

## ***Pratylenchus australis* n. sp. and *Eutylenchus fueguensis* n. sp. (Nematoda: Tylenchina) from Southern Chile**

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**Abstract:** Two new species of nematodes from southern Chile are described and illustrated. *Pratylenchus australis* n. sp. is distinguished by its heavy cephalic sclerotization, smooth tail terminus, lack of spermatheca, and absence of males. *Eutylenchus fueguensis* n. sp. differs from other *Eutylenchus* spp. by the long female stylet (31 [28-32]  $\mu\text{m}$ ), strongly sclerotized excretory duct opening posterior to nerve ring, and broadly rounded caudal alae of males.

**Key words:** taxonomy, tundra.

The principal site visited on a collecting trip by the second author in January 1983 was Orange Bay on Hardy Peninsula, Hoste Island, in southern Chile. The entire land mass is covered with deep tundra growth under which is a high-organic, water-saturated soil. Twelve soil samples were collected, two containing 12 females and a single juvenile of a new species of *Pratylenchus* Filipjev, 1936 and another containing numerous males, females, and juveniles of a new species of *Eutylenchus* Cobb, 1913. Both new species are described here.

### MATERIALS AND METHODS

Nematodes were heat-relaxed and stored in 4% formalin. The formalin solution was replaced by FAA for at least 48 hours to fix and harden the specimens, then they were transferred to glycerin following Cobb's slow method: specimens in FAA were transferred to 2.5% glycerin solution in 30% ETOH for at least 24 hours and then to 5% glycerin in 30% ETOH until evaporation of the ethanol and water at about 25 C. Anhydrous glycerin was achieved over calcium chloride in a desiccator. Transverse sections were made by hand in glycerin and mounted in glycerin-jelly.

For scanning electron microscopy, specimens in FAA were dehydrated through a 30% to 100% ethanol series. The nematodes were then taken to 100% amyl acetate through a 30% to 100% amyl acetate in an absolute ethanol series. Specimens,

in absolute amyl acetate, were sonicated for 15 seconds, then processed through critical point drying, mounted on stubs, and coated with 200 Å of gold sputtered on in several layers. Specimens were observed and photographed with an ISI Model 35-130 DS scanning electron microscope at 10 kV.

### SYSTEMATICS

#### *Pratylenchus australis* n. sp. (Fig. 1A-K; Fig. 2A-F)

**Measurements. Female (12):** L = 0.63 (0.57-0.72) mm; a = 31 (25-33); b = 7.8 (6.4-8.2); c = 18 (16-22); V = 81.5 (77-83); stylet = 19 (18-20)  $\mu\text{m}$ ; tail = 35 (28-38)  $\mu\text{m}$ ; c' = 2.3 (1.9-2.7); PUS/BW = 1.4 (1.2-1.7).

**Male:** Unknown.

**Holotype. Female:** L = 0.64 mm; a = 32; b = 6.5; c = 17; V = 82; c' = 2.6; PUS/BW = 1.7.

**Description. Female:** Body almost straight after heat relaxation and fixation, bending slightly ventrad in posterior third. Body cylindrical, slightly tapering at head end, tail gradually tapering behind anus. Transverse striae 0.8-1.0  $\mu\text{m}$  apart. Lip region outer margins rounded, slightly offset from body; bearing three annules (two transverse striae). Cephalic framework bell-shaped in lateral view, heavily sclerotized, inner guiding chamber conspicuous. Amphidial aperture reniform (Fig. 2B). Stylet 20  $\mu\text{m}$  long, basal knobs rounded, about 4  $\mu\text{m}$  wide. Oesophagus 98  $\mu\text{m}$  long, oesophageal glands 60  $\mu\text{m}$ , extending ventrally over intestine. Nerve ring at level of excretory pore. Lateral field with four lines, inner lines at midbody faint, outer lateral lines prominent; in cross section (Fig. 1E),

Received for publication 5 October 1984.

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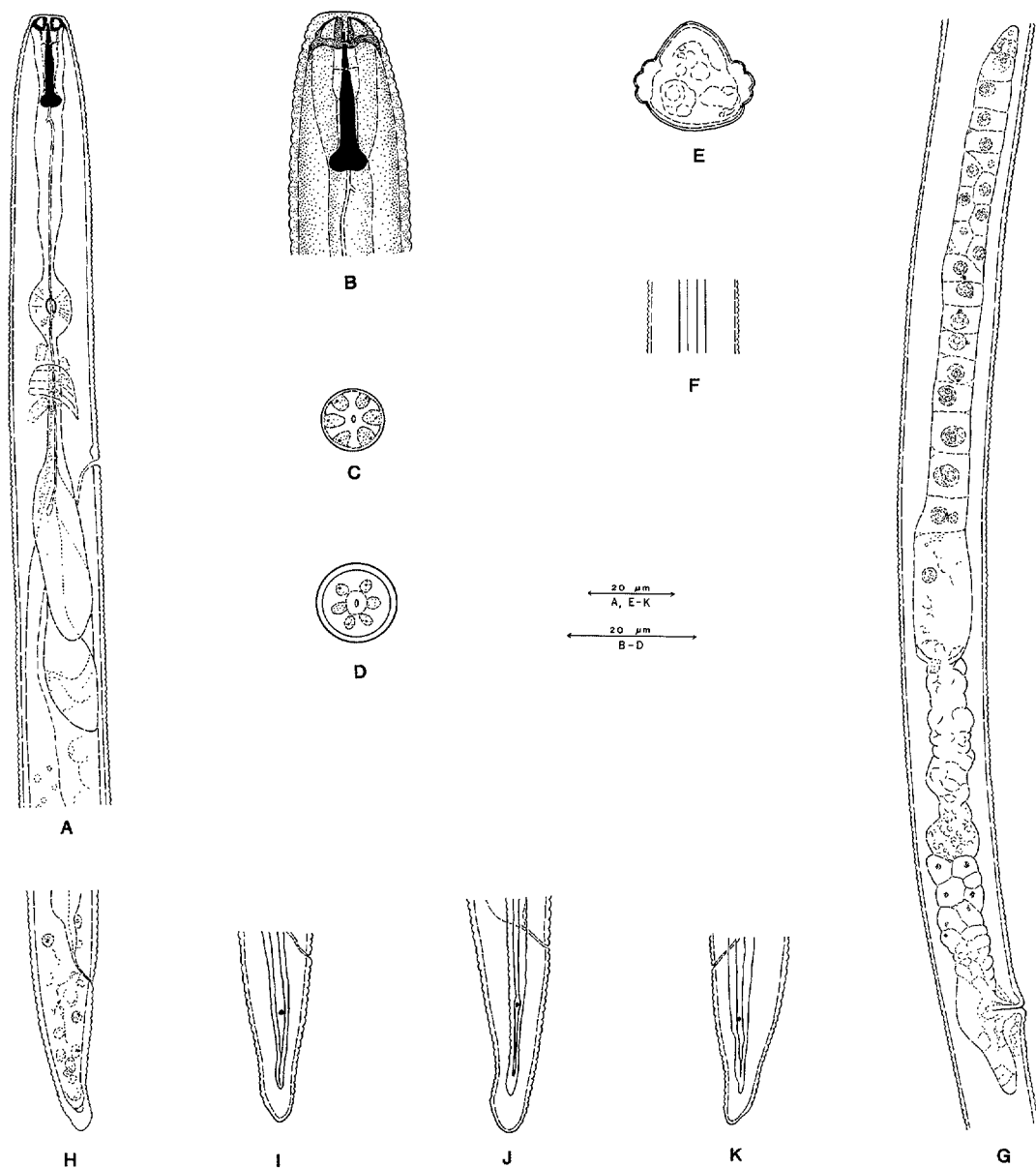
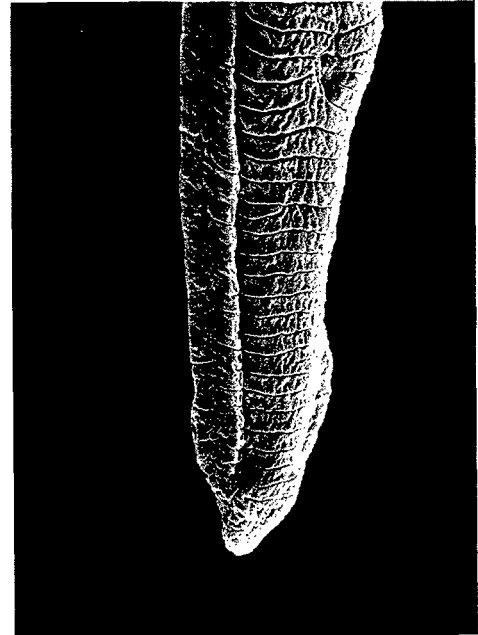
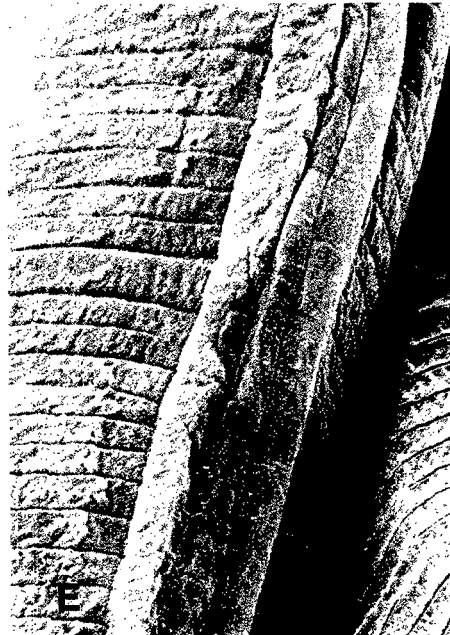
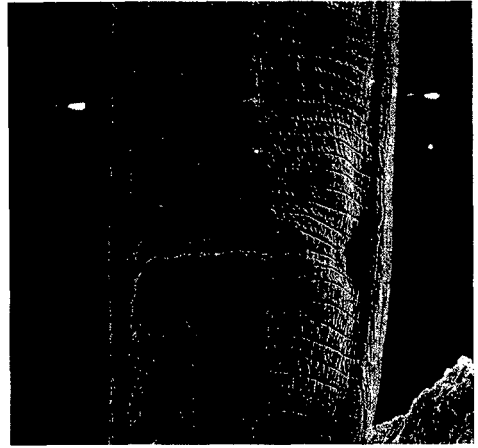
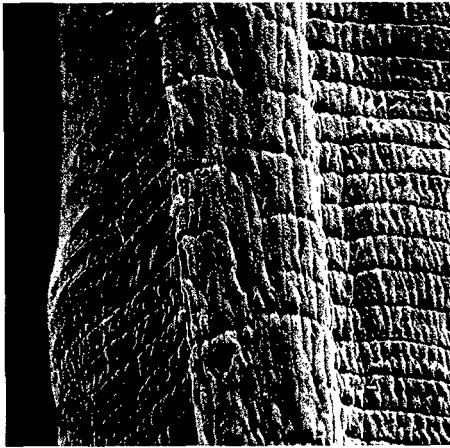
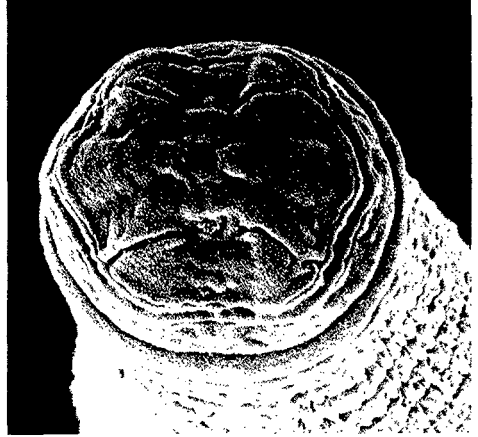
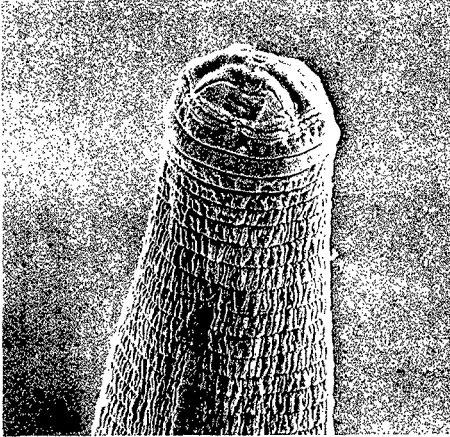


