

## Description of *Pratylenchoides sheri* n. sp. (Nematoda: Pratylenchidae)<sup>1</sup>

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*Abstract:* *Pratylenchoides sheri* n. sp., a bisexual species from the Pacific coastal area of California, is described and illustrated. Its most distinctive characters are the esophageal glands slightly overlapping the intestine dorsally, the large ventrally slanting esophago-intestinal valve, the lack of labial sectors in the first lip annule, the presence of males, and apparently functional spermatheca. *Pratylenchoides sheri* is morphologically similar to *P. magnicauda*, but differs in length and labial conformation, its more anterior vulva, and the presence of males. Relationships of head and esophagus gland lobe characters of *P. sheri* are compared to other *Pratylenchoides* species.

*Key words:* taxonomy, morphology, new species, scanning electron microscopy.

Specimens of an undescribed species were found among nematodes extracted from a composite soil sample about 10 m above high tide at Shell Beach, Sonoma County, California, in October 1977. The esophago-intestinal valve of this nematode is located posterior to the esophageal basal lobe, and the esophagus slightly overlaps the intestine dorsally in the female and greatly overlaps the intestine in the male. In 1970 Sher (3) amended the diagnosis of the genus *Pratylenchoides* Winslow, 1958 and published a key for seven species. Baldwin, Luc, and Bell (2) in 1983 amended the diagnosis of *Pratylenchoides* again after a comprehensive study of the esophagi and

lip regions of 12 species. Comparing the undescribed nematode to their published *Pratylenchoides* diagnosis indicated it belonged to the genus. Its specific epithet acknowledges the contributions of S. A. Sher to this genus and to nematode taxonomy.

### MATERIALS AND METHODS

Specimens were extracted from the soil by sieving-misting (1) and were killed and fixed in hot 2% formalin. Fixed nematodes were impregnated with glycerin by a modified Seinhorst rapid method. For SEM studies glycerin-impregnated specimens were gold-coated and examined with a JEOL JSM-U3 scanning electron microscope (4).

### SYSTEMATICS

*Pratylenchoides sheri* n. sp.  
(Figs. 1-3)

*Measurements:* Holotype and paratype females in Table 1; allotype and paratype males in Table 2.

