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Emendation of the Genus *Paurodontella* Husain & Khan, 1968 and Description of *P. auriculata* n. sp. from Western Canada (Nematoda: Paurodontidae)

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Abstract: Males and females of *Paurodontella auriculata* n. sp. are described and illustrated and the genus emended. The species is characterized by a short, robust body of 355–525 μm, a stylet length of 7–8 μm, lateral field with 5–6 incisures, and a conoid, attenuated tail 1.5 times the vulva–anus distance. Primary characters used in emending the genus are asymmetrical stylet knobs, absence of lateral lips, a deep slit-like amphid dividing the submedian lips to base of head, where open lateral sides are covered by a large auriform cuticular flap, and variable length of the basal esophageal bulb stem and male bursa.

Key words: scanning electron microscopy, *Paurodontus*, amphids, lips.

Husain and Khan (1) erected the genus *Paurodontella* in 1968 to accommodate those paurodontid species having a long basal esophageal bulb stem, symmetrically rounded stylet knobs, a short convex-conoid tail in both sexes, and a ditylenchoid male bursa. Morphology of the head, established by Thorne (3), is presumably the same for all species in this group, including those described as *Paurodontus* Thorne, 1941. Thorne's study of head mounts convinced him that the amphids were pore-like and "located on minute elevations" on the reduced lateral lips. *Paurodontella* presently contains the following species: *P. aberrans* (Nandakumar & Khera, 1969) Sumenkova, 1975; *P. apitica* (Thorne, 1941) Husain & Khan, 1968; *P. asymmetricus* (Tikyani & Khera, 1968) Sumenkova, 1975; *P. densa* (Thorne, 1941) Husain & Khan, 1968; *P. minuta* Husain & Khan, 1968; *P. niger* (Thorne, 1941) Husain & Khan, 1968; *P. sohaili* Maqbool, 1982.

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An undescribed species of *Paurodontella* from western Canada had characters which markedly alter the current concept of the genus. Light and scanning electron microscope studies of heads showed that the lateral lips are absent and the amphid apertures are deep, vertical slits extending from the oral disc to the base of the head, dividing the submedian lips. The open amphid at the sides of the head are covered by large auriform flaps of cuticle that are conspicuous in all glycerine totomounts (Fig. 2). An en face head mount of a Canadian specimen and one of *P. densa* prepared by Thorne in 1938, still in perfect alignment and condition, are identical in morphology. In both, minute lateral "lobes" are present at the base of the head, corresponding to the "minute elevations" observed by Thorne (3). These lobes are also discernible in lateral view of three of nine paratypes of *P. apitica*. Similarities of the distinctive head shape illustrated for other species suggest that the lip and amphid structure of the Canadian specimens is common to all.

Other disparate character states of the Canadian species are a variable basal esophageal bulb stem ranging from 4 to 13 μm, asymmetric stylet knobs (Fig. 2A) (a character thought to be unique to mem-

