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Enoplus anisospiculus, a new species of marine nematode from the Canadian Pacific coast

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Enoplus anisospiculus n. sp. is described from the greater Vancouver area of British Columbia. Males have semicircular plates on their arcuate, asymmetrical spicules by which they are distinguished from the closest related species, *E. groenlandicus* Ditlevsen, 1926, which lacks semicircular plates on its nearly linear spicules.

The description of *Enoplus anisospiculus* n. sp. is based on specimens collected during a study of nematodes with pigment spots collected from the greater Vancouver area of British Columbia. The study includes an investigation of the structure and physiological nature of the pigment accumulations in the anterior region and the associated behavior of the nematodes (Nelson *et al.* 1971; Burr and Webster 1971).

Enoplus anisospiculus n. sp. males are distinguished from all other members of the genus by their arcuate, bilaterally asymmetrical copulatory spicules, the left spicule being shorter and thicker than the right spicule and having more prominent semicircular plates. The only other species having unequal spicules is *E. groenlandicus* (Ditlevsen 1926), whose spicules are nearly linear. *Enoplus anisospiculus* n. sp. belongs in group A of Wieser's *Enoplus* key (Wieser 1953) as it has a large trumpet-shaped preanal supplement, pigment spots, and spicules with semicircular plates. It is readily distinguished from related species in the group by the male copulatory apparatus.

Specimens were sorted by hand from saline-mud suspension, killed by heat, and fixed in 5% formalin. Measurements were made on specimens immobilized by heat in saline solution.

Enoplus anisospiculus n. sp.

(Figs. 1-6)

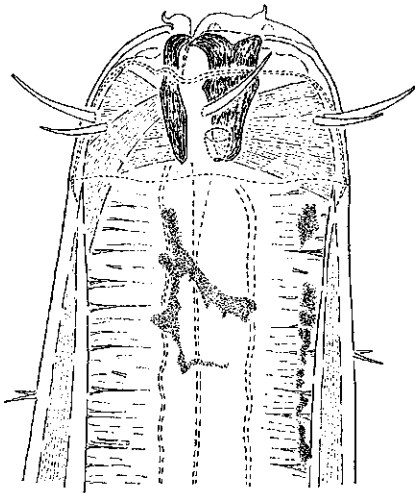
Cuticle externally smooth, but internally with densely and closely aligned transverse rows of

minute punctations. Maximum body diameter 179 (164-196) microns (μ) in male, 203 (186-223) μ in female; head 84 (77-93) μ wide, with three thin lip flaps about 7 μ in height, six prominent labial papillae, and 10 (6 + 4) cephalic setae, 27.5-29 μ + 20-23 μ long. A circle of four cervical setae, 4 μ long, follows closely behind the cephalic capsule. Shortly behind this circle occur two pairs of dorsally and ventrally placed cervical setae of 10 and 7 μ length. Additional cervical-somatic setae 3-4 μ long are sparsely distributed throughout the body. Female with somatic setae on dorsal and ventral surfaces, in the vicinity of the vulva (i.e., 250 μ range), 12-40 μ long.

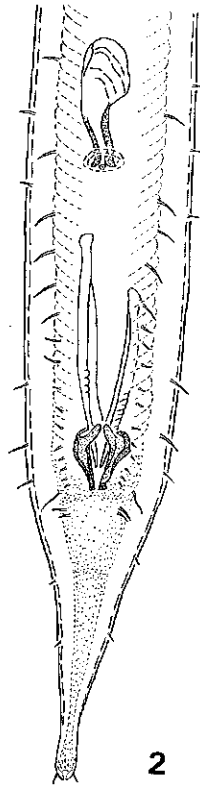
Amphid aperture transversely oval, 4 μ long by 6-7 μ wide; amphidial pouch 9 μ long, completely enclosed by cephalic capsule. Cephalic capsule 35-36 μ long; cephalic suture varying from nearly straight to undulating, maximum amplitude of undulations about 5 μ . Fenestrae surrounding base of cephalic setae, but incisions either absent or so closely approximated that they escape detection. Mandibles 40 (37-42) μ long, 12-19 μ wide at their anterior extremity. Esophagus cylindroid-conoid, 1.09 (0.95-1.23) mm long in male, 1.20 (1.10-1.36) mm long in female. Nerve ring encircling esophagus 464 (424-480) μ from anterior extremity. Esophageal glands apparently opening into esophageal lumen at base of mandibles. Excretory pore 390 (360-429) μ , posterior to cephalic extremity. Excretory gland (renette cell) completely within range of esophagus, posterior portion enlarged and "reflexed" (cf. Wieser 1953, Fig 30b). Pigmented accumulations (pigment spots) diffuse and variable in form with the individual (Figs. 1,

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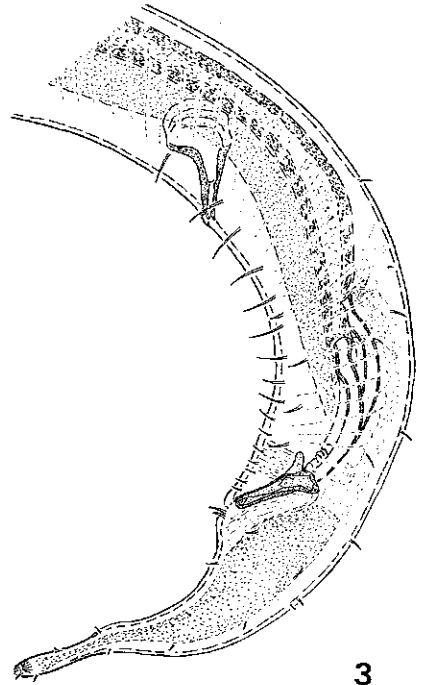
²Present address: Division of Biological Sciences, Rosenstiel School of Marine and Atmospheric Sciences, University of Miami, Florida, U.S.A.