FIG. 1. *Pratylenchus australis* n. sp. female. A) Oesophageal region. B) Cephalic region. C, D) Transverse sections in cephalic region. E) Transverse section midbody. F) Lateral view midbody. G) Gonad. H-K) Tail.

lateral field slightly elevated. Lateral lines anteriorly converge from level of oesophageal glands, becoming three at level of metacarpus; further converging to a single line ending on sixth body annule (Fig. 2A). Four lateral lines distinct posteriorly, converging behind anus. Two inner lines separate slightly at phasmid, in some specimens forming a single inner line, ending

on sixth or seventh annule from terminus; outer lateral lines end closed on second or third annule from terminus. Tail length 37  $\mu\text{m}$ ; bearing 22 annules. Tail tip slightly expanded, without annulation. Postuterine sac 23  $\mu\text{m}$  long. Anterior branch of gonad outstretched, ending about 106  $\mu\text{m}$  behind oesophageal glands, spermatheca indistinct, without sperms.



**Habitat and locality:** Moist soil beneath deep tundra from two sites at Orange Bay, Hardy Peninsula, Hoste Island, Chile. The following plants were identified from the two sites by the Forestry Department, University of Chile, Santiago. Site a: *Acaena pumila*, cf. *Schizeilema ranunculus*, *Gaultheria* cf. *antartica*, *Myrteola nummularia*, *Berberis ilicifolia*, *Gunnera lobata*, cf. *Tetroncium magellanicus*, *Caltha appendiculata*. Site b: *Pernettya mucronata*, *Empetrum rubrum*, *Nothofagus betuloides*, *Berberis ilicifolia*, Ciperaceae.

**Specimen. Holotype:** Catalogue Slide Number 2073, University of California Nematode Collection, Davis, California; collected 19 January 1983 by D. J. Raski. Paratypes (11 females, 1 juvenile), same data as holotype deposited as follows: 5 females, 1 juvenile, UCNC, Davis; 1 female each: USDA Nematode Collection, Beltsville, Maryland; Nematode Collection of the Rothamsted Experimental Station, Harpenden, Herts., U.K.; Agricultural University, Wageningen, The Netherlands; Muséum national d'Histoire naturelle, Laboratoire des Vers, Paris, France; Departamento de Vegetal Sanidad, University of Chile Nematode Collection, Santiago, Chile; Instituut voor Dierkunde, Lab. voor Morfologie, Gent, Belgium.

**Diagnosis:** *Pratylenchus australis* n. sp. is most closely related to *Pratylenchus pratensisobrinus* Bernard, 1984 (1) and *Pratylenchus ventroprojectus* Bernard, 1984 (1) by virtue of the heavy cephalic sclerotization. It differs from both by the absence of males and lack of a spermatheca, which is prominent and contains large sperm in both *P. pratensisobrinus* and *P. ventroprojectus*. Also, the tail ends in a smooth terminus versus a crenate tip in the other two species. A comparison of SEM photographs of *Pratylenchus australis* with those published by Corbett and Clark (2) for 18 species of *Pratylenchus* indicates this species conforms generally with en face morphology and belongs in Group 2 which includes *P. neglectus* and *P. thornei*. However, *P. australis* n. sp.

differs from both in configuration of the submedian and lateral lip sectors.

*Eutylenchus fueguensis* n. sp.  
(Fig. 3A-M; Fig. 4A-F)

**Measurements. Female (18):** L = 0.90 (0.72-1.04) mm; a = 64 (57-76); b = 6.4 (5.7-6.8); c = 7-8; c' = 11.6 (8.8-15.1); V = 73 (71-76); stylet = 31 (28-32)  $\mu$ m.

**Male (13):** L = 0.85 (0.76-0.98) mm; a = 64 (58-74); b = 6.3 (5.9-6.7); c = 7 (6-8); stylet = 29 (26-32)  $\mu$ m; spicules = 25 (22-25)  $\mu$ m; gubernaculum = 7 (6-8)  $\mu$ m.

**Holotype. Female:** L = 0.95 mm; a = 68; b = 6.3; c = 8; c' = 11.3; V = 72; stylet = 30  $\mu$ m.

**Description. Female:** Body elongate, cylindrical, tapering gradually from base of oesophagus anteriorly; from vulva posteriorly, body slims to a fine tail terminus. Lip region well set off. Lips, four separated by deep grooves, the lateral appearing as slits (Figs. 3B, 4B). Each lip bears an elongated, flexible, recurved projection (seta) 12 (11-13)  $\mu$ m long, proximal third wide, gradually attenuating, distal end rounded. Body with 12 longitudinal cuticular elevations (ridges) bearing a pattern of blocks like kernels on a corn cob. Ridges start on about the fifth annule, about 9  $\mu$ m behind anterior end. Stylet cone thin, shorter than shaft; knobs well developed, anterior margins flat. Dorsal gland orifice 2-3  $\mu$ m posteriorly to stylet knobs. Oesophagus 145 (130-160)  $\mu$ m, metacarpus well developed, isthmus thin, basal bulb with one prominent nucleus; oesophageal-intestinal valve extending about 7  $\mu$ m into intestine. Excretory pore at level of isthmus, near posterior margin of nerve ring, duct strongly cuticularized. Hemizonid observed in few specimens, located at level of excretory pore, or 1-2 annules anteriorly, or posteriorly, or up to six annules anterior of the excretory pore. Vulva marked by interruption of pattern of cuticular blocks. Anterior gonad outstretched, postuterine branch about 27  $\mu$ m long, 1.4 times vulval body width (VBW). Tail slender, 120 (100-

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FIG. 2. SEM photographs of *Pratylenchus australis* n. sp. female. A) Anterior end, lateral view, 3,040  $\times$ . B) En face view, 6,350  $\times$ . C) Lateral field, anterior third of body, 5,080  $\times$ . D) Vulva, ventral view, 2,910  $\times$ . E) Lateral field, posterior third of body, 5,080  $\times$ . F) Tail, anus and phasmid shown by arrows, 2,480  $\times$ .

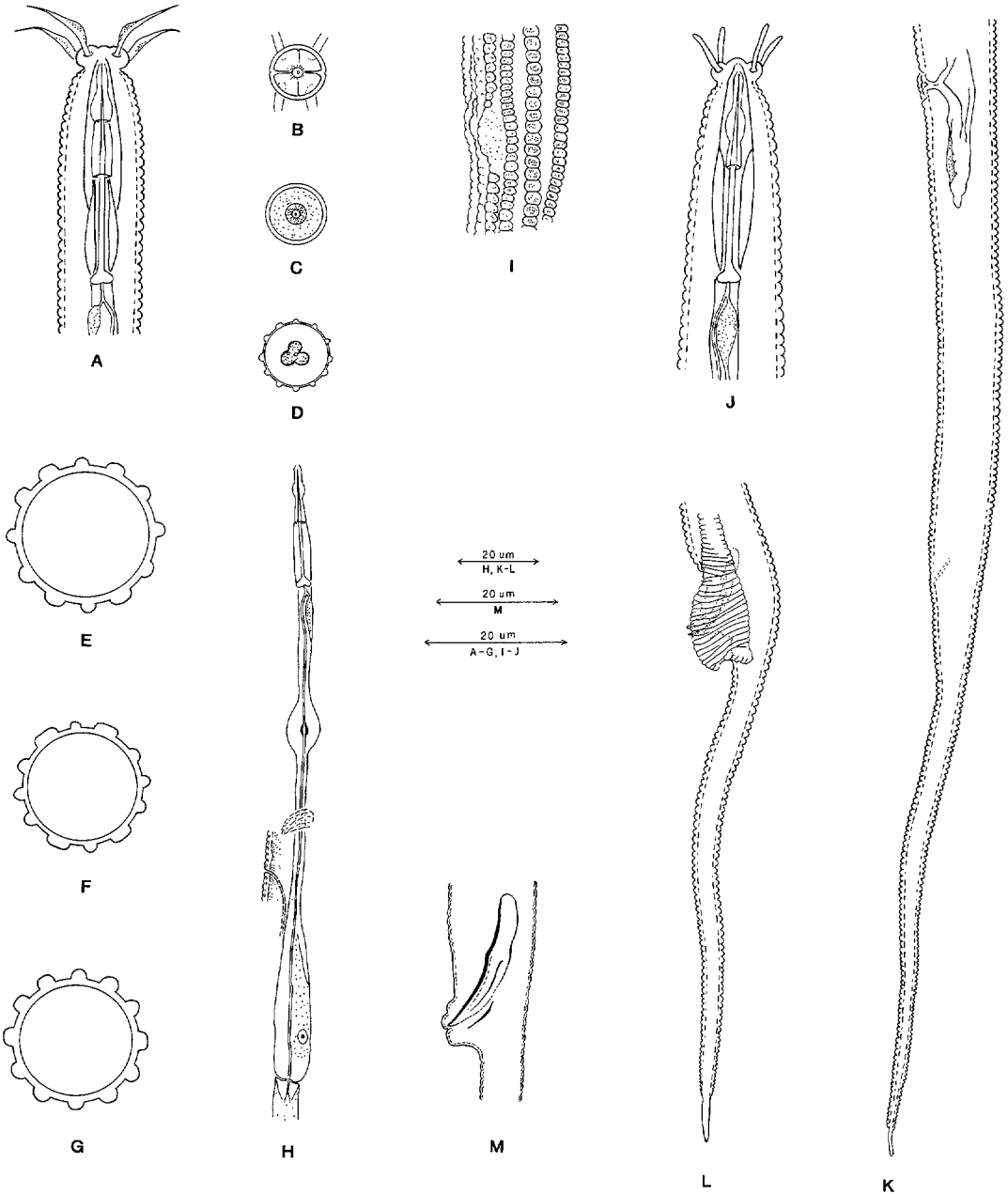
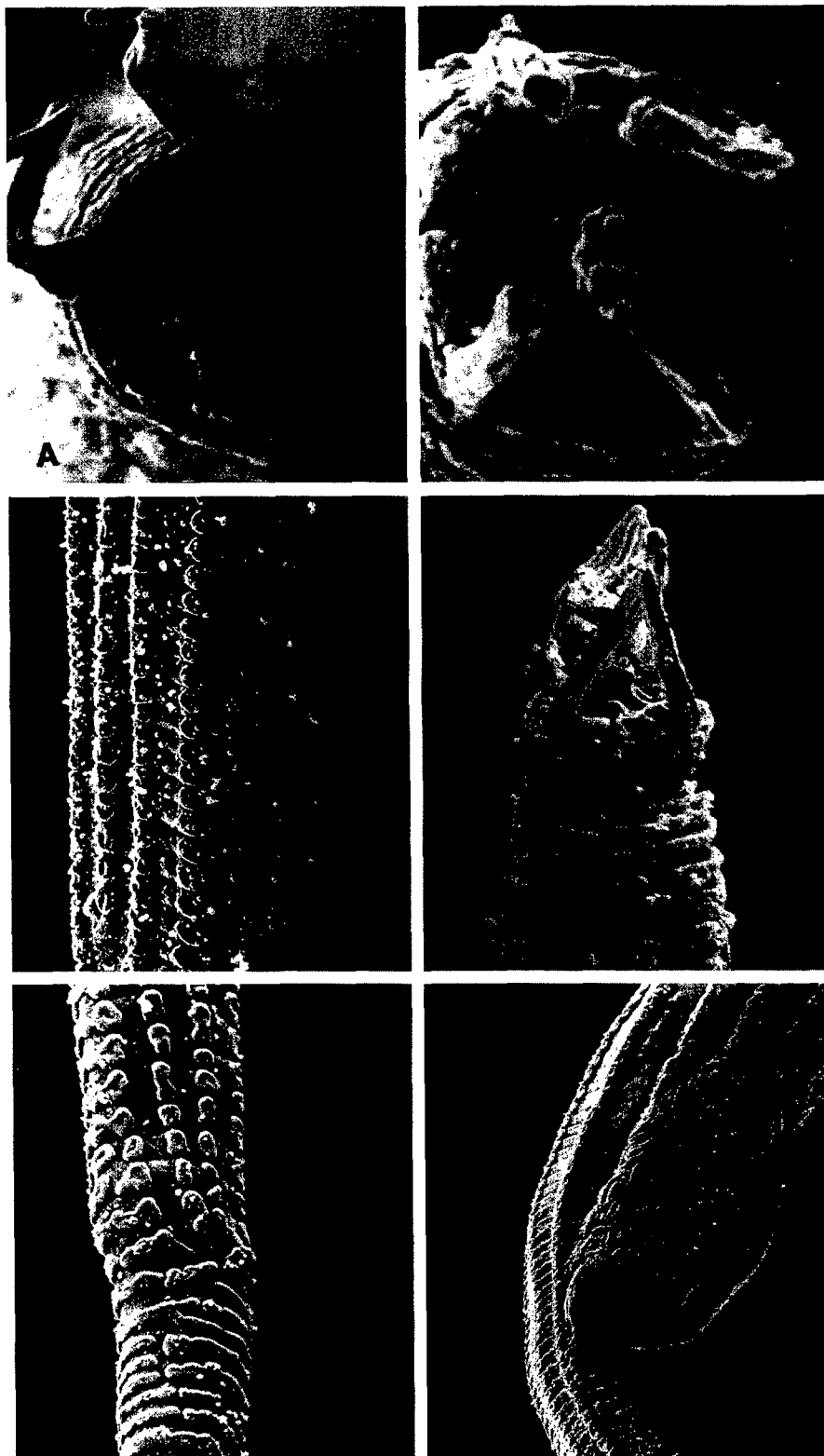


FIG. 3. *Eutylenchus fueguensis* n. sp. A) Female, head view. B) Female, en face. C) Female, near anterior end. D) Female, near stylet knobs. E) Female, midbody. F) Female, posterior to E. G) Male, transverse section, midbody. H) Female, oesophageal region. I) Female, vulvar region. J) Male, head view. K) Female tail. L) Male tail. M) Spicules and gubernaculum.

FIG. 4. SEM photographs of *Eutylenchus fueguensis* n. sp. A, C, E) Female. A) En face view, 8,211 ×. C) Vulva, 3,877 ×. E) Tail at end of longitudinal rows of tubercles. B, D, F) Male. B) En face view, 11,884 ×. D) Anterior end, lateral view, 6,323 ×. F) Caudal alae, 2,336 ×.



151)  $\mu\text{m}$  long, tapering to a fine terminus. Cuticular blocked ridges continue to mid-tail, then cuticle marked by plain transverse annules, last 7–8  $\mu\text{m}$  of tail smooth.

*Male*: Body cylindrical, almost straight, anterior part tapering gradually toward anterior end. Body narrows abruptly posterior to cloaca, tapering gradually and maintaining longitudinal ridges in first half of tail length, then plain annulations in posterior half of tail, ending in a fine point devoid of annules. Labial region as in female, en face section showing four lips separated by well-marked grooves, each lip bearing an elongated projection (seta) differing in shape and size from those in female, diameter uniform, terminus rounded, length 6–8  $\mu\text{m}$ . Body cuticle with 12 longitudinal elevations as in female. Conus of stylet slender, shorter than shaft; knobs flattened anteriorly. Dorsal gland orifice 2–3  $\mu\text{m}$  behind stylet knobs. Oesophagus like that of female. Excretory pore 78–102  $\mu\text{m}$  from anterior end. Testis outstretched. Caudal alae arising from lateral cuticular longitudinal elevation at level of cloaca, extending beyond cloacal opening 5–6  $\mu\text{m}$  onto tail.

*Habitat and locality*: Moist soil about the roots of sea carnation, *Apium australe*, at Orange Bay, Hardy Peninsula, Hoste Island, Chile.

*Specimens. Holotype*: Catalogue Slide Number 2074, University of California Nematode Collection, Davis, California; collected 19 January 1983 by D. J. Raski. Paratypes (23 females, 25 males, 14 juveniles), same data as holotype deposited as

follows: 17 females, 19 males, 14 juveniles, UCNC, Davis; 1 female, 1 male each: USDA Nematode Collection, Beltsville, Maryland; Nematode Collection of the Rothamsted Experimental Station, Harpenden, Herts., U.K.; Agricultural University, Wageningen, The Netherlands; Muséum national d'Histoire naturelle, Laboratoire des Vers, Paris, France; Departamento de Vegetal Sanidad, University of Chile Nematode Collection, Santiago, Chile; Instituut voor Dierkunde, Lab. voor Morfologie, Gent, Belgium.

*Diagnosis*: *Eutylenchus fueguensis* n. sp. is most closely related to *Eutylenchus vitiensis* (3), but differs by 1) its longer stylet (26 [24–28]  $\mu\text{m}$  in female of *E. vitiensis*), 2) strongly sclerotized excretory duct extending more than (versus less than) one body diameter and located posterior to nerve ring (anterior to nerve ring in *E. vitiensis*), and 3) by shape of the caudal alae which are broadly rounded without lobes projecting almost perpendicularly to body line, versus extending posteriorly as narrow lobes in *E. vitiensis*.

#### LITERATURE CITED

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