

Hoplolaimoidea (Nematoda: Tylenchida) from the Aleutian Islands with Descriptions of Four New Species¹

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Abstract: Four new species of hoplolaimoid nematodes (*Merlinius adakensis*, *Pratylenchoides megalobatus*, *Pratylenchus pratensisobrinus*, and *Pratylenchus ventroprojectus*) are described from Adak Island in the Aleutian chain. *M. adakensis* n. sp. is separated from other species by body length (0.96–1.3 mm), stylet length (32–36 μ m), number of tail annules (49–68), and c' (3.1–4.1). *P. megalobatus* n. sp. differs from all known *Pratylenchoides* spp. by having a very long esophageal gland lobe ($b' = 2.4$ –3.3, overlap 3–6 times the body width). *P. pratensisobrinus* n. sp. closely resembles *P. pratensis* (de Man) Filipjev, but has a longer stylet (15–17 μ m), a longer tail ($c = 12$ –15; $c' = 2.8$ –3.7), and more tail annules (23–37). *P. ventroprojectus* n. sp. is distinguished by body length (392–475 μ m), three lip annules, low and flattened cephalic capsule, and presence of terminal subventral projection. *Pratylenchoides variabilis* Sher, *Helicotylenchus amplius* Anderson & Eveleigh, and *H. spitsbergensis* Loof are also reported from Adak and Amchitka Islands.

Key words: stunt nematodes, root-lesion nematodes, spiral nematodes, taxonomy, ectoparasites, endoparasites, new species.

This paper is the third in a series recording and describing plant-parasitic nematode taxa of the Aleutian Islands. As in previous papers on Heteroderoidea and Criconematina (4,5), the majority of the hoplolaimoid taxa so far collected from the Aleutians are undescribed species.

MATERIALS AND METHODS

Sixty-two soil samples were examined from Adak Island, eight from Amchitka Island, and one from Tanaga Island. Soil samples consisted of either a loamy medium sand (Typic Cryopsamment) or a highly organic peat-like soil. Water suspensions of sandy samples were poured through a sieve (38- μ m pores) to collect nematodes. Suspensions of peat samples were poured through two nested sieves (472- μ m over 38- μ m pores). Nematodes from 38- μ m-pore sieve residues were separated by means of a centrifugal-flotation method (6), killed with 80 C 4% formalin, and processed to glycerin by a rapid method (10). All measurements were made on specimens mounted in glycerin. Specimens of *Merlinius adakensis* n. sp. were prepared for scan-

ning electron microscopy by Thomas O. Powers, University of California, Riverside. All type material numbered in the text is deposited under those numbers in the USDA Nematode Collection (USDA-NC), Beltsville, Maryland.

SYSTEMATICS

Merlinius adakensis n. sp.
(Figs. 1–5, 29–30; Table 1)

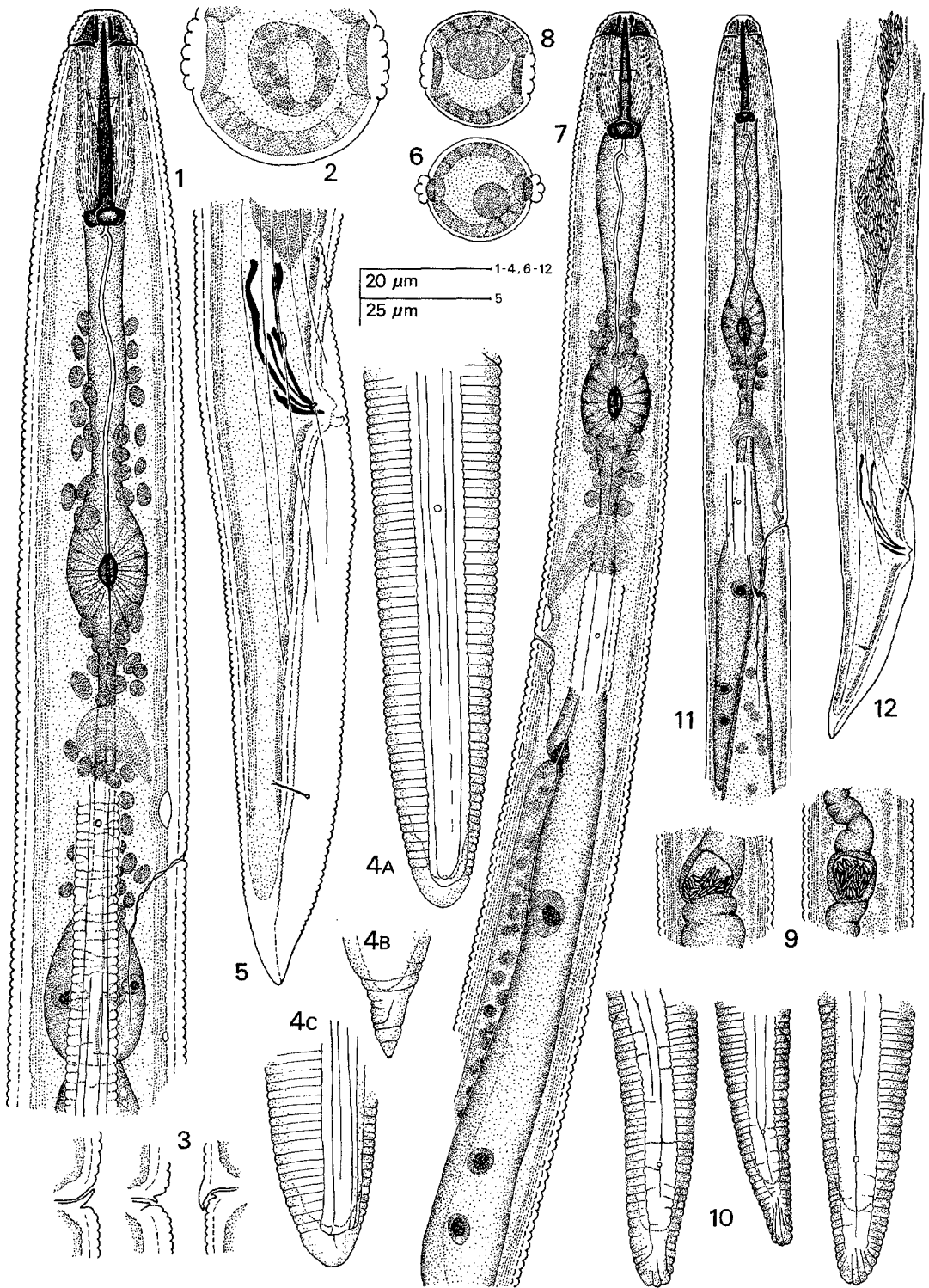
Measurements and ratios for type specimens are provided in Table 1.

DESCRIPTION: Female: Body straight when heat-relaxed. Lip region offset, narrower than adjacent body, with 6–8 annules (Figs. 1, 29, 30) divided by six longitudinal incisures, of which the dorsal and ventral incisures do not reach the labial disc (Figs. 29–30). Labial disc roughly octagonal, the amphid apertures irregularly rounded (Fig. 29). Cephalic sclerotization heavy. Stylet stout, the knobs hatchet-shaped in profile and flattened on their anterior edges. Both pairs of cephalids in the region of the conus. Median bulb oval; procropus and isthmus approximately equal in length; basal bulb ovate, the gland nuclei all at about the same level (Fig. 1). Hemizonid and deirids in the region of the posterior half of the isthmus; excretory pore 3–4 annules behind the hemizonid; hemizonion near level of basal bulb base. Intestinal fasciculi absent. Gonads outstretched, spermathecae rounded or broadly oval. Vulval epiptygma moderately to strongly developed, usually one predominating (Fig. 3). Tail subcylindrical,

Received for publication 30 August 1983.

¹ The author thanks Michael P. Williams and Raymond McCord, University of Tennessee Graduate Program in Ecology, for gathering soil and plant material while supported in part by a grant from the U.S. Department of Energy. He is also grateful to Mr. Thomas O. Powers, University of California, Riverside, for the use of the SEM photographs in this paper, and to Drs. J. G. Baldwin and M. Luc for allowing him to see their manuscript on *Pratylenchoides*.

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FIGS. 1-12. *Merlinius adakensis* n. sp. 1) Female, anterior region. 2) Female, midbody cross-section. 3) Females, vulval regions. 4) Females, tail and tail tips. 5) Male, posterior region. *Pratylenchoides variabilis* Sher. 6) Female, midbody cross-section. *Pratylenchoides megalobatus* n. sp. 7) Female, anterior region. 8) Female, midbody cross-section. 9) Females, spermathecae. 10) Females, tails. 11) Male, anterior region. 12) Male, posterior region.

TABLE 1. Measurements and ratios for *Merlinius adakensis* n. sp.

	Holo- type female	Paratype females (n = 22)				Allo- type male	Paratype males (n = 4)	
		Mean	Range	SD	CV		Mean	Range
Length (μ m)	1,209	1,126	959–1,284	93.8	8.3	1,027	1,105	997–1,172
Stylet length (μ m)	35	34	32–36	1.3	3.7	32	34	33–35
Dorsal gland orifice to stylet base (μ m)	2.8	2.2	1.4–3.3	0.4	19.5	2.0	1.8	1.6–2.0
a	34.5	32.8	27–37	2.4	7.3	41.1	36.5	31.1–41.3
b	6.2	6.2	5.5–6.8	0.4	6.3	6.3	6.5	5.9–7.5
c	12.3	12.5	10.6–14.2	1.0	7.6	9.3	10.5	10.0–10.8
c'	3.7	3.6	3.1–4.1	0.3	8.3	4.4	4.6	4.1–5.1
m (%)	53	54	50–55	1.0	2.1	54	55	53–57
V (%)	57	54	51–58	1.5	3.0			
G1 (%)	20	20	16–26	2.7	13.2			
G2 (%)	18	18	12–25	2.6	14.6			
T (%)						48	50	46–61
Spicule length (μ m)						30	33	30–35
Gubernaculum length (μ m)						9	8	7–10

with 54 (49–68) annules, the tip usually broadly rounded and smooth (Fig. 4A, C); occasionally tip extended irregularly to a pointed terminus (Fig. 4B). Phasmids well developed, located at a third to a fourth of the tail length from the anus, centered in the lateral field; clear portion of tail usually occupying the nonannulated region of the terminus. Lateral field irregularly areolated, consisting of four incisures at deirids, six at basal bulb level (Fig. 1), six at mid-body (Fig. 2) and at phasmids, and four near tail terminus (Fig. 4); lateral field closed near tail tip.

Male: Similar to female in most respects. Body straight to slightly curved. Gonad outstretched. Spicules curved, moderately cephalated; velum minute; spicular tip weakly notched, the ventral part slightly longer. Gubernaculum arcuate, the proximal end bent anteriorly (Fig. 5). Hypopygium prominent. Caudal alae well developed, crenate, and extending to the tail tip; most lateral incisures ending on the alae. Phasmids located in posterior half of tail.

TYPES, TYPE HOST, AND LOCALITY: Holotype female (T-364t), allotype male (T-365t), and paratype females and males (T-3092p–T-3097p) collected from the rhizosphere of *Elymus mollis* Trin. at Kuluk Bay, Adak Island, Alaska, July–August 1978.

DIAGNOSIS: *M. adakensis* n. sp. is similar to several *Merlinius* spp. described from the

western United States (*M. alpinus* (Allen, 1955) Siddiqi, 1970; *M. macrodens* (Allen, 1955) Siddiqi, 1970; *M. grandis* (Allen, 1955) Siddiqi, 1970) by virtue of large size, offset lip region, and heavy cephalic sclerotization. *M. adakensis* can be separated from these species (1,13) by a combination of the following characters: female length 0.96–1.3 mm, stylet length 32–36 μ m, excretory pore near base of isthmus, tail annules 49–68, $c' = 3.1$ –4.1. *M. alpinus* is shorter, has a longer stylet (39–42 μ m), and has an excretory pore in the region of the basal bulb. *M. macrodens* has a longer stylet (41–48 μ m), fewer tail annules (34–37), and smaller c' value (2.6). *M. grandis* has a shorter stylet (26–30 μ m) and fewer tail annules (36–42).

The specific name is derived from the type locality, Adak Island.

Pratylenchoides megalobatus n. sp.

(Figs. 7–12; Table 2)

Measurements and ratios for type specimens are given in Table 2.

DESCRIPTION: *Female*: Body slender, gradually narrowing posterior to the vulva, straight or slightly curved when heat-relaxed. Lip region rounded, with 4–5 annules, not longitudinally striated (Fig. 7). Stylet stout, its knobs rounded or with flattened anterior surfaces; one pair of cephalids seen at level of conus base. Median bulb robust. Excretory pore 1–2 annules

TABLE 2. Measurements and ratios for *Pratylenchoides megalobatus* n. sp.

	Holo-type female	Paratype females (n = 32)				Allo-type male	Paratype males (n = 16)			
		Mean	Range	SD	CV		Mean	Range	SD	CV
Length (μm)	488	522	430-621	54.2	10.4	414	395	342-446	30.8	7.8
Stylet length (μm)	19	19	18-21	0.7	3.9	16	16	15-17	0.5	3.1
Dorsal gland orifice to stylet base (μm)	2.4	2.4	1.6-3.5	0.5	19.7	2.0	1.8	0.8-2.7	0.5	30.2
a	35.9	29.2	24.2-33.9	2.4	8.1	32.2	28.4	24.8-34.5	2.9	10.1
b	4.2	4.5	3.8-5.3	0.4	8.4	4.5	4.5	3.9-5.0	0.3	7.4
b'	2.7	2.8	2.4-3.3	0.2	8.4	3.4	3.3	2.8-3.6	0.3	7.7
Gland overlap/body width	4.7	4.2	3.0-5.9	0.7	16.9	2.4	2.5	1.3-3.7	0.7	28.6
c	14.6	13.7	10.9-15.6	1.1	7.9	11.6	12.6	11.7-14.9	0.8	6.3
c'	3.0	3.1	2.7-4.2	0.3	10.6	3.1	2.8	2.4-3.1	0.2	6.6
m (%)	52	52	50-55	1.5	2.8	58	57	55-58	1.1	1.9
V (%)	64	62	57-66	2.2	3.5					
G1 (%)	22	22	14-32	4.5	20.8					
G2 (%)	18	19	14-28	3.1	16.2					
T (%)						56	49	42-61	4.8	9.9
Spicule length (μm)						19	19	17-20	0.9	5.0
Gubernaculum length (μm)						6	6	5-7	0.6	10.5

behind hemizonid; hemizonion at level of esophagointestinal junction. Esophageal glands extraordinarily long, overlapping the intestine a distance of 3-6 times the body width (Fig. 7); dorsal gland nucleus at about one third the gland overlap, subventral gland nuclei in the posterior third. Intestinal fasciculi not observed. Gonads outstretched; spermathecae rounded or oval, sperm small, bacilliform (Fig. 9). Tail tapering, rounded or subtruncated posteriorly, and coarsely crenate (Fig. 10); phasmids located in the center of the lateral field about at midtail; clear terminus one-third to one-fourth the tail length. Lateral field with four incisures not prominently projecting from body surface (Fig. 8), becoming three on the tail at or before the phasmid, and weakly areolated; lateral field open near tail terminus.

Male: With same aspect as female, but shorter and more slender. Body annulation indistinct or invisible. Lip region high, rounded truncate, with 2-3 annules. Stylet less robust than that of the female, knobs rounded and sloping posteriorly (Fig. 11). Esophagus less developed than female's; gland overlap 1-4 times the body width; dorsal gland nucleus near level of esophagointestinal junction, the subventral in the posterior half. Excretory pore just behind hemizonid; hemizonion in the same loca-

tion as in the female. Gonad usually outstretched, occasionally reflexed, filled with bacilliform sperm (Fig. 12). Spicules curved, slightly cephalated, each with a small velum; gubernaculum slightly curved, linear. Caudal alae arising at the level of the spicular manubria, their edges smooth, and extending to the tail tip. Phasmids at or behind middle of tail. Lateral field with four incisures.

TYPES, TYPE HOST, AND LOCALITY: Holotype female (T-366t), allotype male (T-367t) and paratype females and males (T-3098p-T-3103p) collected from the roots and rhizosphere of *Elymus mollis* Trin. at Kuluk Bay, Adak Island, Alaska, July-August 1978. Additional specimens from Adak Island collected at Clam Lagoon and Andrew Bay, 22 August 1979, in the rhizosphere of *E. mollis*. Other individuals collected from *E. mollis* rhizosphere on Amchitka Island, 30 August 1978.

DIAGNOSIS: The combination in females of extremely long esophageal glands (3-6 times the body width), low b' value (2.4-3.3), and bacilliform sperm serves to separate *P. megalobatus* n. sp. from all other known *Pratylenchoides* spp. Of morphologically similar species, *P. bacilisemenus* Sher, 1970 (12) has bacilliform sperm but a much shorter esophageal gland overlap, while *P. ritteri* Sher, 1970, hitherto the species with

TABLE 3. Measurements and ratios for *Pratylenchus pratensisobrinus* n. sp.

	Holo-type female	Paratype females (n = 15)				Allo-type male	Paratype males (n = 8)			
		Mean	Range	SD	CV		Mean	Range	SD	CV
Length (μm)	479	478	392–559	51	10.7	154	466	438–496	23.6	5.1
Stylet length (μm)	16	16	15–17	0.5	3.0	15	15	15–16	0.3	1.7
Dorsal gland orifice to stylet base (μm)	2.5	1.7	1.0–2.5	0.4	22.5	1.5	1.8	1.5–2.2	0.2	12.8
a	28.0	28.4	25.0–31.5	2.1	7.2	28.8	31.2	26.5–41.0	5.2	16.7
b	5.1	5.3	4.4–6.0	0.6	10.9	5.6	5.7	5.1–5.9	0.3	5.1
b'	3.7	3.7	3.5–4.1	0.2	5.0	3.7	3.9	3.6–4.2	0.2	5.9
Gland overlap/body width	1.9	2.3	1.5–3.2	0.6	24.2	2.7	2.5	1.7–4.1	0.7	30.3
c	13.4	13.9	11.8–15.1	1.0	6.9	16.9	17.0	15.7–19.7	1.3	7.5
c'	3.0	3.1	2.8–3.7	0.2	7.5	2.4	2.5	2.3–2.9	0.2	7.6
m (%)	54	54	51–58	1.9	3.5	52	53	52–56	1.4	2.7
V (%)	76	77	75–80	1.3	1.8					
G (%)	35	33	24–41	4.4	13.1					
T (%)						41	47	34–61	9.6	20.5
Spicule length (μm)						17	18	17–19	0.7	3.9
Gubernaculum length (μm)						5	6	5–6	0.5	9.7

the longest glands, has rounded sperm. According to the species-grouping scheme of Baldwin et al. (3), *P. megalobatus* n. sp. should be placed in group 3—both subventral gland nuclei posterior to the esophagointestinal valve.

The specific epithet is derived from Greek words meaning “provided with a large lobe.”

Pratylenchoides variabilis Sher, 1970
(Fig. 6)

Females (16): L = 554 μm (475–671); stylet = 21 (20–22); dorsal gland orifice to knobs = 2.4 μm (1.5–3.5); a = 30.4 (26–34); b = 4.4 (3.9–5.1); b' = 4.0 (3.6–4.9); gland overlap/body width = 0.7 (0.3–0.9); c = 15.1 (14–17); c' = 2.9 (2.4–3.2); m = 50 (48–53); V = 58 (52–61); G1 = 20 (18–21); G2 = 19 (15–21).

Males (10): L = 517 μm (438–630); stylet = 19 μm (17–21); dorsal gland orifice to knobs = 2.3 μm (1.4–2.8); a = 30.0 (28–34); b = 4.9 (4.0–6.2); b' = 4.5 (3.9–5.1); gland overlap/body width = 0.5 (0.2–1.3); c = 13.8 (12–17); c' = 2.9 (2.4–3.2); m = 50 (48–53); T = 37 (31–43); spicule length = 21 μm (19–22); gubernaculum length = 5 μm (4–6). Collected from the rhizosphere of *Elymus mollis* Trin. at the following sites: from Adak Island, Andrew Bay, 11 August 1978; Mt. Moffett, 420 m level, 25 August 1979; from Amchitka Is-

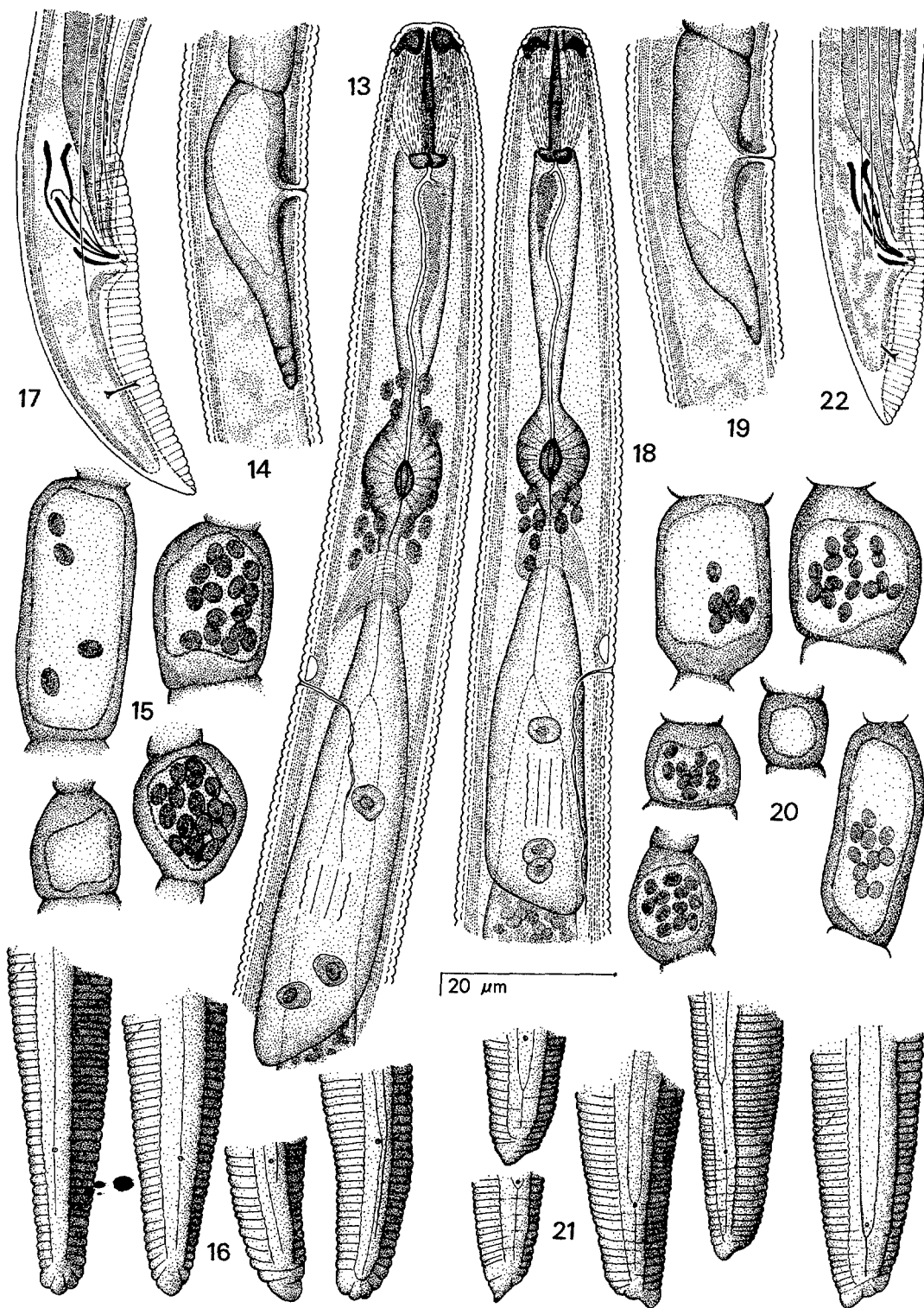
land, beach terrace, 30 August 1978, and 8 August 1979.

The above specimens are indistinguishable from *P. variabilis* paratypes in USDA-NC, kindly loaned by Dr. A. M. Golden. The lateral fields of *P. variabilis* from Adak Island protrude prominently from the body outline (Fig. 6), whereas those of *P. megalobatus* are not protuberant. Whether this protuberance characteristic occurs on *P. variabilis* type could not be determined, nor is the possible value of such a dichotomy in phytonematode systematics known.

Pratylenchus pratensisobrinus n. sp.
(Figs. 13–17; Table 3)

Measurements and ratios for type specimens are listed in Table 3.

DESCRIPTION: *Female*: Body slightly curved when heat-relaxed, rather slender. Lip region of medium height, rounded, with three annules (Fig. 13). Stylet stout, knobs large, cupped anteriorly. One pair of cephalids visible, 3–4 annules behind the cephalic capsule. Median bulb oval, valve conspicuous. Esophageal glands elongated, overlapping intestine; dorsal gland nucleus near middle of lobe, subventral nuclei in the posterior portion. Hemizonid in vicinity of esophagointestinal junction, the excretory pore immediately behind the hemizonid; hemizonion distinct, at about 60% of the gland lobe. Gonad out-



FIGS. 13-22. *Pratylenchus pratensisobrinus* n. sp. 13) Female, anterior region. 14) Female, vulval region. 15) Females, spermathecae. 16) Females, tails and tail tips. 17) Male, posterior region. *Pratylenchus ventroproiectus* n. sp. 18) Female, anterior region. 19) Female, vulval region. 20) Females, spermathecae. 21) Females, tails and tail tips. 22) Male, posterior region.

stretched; spermatheca square or oval to elongated (Fig. 15), usually filled with sperm but occasionally empty; postuterine sac elongated, 2.0 (1.6–2.7) times the body width at the vulva, and with a few discrete cells distally (Fig. 14). Tail conoid and rather elongated, the terminus coarsely annulated or consisting of a large terminal annule (Fig. 16); phasmid centered in lateral field about midway on the tail. Lateral field consisting of four incisures with no indication of regular markings between incisures; incisures usually becoming three on the tail, but often remaining four at least to the phasmid; lateral field usually open near tail terminus, rarely closed.

Male: Similar to female, but shorter, more slender, and with a slightly more delicate stylet. Gonad outstretched. Spicules relatively robust, evenly curved (Fig. 17), partially cephalated; velum prominent, well developed, gubernaculum curved, linear. Caudal alae crenate, enveloping tail. Phasmids arising near the middle of the tail; lateral field hardly extending past the spicules.

TYPES, TYPE HOST, AND LOCALITY: Holotype female (T-368t) and allotype male (T-369t) collected from the rhizosphere of *Viola langsdorffii* Fisch. (Violaceae) at Finger Bay, Adak Island, Alaska, 26 August 1980; paratype females and males (T-3104p–T-3105p) collected from the above host and locality, and from the following host rhizospheres at Finger Bay: *Platanthera convallariaefolia* (Fisch.) Lindl. (Orchidaceae), 28 August 1979, and *Arnica unalaschcensis* Less. (Asteraceae), 26 August 1980.

DIAGNOSIS: *P. pratensisobrinus* n. sp. closely resembles *P. pratensis* (de Man, 1880) Filipjev, 1936, and could conceivably be considered an extreme variant of that species. However, it differs from *P. pratensis* (7,9) in the following characters: stylet generally longer (15–17 vs. 12–16 [7] or 13–15 μ m [9]); tail longer ($c = 12$ –15 vs. 13–24; $c' = 2.8$ –3.7 vs. 2.4–3.1 [7: text; 9] or 1.4–2.5 [7: illustrations]); tail annules more numerous (23–37 vs. 20–28). Although there is some degree of overlap to all of these differentiating characteristics, the differences noted here are deemed sufficient to separate the two species. Modern descriptions of *P. pratensis* (7,9) are not consistent with each other, and ranges ex-

pressed therein for certain characters (e.g., stylet length, c') seem very broad for a single species. If the most recent description (9) is accepted as the most accurate, stylet length will serve to separate the two species.

The specific epithet is formed from the name of the most closely related species, *P. pratensis*, and the Latin *sobrinus* = “cousin.”

Pratylenchus ventroprojectus n. sp.
(Figs. 18–22; Table 4)

Measurements and ratios for type specimens are listed in Table 4.

DESCRIPTION: *Female*: Small, slender, body straight or slightly curved when heat-relaxed. Lip region low, conoid, flattened, with three annules (Fig. 18). Spear stout, knobs variable, usually large and cupped, but sometimes rounded or sloping posteriorly. One pair of cephalids visible 4–5 annules behind the lip region. Median bulb broadly oval, the valve large. Esophageal glands well overlapping intestine; dorsal gland nucleus about 50% of the distance from the median bulb, subventral gland nuclei in posterior end. Hemizonid near the esophagointestinal junction; excretory pore immediately behind the hemizonid; hemizonion about 10–12 annules behind the hemizonid. Gonad outstretched; spermatheca oval to rectangular or rarely elongated, usually filled with sperm but occasionally empty (Fig. 20); postuterine sac 1.1 (0.9–1.8) times as long as the vulval body diameter, usually with a single demarcated terminal cell (Fig. 19). Tail short, broadly conoid, the terminus truncate, coarsely or not annulated, with a distinct, subventral projection one or two annules long (Fig. 21). Phasmid centered in the lateral field near the middle of the tail. Lateral field composed of four incisures, without regular markings between them; inner incisures meeting near the anus or on the tail; lateral field open near tail tip.

Male: Similar to female in most respects. Gonad outstretched or reflexed. Spicule slender, curved, partially cephalated; velum long, narrow, inconspicuous; gubernaculum curved, linear (Fig. 22). Caudal alae crenate, arising anterior to spicules and extending to tail tip. Phasmids near the center of the tail. Lateral field usually not extending past the cloacal opening.

TYPES, TYPE HOST, AND LOCALITY: Ho-

TABLE 4. Measurements and ratios for *Pratylenchus ventroprojectus* n. sp.

	Holo-type female	Paratype females (n = 10)				Allotype male	Paratype males (n = 5)	
		Mean	Range	SD	CV		Mean	Range
Length (μm)	475	439	392-475	28.2	6.4	464	392	371-413
Stylet length (μm)	15	15	14-16	0.4	2.8	14.5	14	14-15
Dorsal gland orifice to stylet base (μm)	2.1	2.7	2.0-3.4	0.5	19.0	1.0	2.5	1.6-3.3
a	28.9	30.1	27.4-34.7	2.2	7.3	31.4	31.1	30.7-32.7
b	6.0	6.0	5.6-6.4	0.3	5.3	6.5	5.5	5.2-6.1
b'	4.3	3.9	3.3-4.4	0.3	8.6	4.1	3.9	3.8-4.0
Gland overlap/body width	1.9	2.7	1.7-3.7	0.6	20.5	3.9	2.3	2.0-3.1
c	22.2	19.4	14.3-22.4	2.6	13.2	20.8	20.1	18.5-22.6
c'	1.9	2.3	1.9-2.6	0.2	10.5	2.2	2.0	1.9-2.2
m (%)	49	50	48-52	1.6	3.2	49	50	48-51
V (%)	80	79	78-80	0.5	0.8			
G (%)	29	32	25-44	4.9	15.1			
T (%)						40	44	38-49
Spicule length (μm)						14	15	14-17
Gubernaculum length (μm)						4	4	4-5

lotype female (T-370t) and allotype male (T-371t) collected from the rhizosphere of *Anemone narcissiflora villosissima* (DC.) Hult. (Ranunculaceae) at Finger Bay, Adak Island, Alaska, 28 August 1979. Paratypes (T-3106p-T-3107p) collected from the rhizospheres of the above plant and *Plantago macrocarpa* Cham. & Schlecht. (Plantaginaceae), same location and date.