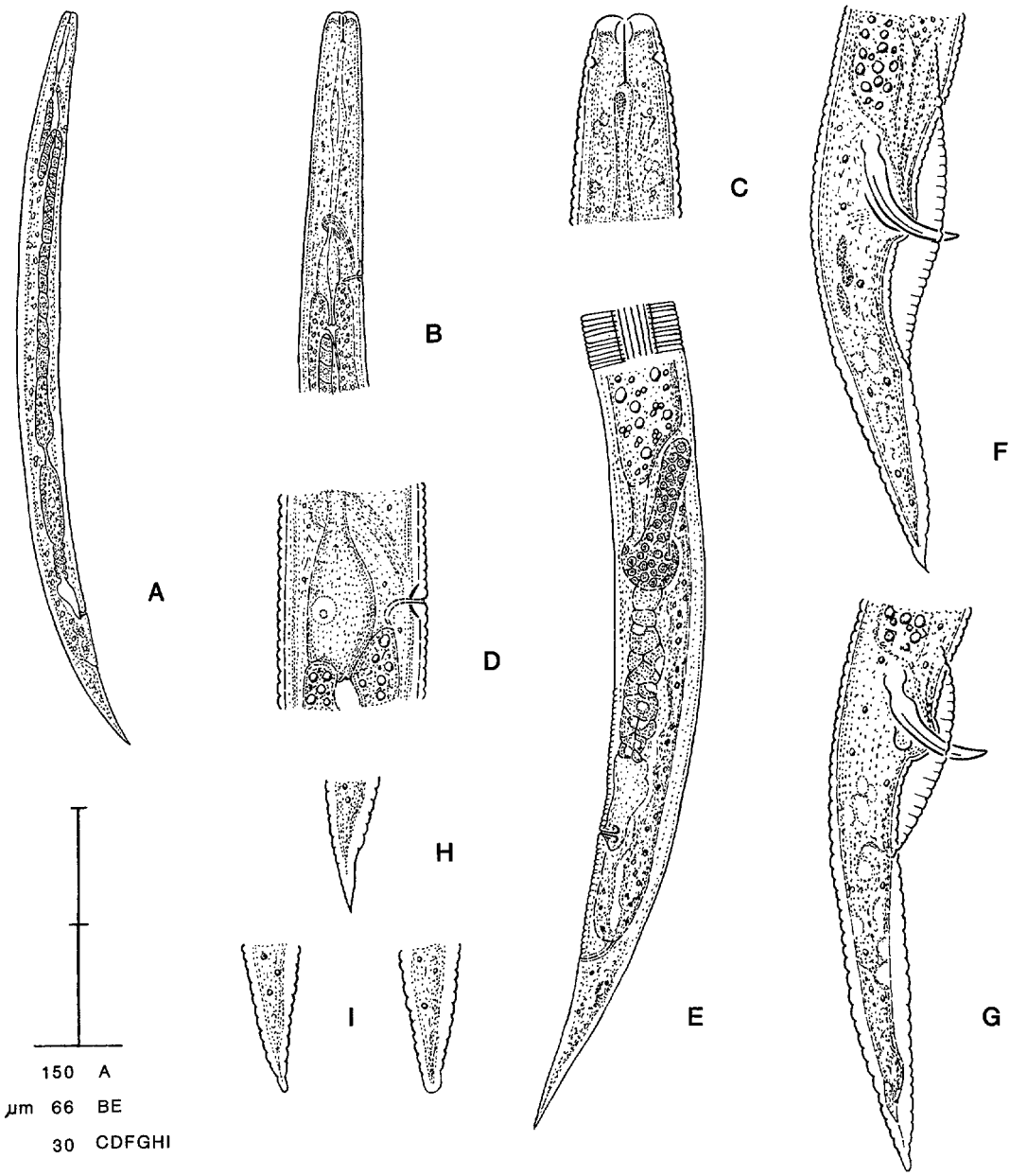

FIG. 1. *Paurodontella auriculata* n. sp. A) Adult gravid female. B) Esophagus with a long-stemmed basal bulb. C) Head end. D) Basal esophageal bulb with a short stem. E) Female reproductive tract. Note the particularly large spermathecal diverticulum. F, G) Male tail showing variation in length of the bursa. H) Female tail end with apiculate terminus typical for the species. I) Variation in roundness of tail tip.

bers of *Stictylus* Thorne, 1941), and a male bursa that is either adanal or ditylenchoid (Fig. 1F, G). The esophageal bulb stem in *P. apitica*, represented as long by Thorne (3), appears to be short in two paratypes and is probably a variable character in other species as well. Because the generic diagnosis of *Paurodontella* is no longer adequate, it is herein emended and a new species from Canada is named and described.

MATERIALS AND METHODS

SEM studies were based on seven females processed according to methods in Mulvey (2) and scanned with a Cambridge 20 kV

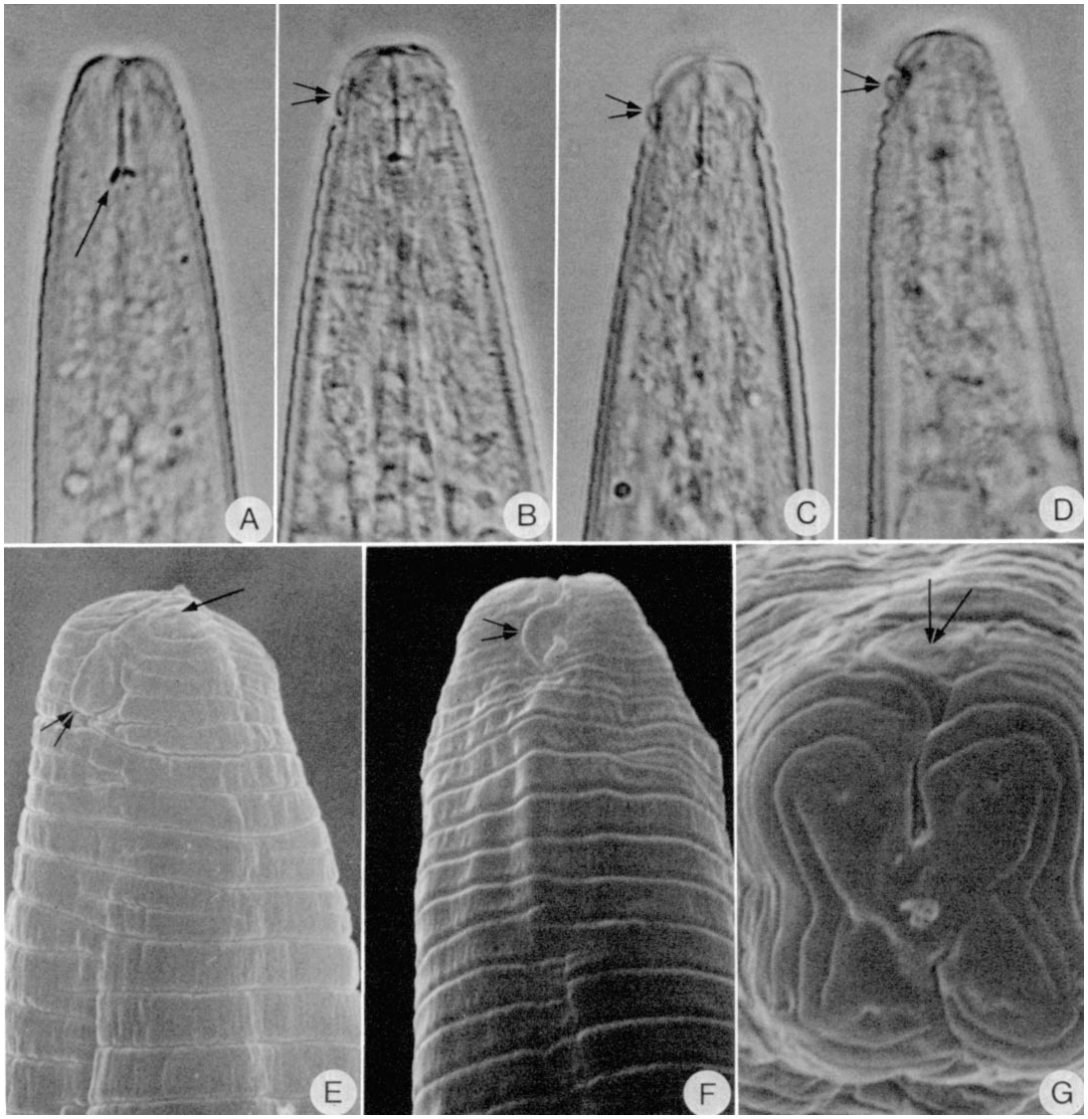

FIG. 2. *Paurodontella auriculata* n. sp. Head ends of adult females. A) Lateral view of stylet showing asymmetry of the knobs characteristic for the species. The subventral are larger and more posteriorly inclined (arrow) than the dorsal. B–D) Dorsoventral views of head revealing the large auriform amphid flaps (double arrow) covering the open-sided, slit-like amphids. E, F) SEM showing the auriform amphid flaps (double arrow) at × 5,000. Note the labial papilla (arrow) in E. G) En face scanning view of head showing the lip and amphid features. Note the auriform amphid flap (double arrow) and median papilla on each of the four lips.

microscope. L. R. White soft grade epoxy resin was used in place of Ladd ultra-low-viscosity resin. Light microscope observations were of temporary water mounts of heat relaxed specimens and glycerine head and whole mounts processed through an ethanol-glycerine series. Type material studied from the Beltsville Nematode Collection, provided by A. M. Golden, are a head mount and three females of *P. densa*, labelled Indio, Calif., April 26, 1938; a head mount and seven females of *P. apitica*, Littlefield, Ariz., March 15, 1934; and two females, Bard, Calif., March 7, 1939.

TAXONOMY

Paurodontella Husain & Khan, 1968
syn. *Neopaurodontus* Tikyai & Khera, 1968

Generic diagnosis (emended): Paurodontinae. Body short, robust, seldom exceeding 500 μm in length. Head low, broadly

rounded. First head annule comprised of large, paired subdorsal and subventral lips radiating from an oral disc, each with a median peripheral papilla. Amphids slit-like, deeply dividing the submedian lips to base of head, open outer sides each covered by a large, auriform cuticular flap. Stylet delicate with symmetrical or asymmetrical knobs, when asymmetrical, the subventral knobs larger and more reclinate than the dorsal. Corpus cylindrical or with a small fusiform metacorpus. Basal esophageal bulb stem short or long. Spermatheca with a diverticulum of variable size in impregnated females, absent or reduced in females without sperm. Postuterine sac absent or short (less than a body width in length). Tail in both sexes conoid, short, usually less than 50 μm (56–69 μm in measured paratypes of *P. apitica*), tapering to an acute or narrowly rounded terminus. Vulva–anus distance short, less than 50 μm, tail usually longer (except in *P. sohaili*, variable in some species). Bursa of male adanal or enveloping no more than half the tail.

Remarks: Few generic characters separate *Paurodontus* and *Paurodontella*. Constant differences are the length of the postuterine sac (at least a body width in length vs. shorter in *Paurodontella*), slenderness of the body (a = more than 30 vs. less), and the vulva–anal length (longer than 50 μm vs. shorter). All other characters listed in the emended diagnosis for *Paurodontella* are found in one or more species in either genus.

Paurodontella auriculata n. sp.
(Figs. 1, 2)

Holotype (female): L = 457 μm; a = 18; b = 5.4; c = 8.5; c′ = 3.2; V = 81. Stylet length = 8 μm.

Paratype (42 females, 20 measured): L = 398–525 μm (466 ± 40 μm); a = 19–25 (21 ± 2); b = 5.1 (5.9 ± 0.64); c = 8.0–10.8 (9.6 ± 1.16); c′ = 2.0–5.1 (3.2 ± 0.6); V = 80–85 (83 ± 1.3). Stylet length = 7–8 μm. Intrauterine egg (n = 9) 50–59 (54) μm × 14–19 (16) μm.

Paratype (3 males, respectively): L = 355, 390, 418 μm; a = 20, 22, 25; b = 4.9, 5.4, 5.2; c = 8.1, 7.9, 7.5; c = 4.0, 3.9, 4.3; T = 62, 61, 62. Spicule length 16, 19, 15 μm. Gubernaculum length 6–7 μm.

Female: Small and robust. Body straight or ventrally arcuate, width 17–28 μm (23 ± 2.9 μm), annule width about 1 μm, ranging to 2 μm on tail and neck. Head low with rounded contour, continuous with body, width about half that of base of esophagus. Lips four, comprised of two subventral and two subdorsal, each with a median peripheral papilla (Fig. 2E, G). Lateral lips absent. Amphid apertures deep vertical slits dividing the submedian lips to base of head, outer sides each covered by a large auriform flap of cuticle, conspicuous in all glycerine totomounts (Fig. 2).

