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A Review of the Genus Pseudocella Filipjiev, 1927 (Nematoda: Leptosomatidae) with a Description of Pseudocella triaulolaimus n. sp.

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The genus Thoracostoma Marion, 1870 was separated into the subgenera Thoracostoma and Pseudocella by Filipjiev (1927), the former subgenus to receive those species with lens-bearing ocelli, symmetrical, but irregularly curved spicula, and gubernaculum with apophyses directed dorsally and parallel with the spicula, and the latter subgenus to receive those species with ocellar pigment spots lacking a lens, spicula often asymmetrical but uniformly curved, and gubernaculum with paired apophyses directed posteriorly at right angles to the spicula. Later, Filipjiev (1946) raised both subgenera to generic rank.

Wieser (1953) continued to treat Filipjiev's taxa as subgenera of the genus Thoracostoma and Pseudocella by Filipjiev (1927), the former subgenus to receive Thoracostoma and Pseudocella by Filipjiev (1927), and the latter subgenus to receive the species with lens-bearing ocelli, symmetrical, but irregularly curved spicula, and gubernaculum with apophyses directed dorsally and parallel with the spicula. Later, Filipjiev (1946) raised both subgenera to generic rank.

Wieser (1953) continued to treat Pseudocella by Filipjiev (1927) as a single species, T. galathea (Wieser, 1956) which also resembles species of Pseudocella, but which possesses a cephalic capsule reduced to a ring with a slightly notched posterior edge, no anterior lobes, with amphids completely posterior to the lobes and a buccal armature resembling that of Synonchus Cobb, 1893. From the two male specimens of T. galathea, Wieser was unable to determine if the gubernaculum possessed caudally directed apophyses.

Platonova (1962) ranked Thoracostoma and Pseudocella as genera and assigned T. kreisi and T. filipjevi to Pseudocella without reference to Wieser's subgenera.

The differences between Thoracostoma and Pseudocella have remained much the same even though new species have been added to both groups. A notable exception, as pointed out by Wieser (1956), is that species of Thoracostoma have been described which do not possess ocellar pigment spots or lenses (Wieser, 1956; Allgen, 1951; Schuurmans Stekhoven and Mawson, 1955). Consequently, emphasis has shifted from differences in the ocelli to differences in the spicula and gubernaculum. The fact remains, however, that there are

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Fig. 1. *Pseudocella triaulolaimus* n. sp. Head of holotype in lateral view. Dorsal and subventral interradial teeth not illustrated.

relatively distinct and, at present, consistent morphological differences between these two groups and, for these reasons, their generic status is herein retained.

Species of *Corythostoma* differ from those of *Thoracostoma* and *Pseudocella* in the structure of the cephalic capsule, as mentioned above, and for this reason, retaining *Corythostoma* as a subgenus can be justified, pending further study. On the other hand, it is difficult to justify raising *Corythostoma* to the generic level since the males of this group, that have been adequately studied, have spicula and gubernaculum identical to those of *Pseudocella*. Therefore, the subgenus *Corythostoma* is here transferred from *Thoracostoma* to the genus *Pseudocella*.

It is also here proposed that *Synonchoides* be provisionally considered a subgenus of *Pseudocella*. A more satisfactory arrangement must be based on additional studies of the stomatal armature, spicula, and gubernaculum of *P. (Synonchoides) galathea* (new combination). The taxonomic status of this species might also be clarified by a detailed study of the stomatal armature in species of the genus *Synonchus*.

All species of the genus *Pseudocella* not here assigned to the subgenera *Corythostoma* and *Synonchoides* are regarded as members of the nominate subgenus *Pseudocella*, which has the posterior lobes of the cephalic capsule separated by notches; a claviform piece present; amphids completely surrounded by lobes of the cephalic capsule; ocelli absent; spicula of uniform diameter and regularly curved; and
Pseudocella triaulolaimus n. sp. Photomicrographs of cross-sections through stoma. Sections A through D approximately 5, 10, 15, and 30 μ, respectively, from anterior extremity. Anterior dorsal interradial tooth (ad); teeth of radii (t); subventral interradial teeth (s); posterior dorsal interradial tooth (pd).

Fig. 2. Pseudocella triaulolaimus n. sp. Photomicrographs of cross-sections through stoma. Sections A through D approximately 5, 10, 15, and 30 μ, respectively, from anterior extremity. Anterior dorsal interradial tooth (ad); teeth of radii (t); subventral interradial teeth (s); posterior dorsal interradial tooth (pd).

Gubernacula with caudally directed apophyses (Wieser, 1956).

Pseudocella (Corythostoma) triaulolaimus n. sp.

Sixteen male, three female, and three juvenile specimens of Pseudocella triaulolaimus n. sp. were collected in February, 1963 from sandy sediment held by holdfasts of Egregia menziesii (Turner). The holdfasts were attached to rocks in the intertidal zone at Dillon Beach, California. The nematodes were relaxed for 30 minutes in sea water and mounted in glycerine or CMC10*. The latter was used principally for males, for the specimens are rendered more transparent in this mounting medium and a detailed study of the stomatal structure and male genital apparatus is made possible. The head of one male was mounted en face in glycerine jelly and one male and one female were embedded in polyethylene glycol and sectioned at 5 μ. The sections were stained with hematoxylin at pH 2.4 by the method of Craig and Wilson (1937).

* Product of Turtox Biological Supply House Inc.
Fig. 3. *Pseudocella triaulolaimus* n. sp. (A) Tail of allotype (female). (B) Tail of holotype (male). (C) Left (with distal hook) and right spicula of male paratype. (D) Gubernaculum of male paratype.
Measurements

**Holotype** (Male):  L = 16.80 mm; a = 74.7; b = 8.27; c = 69.13; T = 45%

**Allotype** (Female):  L = 19.72 mm; a = 88.4; b = 8.80; c = 93.0; V = (24.6%) 62.9% (22.6%)

**Paratypes** (13 males):  L = 14.53–20.89 mm (18.75); a = 51.5–83.5 (72.23); b = 7.27–13.47 (9.19); c = 60.04–88.60 (73.09); T = 45.0%–71.6% (60.9%).

**Paratype** (1 female):  L = 18.09 mm; a = 58.7; b = 8.89; c = 88.7; V = (14.8%) 64% (18.0%)

**Paratypes** (3 juveniles):  L = 12.06–13.96 mm (13.15); a = 50.7–72.7 (62.6); b = 6.03–8.31 (7.46); c = 58.1–73.9 (6.77).

**Description**: Body long, slender, and tapering anteriorly from base of esophagus; posterior extremity tapering from short distance anterior to cloaca. Integument without transverse or longitudinal striations; cuticle 10.5–6.1 (8.69) μ thick at mid-body level. Six papillae on lips followed by circle of ten cephalic setae, the latter, 11.0 to 17.5 μ long.

Cephalic capsule with well-developed posterior lobes; sublateral lobes only partially enclosing amphids; lobes separated by deep notches and lacunae absent. Anterior lobes short; claviform piece absent. Major portion of cephalic capsule separated from integumentary cuticle by alveolar substance (tissue?). Amphids circular, ½ width of corresponding head diameter and situated just posterior to lateral cephalic setae.

Cervical setae between cephalic capsule and nerve ring in dorsal, lateral, and ventral longitudinal rows. These setae long (11.0 to 17.0 μ), numerous and in clusters near posterior margin of cephalic capsule, becoming sparse and shorter (3.0 to 5.0 μ) at level of nerve ring. Setae posterior to nerve ring 2.0 to 3.0 μ long and sparsely distributed.

Stoma triradiate in cross-section with 12 teeth, two at distal end of each radius (Fig. 2A and B; t) and two on each of three interradial facets; subventral interradial teeth juxtapose (Fig. 2B; s) and dorsal interradial teeth tandem; anterior dorsal tooth 1.0 μ long (Fig. 2A; ad), posterior dorsal tooth 3.5 μ long (Fig. 2C; pd); all teeth directed anteromedially. Distal ends of radii tuboid and walls of radii greatly thickened for a distance of approximately 30 μ posterior to teeth (Fig. 2D). Further posteriorly, distal ends of radii convergent, walls thin but with muscle attachment points and muscles centered.