DIAGNOSIS: *P. ventroprojectus* n. sp. most closely resembles *P. convallariae* Seinhorst, 1959 by possession of three lip annules and a short, truncate tail with irregularly annulated terminus (9,11). However, *P. ventroprojectus* has a flat head (rounded in *P. convallariae*), and a shorter body (392-475 vs. 580-610 μm), a shorter stylet (14.4-15.6 vs. 16-17 μm), and a tail which always has a terminal, subventral projection (very weak or absent in *P. convallariae*). Of other species, *P. goodeyi* Sher & Allen, 1953 has a somewhat similar tail, but that species has four lip annules and $V = 73-75\%$ (three lip annules and $V = 78-80$ in *P. ventroprojectus*). A form of *P. pratensis*, originally described as *P. irregularis* Loof, 1960 (7,9), has an irregular tail projection as well, but *P. ventroprojectus* differs from it by having a lower, flattened lip region (high and rounded in this form of *P. pratensis*), a shorter body (392-475 vs. 481-685 μm), and a shorter stylet (14-16 vs. 16-17 μm). The terminal projection on the tail of *P.*

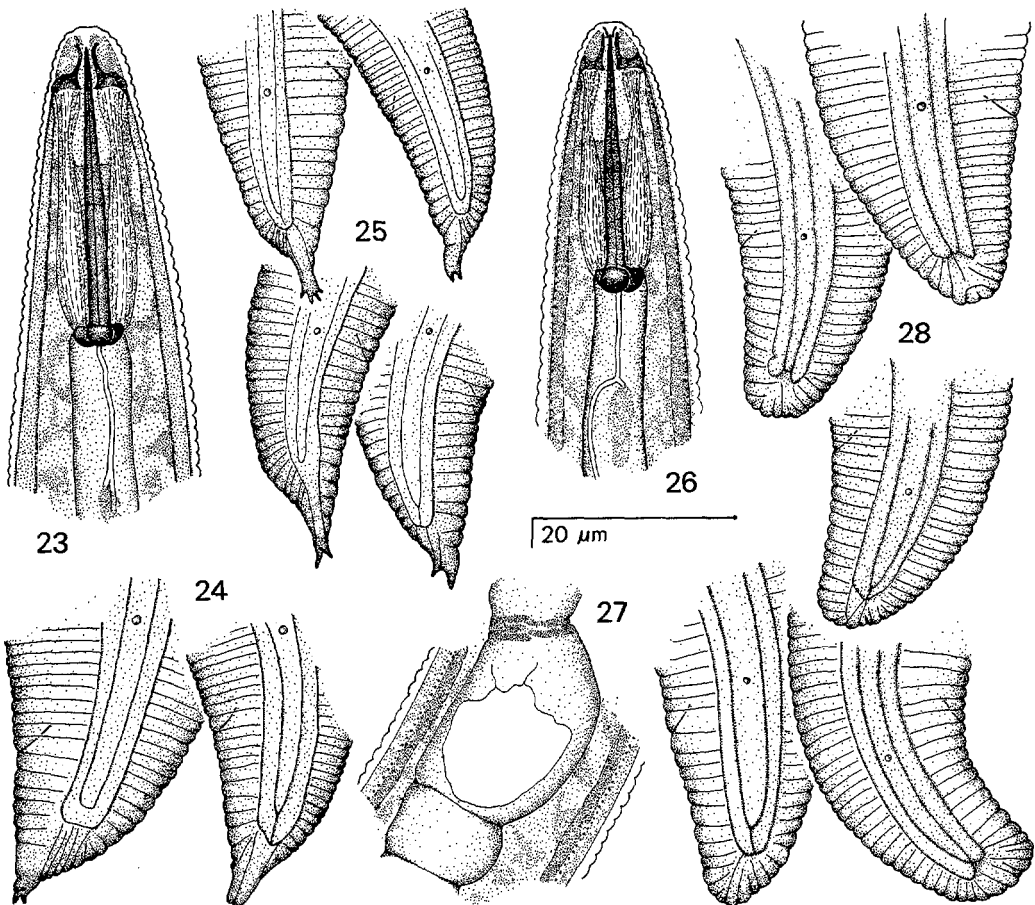
ventroprojectus is decidedly subventral, whereas that of "*P. irregularis*" is median.

The specific name is selected to emphasize the main differentiating character of the species: the subventral projection of the tail tip.

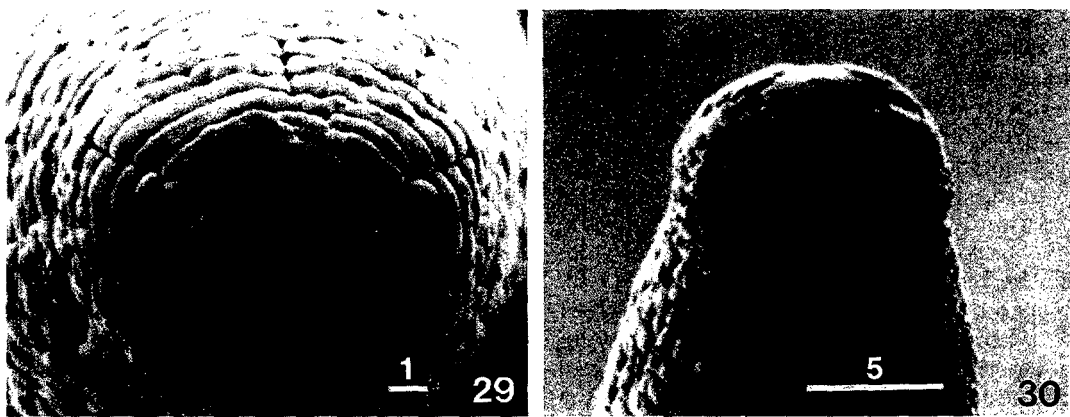
Helicotylenchus amplius
Anderson & Eveleigh, 1982
(Figs. 23-25)

Females (2): $L = 877 \mu\text{m}$ (828-927); $a = 26.9$ (25.6-28.2); $b = 5.7$ (5.6-5.7); $c = 46.2$ (44-49); $c' = 1.2$ (1.1-1.3); $V = 62\%$ (61-63); stylet = 28.5 μm (27-30); $m = 51$ (50-52); $0 = 44$; excretory pore to head = 119 μm (114-125). Collected from the rhizosphere of a dune grass, *Elymus mollis* Trin., on the southeast base of Mt. Moffett at the 396 m elevation, Adak Island, Alaska, 13 August 1978; in addition, three juveniles, same data as above, and one juvenile from the rhizosphere of *Anemone narcissiflora villosissima* (DC.) Hult., Finger Bay dump area, Adak Island, Alaska, 26 August 1980.