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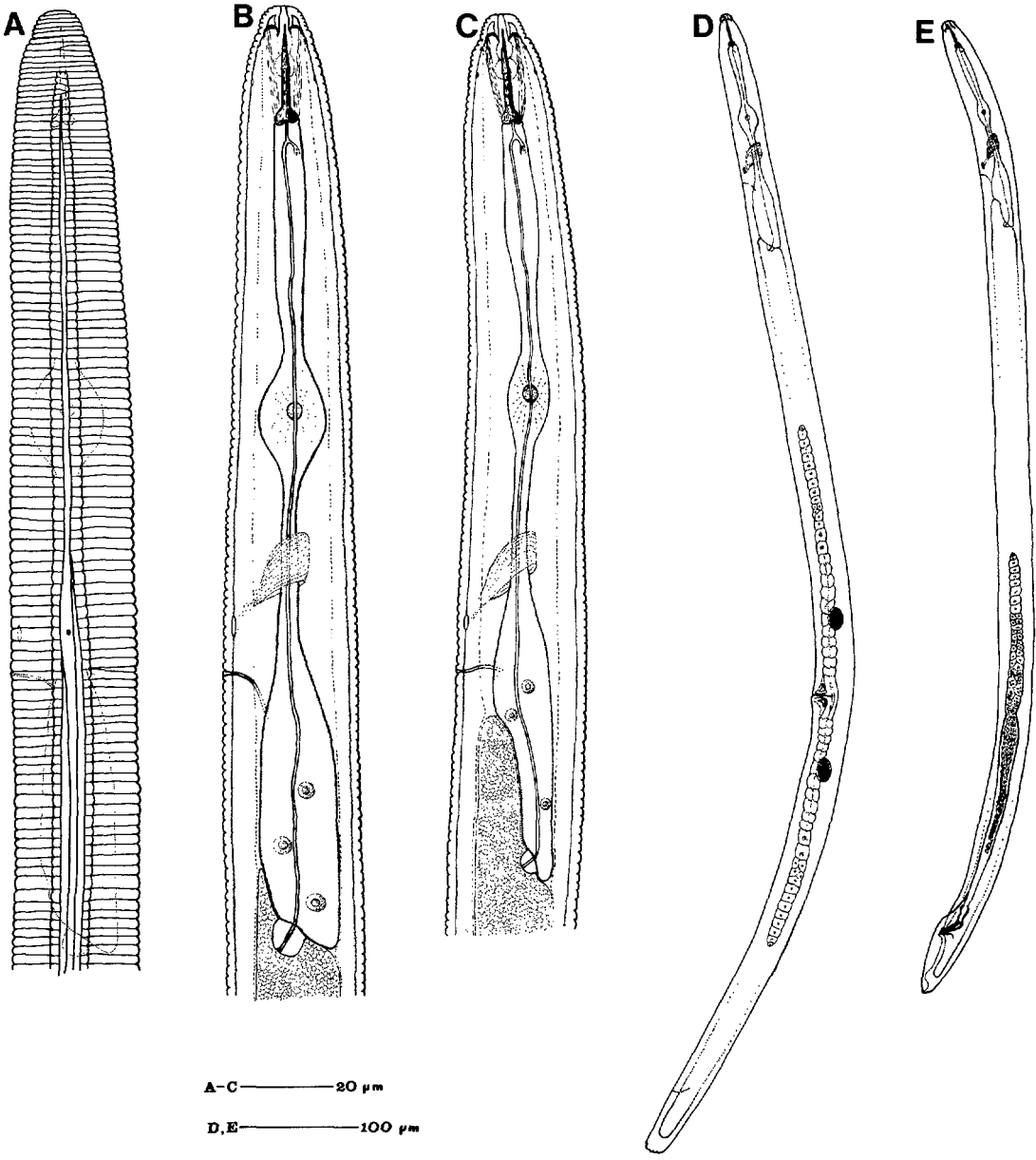


FIG. 1. *Pratylenchoides sheri* n. sp. A, B) Anterior end of female. C) Anterior end of male. D) Female. E) Male.

*Description, female:* Body with slight ventral curvature. Lip region rounded with 5–6 head annules. Cephalids 6–7 annules posterior to the lips. Stylet knobs usually sloped posteriorly, may be flattened. Hemizonid 5 μm (4–6) long, 7.3 μm (2–11) anterior to excretory pore near level of anterior of esophagus base. Deirids usually near level of hemizonid. Esophago-intestinal valve near terminus of esophageal gland. Esoph-

ageal gland slightly overlaps intestine dorsally. Spermatheca round with small, round to oval sperm. Intestinal fasciculi visible in a few specimens. Lateral field with six lines, outermost lines areolated, two innermost lines start near level of deirids and terminate between level of anus and phasmids. Tail nearly cylindrical, terminus rounded, with 26 (20–32) coarse annules.