Esophagus muscular and gradually increasing in diameter towards its posterior end. Nerve ring located approximately ½ the length of the esophagus from the anterior end. Retinette cell and ocellar pigment spots absent.

**Males**: Longitudinal series of subventral setae extending from near mid-region of tail to posterior subventral supplements; 16–22 in right subventral series, 17–21 in left subventral series; setae 15–25 μ long. Four to six setae distributed irregularly around caudal gland pore. Heavily cuticularized, hemispherical copulatory supplements in one subventral row on each side of body anterior to anus; four to six supplements on right side, four to seven on the left side; position of supplements relative to those of the opposite side either even or staggered; each supplement bearing a minute apical papilla.

Reproductive system díorchic, testes opposed and outstretched. Spicula (Fig. 3C) rather uniformly arcuate and comprised of three longitudinal ribs; proximal end of spicula devoid of dilated capitulum; distal end of left spiculum thickened, with a pointed posterior process. Right spicula 292.6–319.5 μ, left spicula 270.7–324.4 μ long. Corpus of gubernaculum (Fig. 3D) with thin-walled processes embracing spicula laterally and with heavily cuticularized apophyses extending at right angles to spicula in a dorso-caudal direction; apophyses fused at their bases by a medial triangular thickening. Paired trumpet-shaped structures (Fig. 3D), ventro-lateral to distal end of spicula, apparently fused laterally with gubernaculum; these structures with a small pore near their distal end.

Posterior end of body strongly curved toward venter. Copulatory muscles well developed in approximately the posterior 11% of the body length. Tail conical with terminal gland pore; caudal glands convoluted, not extending anterior to gubernaculum.

**Females**: Vulva without distinctly protruding lips. One to three rounded cuticular elevations anterior and posterior to vulva on ventromedial body surface (Fig. 4); setae not present on these elevations. Five to six hypo-
Fig. 4. *Pseudocella triaulolaimus* n. sp. Allotype (female).
dermal gland cells in longitudinal series in each lateral hypodermal chord at level of vulva; gland cells opening to the exterior by minute pores on ventral margin of each lateral chord.

Reproductive system amphidelphic and reflexed. Ova with chorion 560–653 (601) μ long and 127–147 (136.5) μ wide. Tail (Fig. 3A) conical, terminus bluntly rounded.

**Holotype (Male):** United States National Museum catalogue number 33631.

**Allotype (Female):** United States National Museum catalogue number 33632.

**Paratypes (Males, female, and juveniles):** United States National Museum catalogue numbers 33633–33650.

**Type Habitat:** Sediment held by the holdfasts of *Egregia menziesii* (Turner) attached to intertidal rocks.

**Type Locality:** Dillon Beach, California.

**Remarks:** *Pseudocella triaulolaimus* n. sp. has been assigned to this genus because of the presence of a cephalic capsule, a relatively short, bluntly rounded tail, uniformly curved spicula and gubernaculum with caudally directed apophyses; to the subgenus *Corythostoma* because the lobes of the cephalic capsule are reduced in length and separated by notches only, neither incisions or fenestrae are present and amphids have at least half their length situated posterior to the caudal margin of the lobes.

It might be argued that *P. triaulolaimus* belongs in the subgenus *Synonchoides* because of the multiple teeth in the stoma. It is not assigned to this subgenus since the cephalic capsule is not reduced to a narrow band and because it is difficult at this time to appraise the apparent similarities of the stomatal armature without knowing the exact structure and location of teeth present in *P. (S.) galathea*.

*Pseudocella triaulolaimus* n. sp. can be distinguished from all species of *Pseudocella* by the tuboid radii and thickened walls in the posterior portion of the stoma and by the greater number of stomatal teeth.

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