus large, occupying a major portion of the body cavity and becoming distended with larvae as the eggs hatch; vulva protuberant; anal opening invisible; tail obtuse. Figures 1 C and D.

**Diagnosis:** Elongate *Parasitylenchus* with broadly rounded lip region and obtuse tail. Differs from other species of the genus in its greater length and width.

**Type Host:** *Scolytus ventralis*.

**Type Locality:** Sandia Mountains, Albuquerque, New Mexico.

The species is of especial interest as approximately 50 percent of the beetles examined, adults, larvae and pupae, were found to be infested with the parasite. Development of the parasite progresses with the development of the beetle. Immature females are found only in the larvae, pupae, and young adults of the insect. Mature parasitic females are found only in the mature adult beetles. Nothing is known of its effect on its host, but it is thought to be similar to that of *Sphaerularia dendroctoni* Massey and *Aphelenchulus reversus* Thorne in that the egg-laying capacity of infested females is greatly reduced.

*Parasitylenchus pilifronus,* n. sp. (Fig. 2)

**Parasitic Female:** Length 3.8-5.4 mm.; width 0.23 mm.; body elongate, anterior 1/3 of the body widest, tapering toward the posterior end; cuticle translucent, hypodermis composed of large irregular transparent cells as in Figure 2 C; lip region broadly rounded (Figure 2 B); spear .013 mm. long, slender with prominent knobs; ovary single, reflexed one to several times, often almost reaching the base of the spear; vulva and anal openings not apparent. Figure 2 A. Males unknown.

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**Fig. 1.** *Parasitylenchus elongatus,* n. sp. A. Head immature parasitic female. B. Tail immature parasitic female. C. Head mature parasitic female. D. Tail mature parasitic female.
DIAGNOSIS: *Parasitylencus* with translucent cuticle, differs from other species in the genus in the peculiar arrangement of the hypodermal cells and in their lack of color.

**Type Host:** *Ips pilifrons*.
**Type Locality:** Uncompahgre National Forest, Norwood, Colorado.

*Parasitylencus avulsi*, n. sp. (Fig. 3 A)

Eggs: Hatch within uterus of parasitic females.

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Fig. 2. *Parasitylencus pilifrons*, n. sp. A. Parasitic female. B. Anterior portion parasitic female. C. Hypodermal pattern.
First stage larvae: Length 0.29 mm, width .016 mm; a = 17, b = ? , c = ?; lip region flatly rounded; spear slender, faintly knobbed; esophagus a narrow tube, narrowing even more as it passes through the prominent nerve ring; ectopore not visible, body cavity filled with large vacuole-like inclusions; anal opening not visible; tail narrowly rounded.

Parasitic females: Length 1.2-1.55 mm, width 0.10-0.12 mm, a = 11, b = ?, c = 54, V = 98 percent, body sausage shaped, narrowing only slightly at the anterior and posterior ends, assuming circular shape when relaxed; cuticle smooth regular, hypodermis composed of cells with large nuclei; lip region, crown shaped, broadly rounded; spear moderately slender with prominent knobs, .013 mm in length; lumen of the esophagus traceable for a short distance from the base of the spear; ovary reaching almost to the base of the spear, reflexed one to several times in mature specimens; uterus occupying a prominent part of the body cavity; vulva a narrow slit; anal opening subterminal only slightly separated from the vulva; terminus obtuse. Figure 3 A. Males unknown.

Fig. 3A. Parasitylenchus avulsi, n. sp. B D. Parasitylenchus ovarius, n. sp.
B. Parasitic female. C-D. Anterior and posterior portion of first stage larva.
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Diagnosis: Parasitylenchus with crown-shaped lip region. Differs from P. cossoni in the shape of the lip region, the subterminal location of the vulva. It differs from P. scolyti in its larger size and shape of the terminus.

Type host: Ips avulsus.

Type locality: Talladega National Forest, Alabama.

P. avulsus was taken from the body cavity of adults Ips avulsus found associated with Dendroctonus frontalis Zimm. and Ips grandicollis (Eichh.).

Parasitylenchus ovarius, n. sp. (Fig. 3B-D)

Eggs: Hatch within uterus of adult females.

First stage larvae: Length 0.7 mm.; width 0.03 mm.; cuticle with faint striations nearly smooth; lip region flattened to very slightly rounded; spear slender, minutely knobbed; esophagus a narrow tube, becoming constricted as it passes through the nerve ring; nerve ring prominent; excretory pore not visible in specimens examined; genital primordia apparent; anal opening not visible; body cavity filled with vacuole-like inclusions. Figures 3 C and D.

Parasitic female: Length 1.7 mm.; width 0.16 mm., a = 11, b = ?, c = 8; body when relaxed assumes semicircular position, saclike in shape, broadest at the middle, narrowing at the anterior and posterior ends; lip region broadly rounded; spear, slender, .014 mm. in length with prominent knobs, often displaced by the growth of the ovaries, becoming nonfunctional in older specimens; lumen of the esophagus visible for only a short distance from the base of the spear; ovary single, reflexed; uterus filling a large portion of the body cavity in mature specimens; vulva and anal opening closely separated; tail narrowly obtuse. Figure 3 B. Males unknown.

Diagnosis: P. ovarius is closely related to P. dispar and P. grossmannae. It differs from P. dispar in its larger size and the terminal location of the anal opening; from P. grossmannae in the presence of discernible anal opening and the more narrowly rounded lip region.

Type host: Ips piliferons.

Type locality: Uncompahgre National Forest, Norwood, Colorado. Only the adult beetles were infested with the parasite.

Literature Cited