1



2



3



a



b

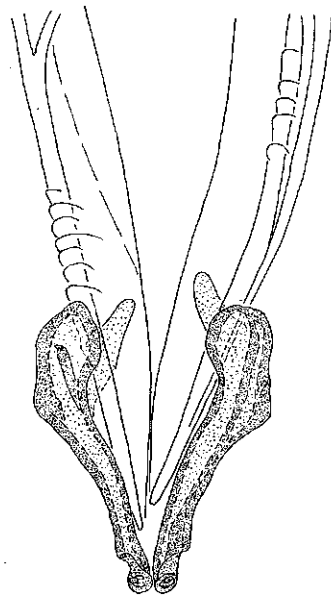


c

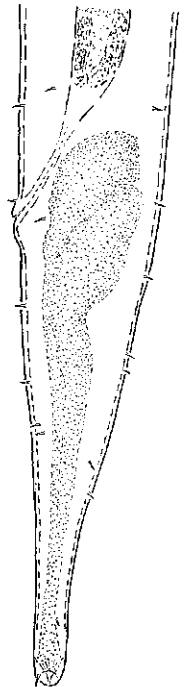


d

4



5



6

4 a-d); lense-like structures absent. Pigment spots 77 (70-80) μ from anterior extremity. Tail length in male, 226 (191-281) μ , in female 328 (294-358) μ . Anal body diameter 114 (106-122) μ . Spinneret glands confined to tail.

Male 6.93 (5.73-8.21) mm long; a, 38.7 (33.7-45.6); b, 6.4 (5.9-6.9); c, 30.9 (27.2-34.8); diorchic, gonads opposed, outstretched. Spicules asymmetrical, left shorter than right. Left spicule 178 (135-200) μ long (chord 152 (115-172) μ), with 5.6 (0-8) semicircular plates. Right spicule 234 (212-246) μ long (chord 197 (193-208) μ), with 5.4 (2-8) semicircular plates. Gubernaculum 81.6 (80-85) μ long. Preanal supplement 121 (100-136) μ long, sclerotized portion 73.5 (65-82) μ ; corresponding body diameter 142 (127-160) μ . Subventral setae present in precloacal region, setae about 30 μ long anteriorly, 12-13 μ at cloacal aperture.

Female 7.80 (6.41-9.08) mm long; a, 38.5 (34.0-44.7); b, 6.4 (5.7-6.9); c, 23.8 (21.8-26.9); V, 54 (49-56)%; didelphic, amphidelphic, gonads reflexed. Number of eggs per uterus 3.6 (0-14). Maximum number of eggs observed in one specimen, 22, 8 in anterior, 14 in posterior uterus. Egg size inversely proportional to number present; maximal egg size observed, 200 \times 85 μ .

HOLOTYPE: Male, Canadian National Collection of Nematodes, Entomology Research Institute, Ottawa, Collection No. 6488, Type Slide No. 212a.

ALLOTYPE: Female on Type Slide No. 212b, other data as for holotype.

PARATYPES: Sixteen males and 17 females on Type Slide Nos. 212a to 212o. Other data as for holotype. Two males and two females deposited in U.S.N.M.

Type Locality and Collection Data

The type specimens were collected by the first author in November 1971 from the top centimeter of brownish mud in tide pools in the intertidal mud flats at the eastern end of Port Moody Arm, of Burrard Inlet. The flats are composed of several centimeters of soft mud with a thin surface covering of small pieces of tree bark and fragmented wood. Below this mud layer is a black, oily layer that contains

few living organisms. Filamentous algae are scarce and are found together with barnacles mainly on driftwood. Other organisms prominent in the samples were mud-dwelling polychaetes and benthic amphipods (e.g., *Corophium* sp.). The close proximity of various industrial sites suggests that the sampling area may be considerably polluted.

Surface oceanographic determinations made in 1971 at stations in Burrard Inlet near the mud flats give a seasonal temperature variation of 24.5°C in July to 8°C in November. The seasonal salinity variation at the same stations ranges from 19.0‰ in July to 14.8‰ in November. The mud flats are exposed to extreme variations in temperature and salinity as a result of their intertidal position and to the influx nearby of two freshwater streams. During summer and early fall there are very few adult but many larval *E. anisospiculus* n. sp. in the mud, but by November many adult forms occur and egg deposition has begun.

Differential Diagnosis

Enoplus anisospiculus n. sp. is distinguished from all nominal species of *Enoplus* with the singular exception of *E. groenlandicus* Ditlevsen, 1926, by possessing males which have right and left spicules of unequal length. *Enoplus anisospiculus* n. sp. can be separated from *E. groenlandicus* by the large trumpet-shaped preanal supplement, the presence of semicircular plates on the spicules, and the arcuate shape of the spicules. In *E. groenlandicus*, the preanal supplement is short and cylindrical, the spicules lack semicircular plates, and the spicules are nearly linear, the chordal length being about equal to the absolute length (see redescription by Hope and Murphy 1970).

Acknowledgments

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FIGS. 1-6. *Enoplus anisospiculus* n. sp. Fig. 1, male head; Fig. 2, male tail, ventral view; Fig. 3, male tail, left lateral view; Fig. 4 a-d, variation in form of pigment accumulations; Fig. 5, gubernaculum and distal extremity of spicules, dorsal view; Fig. 6, female tail, left lateral view.

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