

Panagrellus ceylonensis n. sp. (Nematoda: Cephalobidae)

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Abstract: *Panagrellus ceylonensis* n. sp. is described from rubber latex in Ceylon. Its long, slender spicules are curved ventrally with a dorsal deflection at two-thirds of their length. The manubrium is thick and hooked, and the shaft is not widened at the shoulder. The terminal bifurcations are wide, with the dorsal one considerably longer and thicker than the ventral. The main ventral element is continuous with the terminal sheath with the ventral bifurcation arising within it. **Key Words:** *Panagrellus pycnus*, *P. dubius*, *P. redivivus*, morphology, spicule.

Specimens mounted in glycerine from the Gerald Thorne Collection of the U. S. D. A. Nematode Collection, Beltsville, Maryland, were found to represent a new species, described here as *Panagrellus ceylonensis* n. sp. Most of the females were in poor condition. However, the males and one female were well enough preserved to afford an adequate description, although the cuticle was loosened in every specimen. The chief diagnostic character separating the species of the genus *Panagrellus* is the form of the spicules. Therefore the spicules of *P. ceylonensis* are described in detail and compared with those of *P. pycnus* Thorne, 1938, which they most

closely resemble. Cross section drawings were made from severed tails mounted in glycerine jelly.

Panagrellus ceylonensis n. sp.

Measurements (δ Holotype): L = 1.130 mm; a = 29; b = 5.3; c = 9.4; stoma = 0.013 mm; right spicule = 0.090/0.078 mm²; left spicule = 0.088/0.076 mm; gubernaculum = 0.034 mm.

(φ Allotype): L = 1.155 mm; a = 24; b = 5.8; c = 7.8; V = 65%; stoma = 0.014 mm.

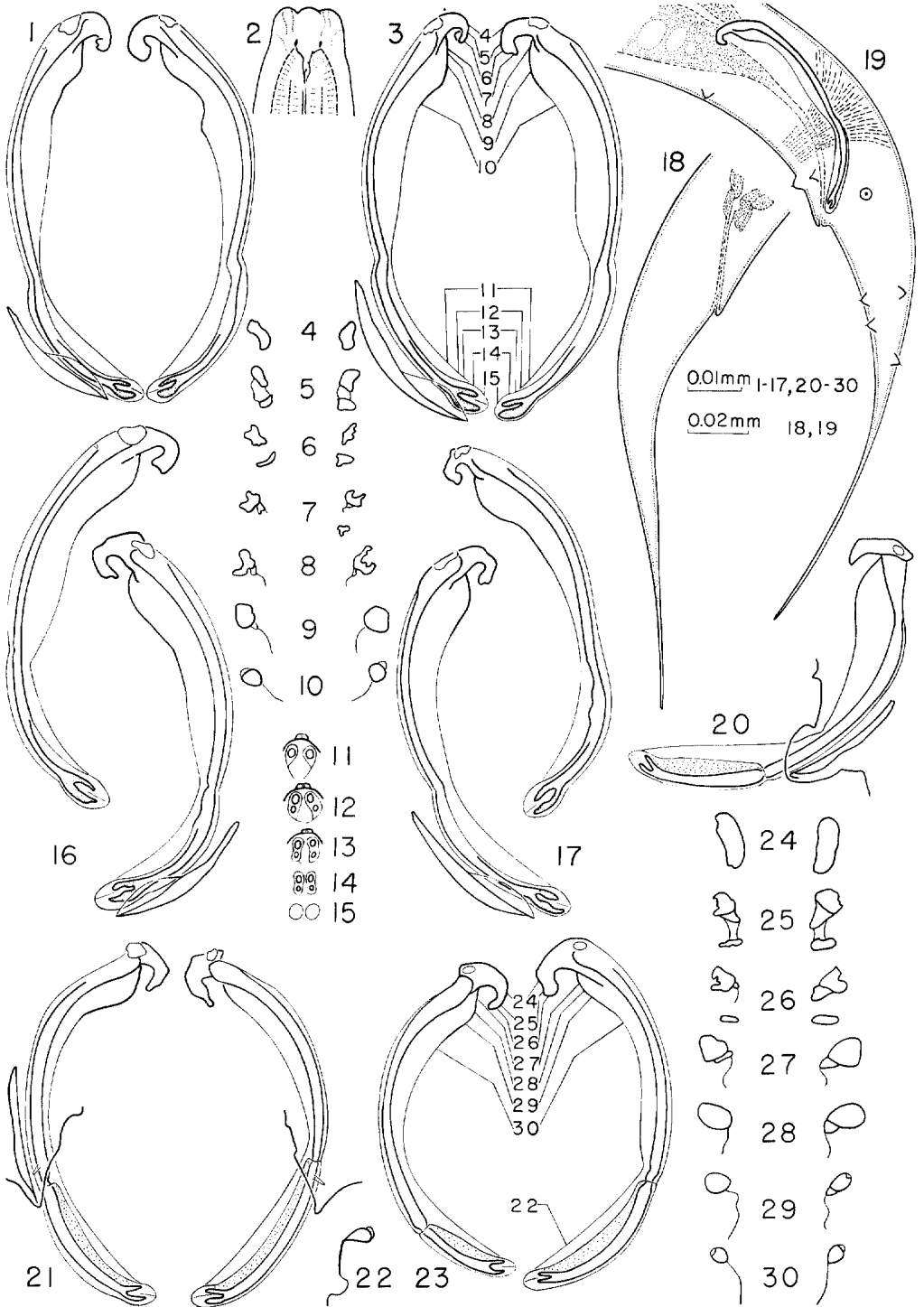
(3 $\delta\delta$ Paratypes): L = 1.160, 1.180, 1.090 mm; a = 28, 27, 28; b = 5.7, 6.1, 5.3; c = 7.4, 9.7, 7.3; stoma = 0.014, 0.013, 0.013 mm; spicules = right 0.093/0.077—left 0.092/0.074, right 0.092/0.080—left 0.095/0.080, right 0.087/0.075—left 0.087/0.075 mm; gubernaculum = 0.034, 0.036, 0.030 mm.

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² The first figure given in the spicule dimensions is the measurement along the curve, the second is the measurement across the chord.

PLATE I. Fig. 1–19. *Panagrellus ceylonensis* n. sp. 1. gubernaculum, right and left spicules, holotype; 2. female head; 3. gubernaculum, right and left spicules, paratype (small numbers refer to level of cross sections); Fig. 4–15. Cross sections of spicules in figure 3. 4. manubrium; 5, 6. hooked portion of manubrium; 7. shoulder, muscle insertion depression, and distal projection on left spicule hook; 8. shoulder just behind section in figure 7; 9. shaft just posterior to shoulder; 10. shaft, beginning of main dorsal element; 11. posterior shaft and gubernaculum; 12, 13. bifurcation and gubernaculum at two levels; 14. bifurcation; 15. sheath surrounding spicule terminus; 16. right and left spicules, gubernaculum of paratype; 17. gubernaculum, right and left spicules of paratype; 18. female tail; 19. male tail. Fig. 20–30. *Panagrellus pycnus* Thorne, 1938. 20. spicule and gubernaculum of paratype; 21. gubernaculum, right and left spicules of lectotype; 22. cross section through posterior shaft of a single unillustrated spicule; 23. right and left spicules of paratype (small numbers refer to level of cross sections); