

Description of *Pararotylenchus belli* n.sp. (Nematoda:Hoplolaimidae)¹

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Abstract: A new species of *Pararotylenchus* Baldwin & Bell, 1981 from the Pacific coastal area of California is described. Numerous females and juveniles were recovered, but no males were found. *Pararotylenchus belli* n.sp. is most similar to *P. sphaerocephalus*, but females of *P. belli* are shorter and have a shorter stylet and a hemispherical tail. Specimens from a cereal field in South Dakota were identified as *P. colocaudatus*. *Key words:* taxonomy, new species, scanning electron microscopy, morphology.

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Baldwin and Bell (2) recently proposed the genus *Pararotylenchus* with eight species. This genus is unique in the Hoplolaimidae because it possesses a basal esophageal bulb instead of overlapping esophageal lobes. In October 1977 numerous female and juvenile specimens of an undescribed species of this genus were discovered in soil samples taken from about the roots of unidentified herbaceous and shrubby plants about 6–12 m above the high tide mark on the slope leading to Shell Beach, Sonoma County, California. This nematode is described herein. Its specific epithet acknowledges the many contributions of

A. H. Bell to this genus and to the science of nematode taxonomy.

MATERIALS AND METHODS

Specimens were extracted by sieving-misting (1) of the soil and were killed and fixed in hot 2% formalin. They were impregnated with glycerin by a modified Seinhorst rapid method. Glycerin impregnated specimens were gold coated, and specimens were studied with a Jeol JSM-U3 SEM using the method of Sher & Bell (3).

In the following description, all measurements are in μm . Means are given first, followed in order by the range, standard deviation, and coefficient of variation (as a percentage) in parentheses for the measurements and ratios. In the descriptive text, only mean and range are given. Measurements, ratios, and corresponding abbreviations included in the description are as defined by Baldwin and Bell (1).

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DESCRIPTION

Pararotylenchus belli n.sp.
(Fig. 1,2)

MEASUREMENTS (14 ♀♀ Paratypes):
L = 997 (877–1,138, 85.4, 8.6); a = 28.9 (26.6–30.8, 1.5, 5.2); b = 5.5 (4.9–6.1, 0.4, 6.9); c = 43.8 (39.1–53.7, 4.4, 10.1); c' = 0.87 (0.67–1.00, 0.1, 11.4); V = 59.5 (52.3–62.4, 1.3, 2.3); stylet = 34.4 (34–35, 0.5, 1.5); DGO = 5.9 (5.0–7.0, 0.7, 11.9); width = 34.5 (32.0–38.0, 1.9, 5.6); distance from an-

terior end to base of esophagus (esop.) = 180 (171–192, 5.5, 3.0); tail = 22.9 (18.0–28.0, 3.2, 13.9); ABW = 26.2 (24.0–29.0, 1.6, 6.0); distance from anterior end to valve of median bulb (DVMB) = 106.6 (101.0–113.0, 3.5, 3.4); distance from anterior end to excretory pore (ex.p.) = 156 (144–170, 8.2, 5.2).

DESCRIPTION (Females): Body C-shaped to coiled. Lip region offset slightly, hemispherical with seven to nine annules. Lip region observed en face with SEM