*Male:* Body shape similar to female, gen-

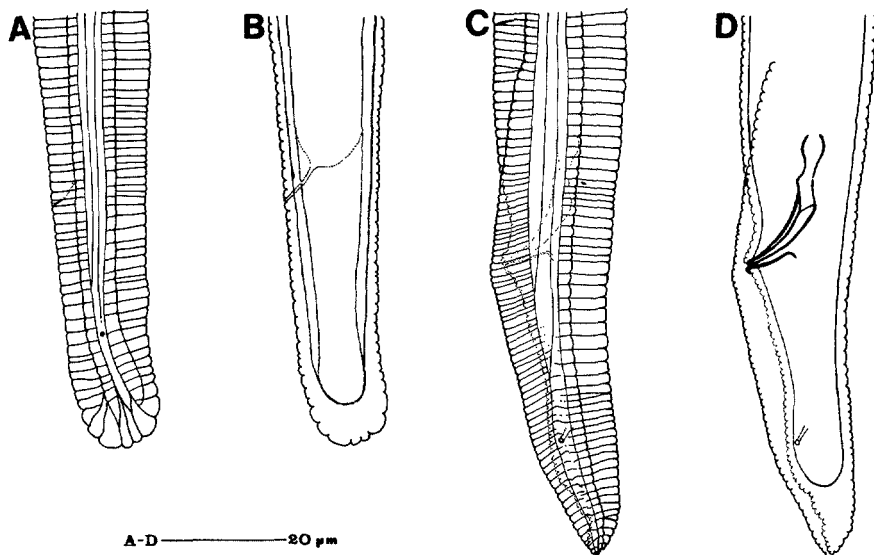


FIG. 2. *Pratylenchoides sheri* n. sp. posterior ends. A, B) Female. C, D) Male.

erally smaller. Stylet shorter than for female. Hemizonid, excretory pore, and deirids similar to female. Esophageal median bulb and gland lobe much smaller than for female with gland lobe overlapping intestine dorsally over half the length of the lobe, esophago-intestinal valve located as for female. Sperm small, rounded to oval in shape. Fasciculi not observed.

*Holotype (female)*: Collected by R. T. Robbins in October 1977. Catalog number 53; University of California; Riverside Nematode Collection (UCRNC); Department of Nematology, University of California, Riverside.

*Allotype (male)*: Catalog number 54; other data same as for holotype.

*Paratypes (46 ♀, 24 ♂, 66 y)*: Same data as holotype. Specimens distributed to the following nematode collections: 8 ♀, 5 ♂, 18 y—UCRNC; 6 ♀, 3 ♂, 12 y—University of California—Davis Nematode Collection; 6 ♀, 4 ♂, 12 y—United States Department of Agriculture Nematode Collection, Beltsville, Maryland; 2 ♀, 2 ♂—Nematology Department, Rothamsted Experimental Station, Harpenden, Hertfordshire, England; 2 ♀, 2 ♂—Laboratorium Voor Nematologie, Wageningen, The Netherlands; 2 ♀, 2 ♂—Laboratoire des Vers, Museum, 61 Rue de Buffon, Paris; and 2 ♀, 2 ♂—Canadian National Collection of Nematodes, Ottawa. The remaining spec-

imens retained in the collection of the author.

*Type host*: Soil and roots of several intermixed plants. One probable host was an unidentified species of the mint family.

*Type locality*: Steep, sloping ground 10 m above high tide mark, Shell Beach, Sonoma County, California.



FIG. 3. SEM face view of *Pratylenchoides sheri* n. sp. female.  $\times 8,000$ .

TABLE 1. Biometrics of *Pratylenchoides sheri* n. sp. female holotype and paratypes.

Measurements (in $\mu\text{m}$ ), percentages and ratios	Holotype	Paratypes n = 20
Length	1,029	1,042 (898–1,173)*
a	32.2	32.3 (29.0–36.5)
b'	5.0	5.1 (4.49–5.59)
c	20.2	19.1 (17.1–25.5)
c'	2.4	2.4 (2.00–3.00)
V	57.7	56.9 (54.3–59.0)
Stylet	25	24.6 (22.0–25.5)
DGO	3.5	3.8 (3.0–4.0)
Width at vulva	32	32.1 (28–36)
Tail length	51	55.5 (47–64)
Width at anus	21	23.2 (20–27)
MB†	42.5	42.5 (41.5–44.2)
h‡	10	9.6 (8–12)
P (ant./post.)§	25/27	27.2/30.8 (15/20–38/39)
Medium bulb width	15	13.5 (12–15)
Dist. from anterior to:		
Median bulb valve	88	86.7 (79–91)
Hemizonid	136	134.5 (118–147)
Ex. pore	150	147.4 (131–159)
Deirids (ant./post.)	140/144	133.6/136.7 (119/121–146/149)
Esophageal base	207	204.2 (190–217)
Vulva	594	592.9 (517–680)

\* Mean followed by range in parentheses.

† MB = distance from anterior to median bulb valve center/total esophagus length  $\times$  100.

‡ h = length of hyaline area of tail.