Specimens collected from Adak Island and identified as *H. amplius* agree fairly well with the description by Anderson and Eveleigh (2), except that the tails of the Adak females are shorter ($c = 44-49$ vs. 30-42 for *H. amplius* paratypes [2]), the "m" value is greater (50-52 vs. 41-46), there are 5-6 head annules rather than 4-5, ventral tail annules are fewer in number,



FIGS. 23–28. *Helicotylenchus amplius* Anderson and Eveleigh. 23) Female, head region. 24) Females, tails. 25) Juveniles, tails. *Helicotylenchus spitsbergensis* Loof. 26) Female, head end. 27) Female, spermatheca. 28) Females, tails.



FIGS. 29, 30. *Merlinius adakensis* n. sp. 29) SEM face view. 30) SEM lateral view of head region. (Scales in μm.)

LITERATURE CITED

and the lateral field terminus is closed (open on one juvenile) rather than open. Despite these differences, the tail projection of Aleutian specimens generally displays the multimucronate terminus of the Canadian *H. amplius*, and the tail has phasmids situated well anterior of the anus in females, and near the anus in juveniles.

Helicotylenchus spitsbergensis Loof, 1971
(Figs. 26-28)

Adak Island specimens: Females (5): L = 780 μ m (729-879); a = 26.4 (24-28); b = 6.4 (5.9-6.8); c = 38.7 (36-43); c' = 1.2 (1.1-1.4); V = 63% (60-65); stylet = 28 μ m (27-30); m = 50 (49-52); O = 35 (30-38); excretory pore to head = 122 μ m (116-129). Four females and three juveniles collected from the rhizosphere of *Elymus mollis* growing on the southeast base of Mt. Moffett at the 290-m elevation, 13 August 1978, and one female collected from the rhizosphere of *Tofieldia coccinea* Richards (Liliaceae), Finger Bay dump area, Adak Island, Alaska, 26 August 1980.

Amchitka Island specimen: Female (1): L = 821 μ m; a = 29.8; b = 6.3; b' = 5.0; c = 32.8; c' = 1.2; V = 62%; stylet length = 29 μ m; m = 47; O = 34; excretory pore to head = 131 μ m. Collected from bare soil adjacent to a road near Makarius Bay, Amchitka Island, Alaska, 8 August 1979.

These specimens all appear to closely fit the description of *H. spitsbergensis* (8), which is characterized by a rounded head region with 4-5 annules, axial spermatheca, and rounded or slightly truncated tail with phasmids near the anus.

1. Allen, M. W. 1955. A review of the nematode genus *Tylenchorhynchus*. University of California Publ. Zool. 61:129-166.
2. Anderson, R. V., and E. S. Eveleigh. 1982. Description of *Helicotylenchus amplius* n.sp. and a key to the Canadian species of the genus (Nematoda:Hoplolaimidae). Canad. J. Zool. 60:318-321.
3. Baldwin, J. G., M. Luc, and A. H. Bell. 1983. Contribution to the study of the genus *Pratylenchoides* Winslow (Nematoda:Tylenchida). Rev. Nematol. 6: 111-125.
4. Bernard, E. C. 1981. Three new species of Heteroderidae (Nematoda) from the Aleutian Islands. J. Nematol. 13:499-513.
5. Bernard, E. C. 1982. Criconematina (Nematoda:Tylenchida) from the Aleutian Islands. J. Nematol. 14:323-331.
6. Jenkins, W. R. 1964. A rapid centrifugal-floatation technique for separating nematodes from soil. Plant Dis. Rept. 48:692.
7. Loof, P. A. A. 1960. Taxonomic studies on the genus *Pratylenchus* (Nematoda). Tijdschr. Plantenziekten 66:29-90.
8. Loof, P. A. A. 1971. Freelifing and plant parasitic nematodes from Spitzbergen, collected by Mr. H. van Rossen. Meded. Landbouw. Wag. 71-7:1-86.
9. Loof, P. A. A. 1978. The genus *Pratylenchus* Filipjev, 1936 (Nematoda:Pratylenchidae): A review of its anatomy, morphology, distribution, systematics and identification. Växtskyddsrapporter 5:1-50.
10. Seinhorst, J. W. 1959. A rapid method for the transfer of nematodes from fixative to anhydrous glycerin. Nematologica 4:67-69.
11. Seinhorst, J. W. 1959. Two new species of *Pratylenchus*. Nematologica 4:83-86.
12. Sher, S. A. 1970. Revision of the genus *Pratylenchoides* Winslow, 1958 (Nematoda:Tylenchoidea). Proc. Helminthol. Soc. Wash. 37:154-166.
13. Tarjan, A. C. 1973. A synopsis of the genera and species in the Tylenchorhynchinae (Tylenchoidea, Nematoda). Proc. Helminthol. Soc. Wash. 40: 123-144.