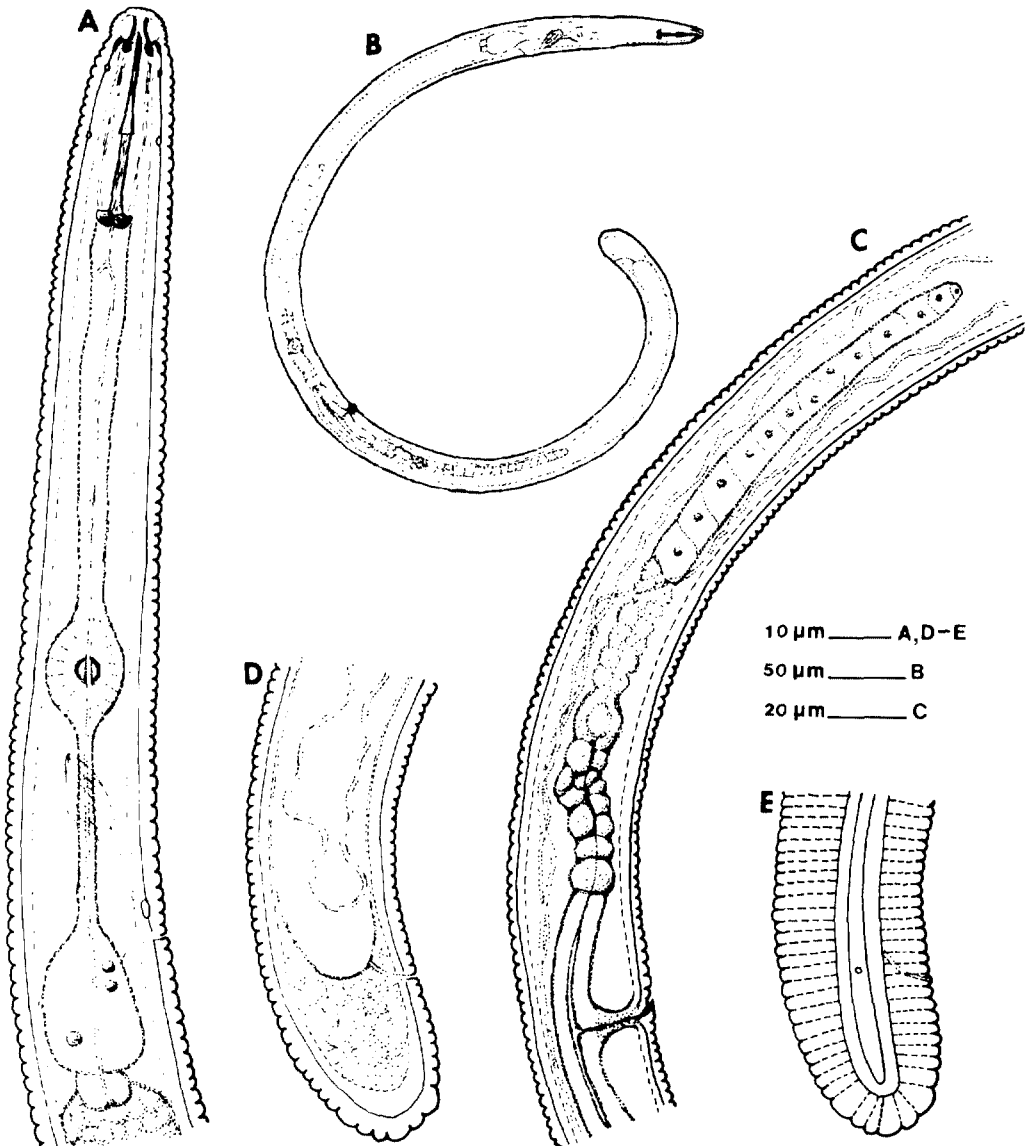


Fig. 1. Drawing of females of *Pararotylenchus belli* n.sp. A) Anterior region. B) Entire specimen. C) Vulva and anterior ovary. D) Posterior, internal structures. E) Posterior, external view.



showed all features consistent with other females of the genus; lip annules may be incomplete. Lip width at base of lips 10 (9.5–11). Anterior cephalids about three annules below lips, posterior cephalids near level of base of stylet cone. Stylet knobs with flattened anterior surfaces, rounded posteriorly. Excretory pore usually located near anterior end of basal bulb. Hemizonid 2–4 annules anterior to excretory pore. Serpentine canals conspicuous in most specimens. Spermatheca small, obscure, without sperm. Epiptygma typically large and conspicuous, occasionally inconspicuous or missing. Phasmids near level of anus. Tail cylindrical with hemispherical terminus, 9–13 tail annules.

HOLOTYPE (Female): L = 1,042; a = 30.6; b = 5.7; c = 41.7; c' = 1.00; V = 57.6; stylet = 34; DGO = 6.5; width = 34; esop. = 184; tail = 25; ABW = 25; DVMB = 113; ex.p. = 162; anterior ovary = 240; posterior ovary = 238; TA = 13. Female as in general description, coiled. Lip region with eight annules, 10 μm wide at base. Excretory pore at level of anterior region of basal bulb. Hemizonid two annules anterior to excretory pore.

MALES: Not found.

HOLOTYPE (♀): Collected by R. T. Robbins in October 1977. Catalog number 53; University of California Riverside Nematode collection, Department of Nematology, University of California, Riverside.

PARATYPES (numerous females and juveniles): same data as holotype. Specimens distributed to the following nematode collections: University of California Riverside Nematode Collection; University of California Davis Nematode Collection; United States Department of Agriculture Nematode Collection, Beltsville, Maryland; Nematology Department, Rothamsted Experimental Station, Harpenden, Herts, England; Laboratorium Voor Nematologie, Wageningen, The Netherlands; Laboratoire des Vers, Museum, 61 Rue de Buffon, Paris; Canadian National Collection of Nematodes, Ottawa; the remaining specimens retained in the collection of the author.



Fig. 2. A–C) SEM en face views of adult females of *Pararotylenchus belli* n. sp.

TYPE HOST AND LOCALITY: Soil from around roots of various unidentified plants on steep sloping ground 20–40 feet above high tide mark, Shell Beach, Sonoma County, California.

DIAGNOSIS: *Pararotylenchus belli* is most similar to *P. sphaerocephalus*, but females of the former are shorter in length (997 [877–1,138] vs. 1,405 [1,250–1,640]), the stylet is shorter (35 [34–35] vs. 41.25 [39.0–44.0]), and the tails are cylindrical with hemispherical (rounded) terminus vs. tapering with dorsal side more curved and often flattened slightly or dorsally indented near terminus.

IDENTIFICATION

Specimens of a *Pararotylenchus* sp. collected by F. E. Caveness on 6 May 1958 in a grain field near Toronto, South Dakota, were examined and compared to paratypes of several species and identified as *P. colocaudatus* Baldwin and Bell, 1981. The specimens (5 ♀♀, 10 ♂♂, 1 juvenile), a part of the University of California Davis Nematode Collection, were catalogued as *Rotylenchus brevicaudatus*. Measurements are given below.

Pararotylenchus colocaudatus Baldwin and Bell, 1981

MEASUREMENTS (5 ♀♀): L = 928 (850–1,030); a = 31.0 (27.9–34.3); b = 5.9 (5.4–6.5); c = 45.6 (36.2–51.8); c' = 0.85 (.71–1.05); V = 58.7 (57.4–59.8); stylet = 30.9 (30.5–32); width = 29.9 (28.0–31.5); esop. = 156 (148–169); tail = 20.6 (17.5–23.5); ABW = 24.4 (22.0–29.0); DVMB = 92 (88–100); ex.p. = 122 (117–128); TA = 9.2 (7–12).

MEASUREMENTS (10 ♂♂): L = 973

(863–1,088); a = 35.4 (32.9–38.9); b = 6.0 (5.4–6.3); c = 38.8 (32.6–48.8); stylet = 31.1 (29–33); width = 27.4 (25.0–29.0); esop. = 164 (147–179); tail = 25.3 (21–30); DVMB = 96 (87–105); ex.p. = 140 (130–152); spicule = 33.9 (31–38); gubernaculum = 13.9 (12–16).

DISCUSSION

Most of the female paratypes of *P. colocaudatus* were flattened somewhat. The few not flattened had width and 'a' measurements comparable to the above. The stylets of the South Dakota females were slightly shorter, but not enough to justify classifying them as a new species. All other female measurements had comparable means with considerable overlap of ranges. In many of the paratypes, the spermathecae were round as were those of the South Dakota specimens. No other character differences were observed.

The paratype males were generally flattened somewhat. Those few not flattened were within the range of width for the South Dakota males. The South Dakota males were slightly longer, which gave them a slightly greater 'a' measurement. Again, the differences were not sufficient to name them a new species.

LITERATURE CITED

1. Ayoub, S. A. 1977. Plant nematology, an agricultural training aid. State of California, Department of Food and Agriculture, Sacramento.
2. Baldwin, J. G., and A. H. Bell. 1981. *Pararotylenchus* n. gen. (*Pararotylenchinae* n. subfam., *Hoplolaimidae*) with six new species and two new combinations. *J. Nematol.* 13:111–128.
3. Sher, S. A., and A. H. Bell. 1975. Scanning electron micrographs of the anterior region of some species of *Tylenchoidea* (*Tylenchida*: *Nematoda*). *J. Nematol.* 7:69–83.