§ P = distance from phasmid to anus or cloaca.

TABLE 2. Biometrics of *Pratylenchoides sheri* n. sp. male allotype and paratypes.

Measurements (in $\mu\text{m}$ ), percentages and ratios	Allotype	Paratypes n = 20
Length	1,033	947 (778–1,050)*
a	32.3	33.4 (29.7–37.4)
b'	5.4	5.1 (4.4–5.6)
c	16.7	17.0 (14.5–19.2)
c'	2.9	2.7 (2.38–3.20)
T	37.5	35.7 (27.8–44.1)
Stylet	22	22.6 (21.5–24.0)
Spicule length	28	29.6 (28–31)
Gubernaculum length	10	9.5 (9–11)
DGO	3.0	3.1 (2.5–3.5)
Width at mid-body	32	28.3 (24–32)
Tail length	62	55.7 (48–64)
Width at cloaca	21	20.6 (19–22)
MB†	43.7	45.0 (42.5–46.3)
h‡	13	12.2 (8–15)
P (ant./post.)§	34/39	30.1/32.0 (25/25–39/41)
Medium bulb width	10	10.1 (8–12)
Dist. from anterior to:		
Median bulb valve	83	83.0 (79–88)
Hemizonid	132	128.3 (115–140)
Ex. pore	147	140.6 (125–151)
Deirid (ant./post.)	128/135	126.8/129.9 (112/113–136/140)
Testis	646	614.5 (437–675)
Esophagus gland		
Posterior terminus	190	184.6 (171–194)

\* Mean followed by range in parentheses.

† MB = distance from anterior to median bulb center/total esophagus length  $\times$  100.

‡ h = length of hyaline area of tail.

§ P = distance from phasmid to anus or cloaca.

*Diagnosis:* *Pratylenchoides sheri* n. sp. is most similar to *P. magnicauda* (Thorne, 1935) Baldwin, Luc, and Bell, 1983, but is longer (1.04, 0.9–1.2 vs. 0.89, 0.75–1.1 mm), the vulva is more anteriorly positioned (54–59 vs. 58–64%) and males are present vs. unknown. SEM face views show the labial disc of *P. sheri* to be more set off subdorsally and subventrally, and the first lip annule is not segmented. The females of *P. sheri* differ from those of the most similar bisexual species, *P. heathi* Baldwin, Luc, and Bell, 1983, by a more anteriorly positioned vulva (54–59 vs. 56–62%), wider body width (28–36 vs. 21–30  $\mu\text{m}$ ), and greater anal body width (20–27 vs. 16–22  $\mu\text{m}$ ). SEM face views reveal similar labial discs, but the first lip annule of *P. sheri* is not segmented laterally, subdorsally, or subventrally, as is *P. heathi*. Males of *P. sheri* have a smaller median bulb and a shorter stylet than *P. heathi* males.

#### DISCUSSION

Differences in lip morphology of several *Pratylenchoides* species are discussed by Baldwin et al. (2). The labial disc of *P. sheri* is similar to that shown for *P. heathi*. Lip sectors are well delineated (especially lateral) in the first lip annule of *P. magnicauda*, *P. heathi*, and *P. utahensis* Baldwin, Luc, and Bell, 1983, while “there is a tendency toward a greater degree of fusion among sec-

tors of the first lip annule” for *P. crenicauda* Winslow, 1958, *P. bacilisemenus* Sher, 1970, and *P. ritteri* Sher, 1970 (2). The first lip annule of *P. sheri* lacked sectors in SEM photomicrographs of four specimens. When the tendency toward fusion of the first lip annule sectors noted by Baldwin et al. (2) is carried to its logical end, it results in fusion of all the sectors as in *P. sheri*.

The esophageal gland lobe of the *Pratylenchoides* species varies in size, shape, position of the gland nuclei, and position of the esophago-intestinal valve (2). The esophageal gland lobe of *P. sheri* is most similar to that of *P. magnicauda*, but it may have even less intestinal overlap and the large esophago-intestinal valve slants ventrally downwards.

#### LITERATURE CITED

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