Stylet delicate, indistinct in most glycerine mounts, knobs rod-shaped, irregular, the subventral being larger and more reclinate than the dorsal (Fig. 2A). Dorsal gland duct obscure, ampulla near dorsal stylet knob. Anterior cephalids conspicuous in most specimens, 5–7 μm posterior to head end, posterior cephalids not observed. Lateral field 7–9 μm wide, about a third of body diameter, marked usually by six, sometimes five, incisures. Outer incisures areolated, midincisures may be irregularly broken, entire field transected by transverse striae posterior to vulva. Deirids and phasmids not observed at SEM magnifications of up to × 10,000.

Esophagus (with stem) 71–86 μm long (79 ± 5 μm), metacorpus typically fusiform, cylindroid in some specimens, basal bulb pyriform with a 4–13-μm-long stem extending into intestine. Excretory pore 69–81 μm (76 ± 4 μm) from head end, opposite or immediately posterior to hemizonid. Intestine densely packed with refractive globules. Ovary with double flexure in gravid females, extending well into esophageal region, without flexure in virgin females. Oogonia in single or double row, up to three eggs observed in uterus. Spermatheca in impregnated females with a diverticulum of variable size depending on sperm load, spermatheca spherical without diverticulum in females with few sperm, spermatheca indistinct and underdeveloped in young females without sperm. Postuterine sac short, rudimentary, length about equal to that of vagina. Vulva–anus distance 26–45 μm (33 ± 3.6 μm). Tail straight or slightly arcuate ventrally, 39–55 μm (49 ± 4.4 μm) long, or 0.9–1.9 (1.5 ± 0.2) times vulva–anus distance. Tail terminus typically apiculate, narrowly rounded to varying degrees in some specimens (Fig. 1H, I).

Male: Similar to female in general body morphology, but differs in having distinct deirids, apparent absence (or great reduction) of basal esophageal bulb stem, and a heavily vacuolated, translucent intestine containing few globules. Excretory pore 69–79 μm from head end. Deirids less than one body diameter posterior to excretory pore. Excretory pore 69–79 μm from head end. Spermagonia in double row, sperms spherical, 2–3 μm in diameter. Spicule arcuate, cephalated, gubernaculum linear. Bursa adanal or ditylenchoid, enveloping 29–44% of tail, bursal margin strongly annulated.

Relationships: P. auriculata n. sp. differs from all others of the genus in having asymmetrical rod-shaped stylet knobs and in the increased size of the female reproductive system. These characters are more representative of members of *Stictylus*. *P. auriculata* is most similar to *P. niger* and *P. densa*. Thorne (3) describes these species as having a long-stemmed basal esophageal bulb and lacking a spermathecal diverticulum. According to this study, these characters are variable in at least some species of *Paurodontella* and probably are not diagnostic. *P. niger* is similar in all other characters to *P. auriculata*. *P. densa* differs only in having a generally shorter tail (36–43 μm in three paratypes vs. 49 ± 4.4 μm), which is equal to, or slightly longer than, the vulva–anus length (shorter according to Thorne) (vs. 1.5 ± 0.2 times the vulva–anus length) in *P. auriculata*.

Type host and habitat: Strawberry. Collected October 1983 in light sandy soil by Dr. G. Platford, Plant Pathology Laboratory, Agriculture Services Complex, Winnipeg, from fumigation research plots at the Sontag commercial strawberry farm, Oakbank, Manitoba.

Type designations: Holotype (female), type slide no. 279. Paratypes (32 females), type slide nos. 279 a–f. Paratypes (three males), type slide nos. 279 c, d. Deposited in the Canadian National Collection of Nematodes, Ottawa. Other depositions: three female paratypes, U.S. Department of Agriculture, Beltsville Nematode Collection; two female paratypes, University of California Davis Nematode Collection; five female paratypes, Gent Nematode Collection, Belgium; two female paratypes, The Nematode Collection of the Nematology Department, Rothamsted Experimental Station.

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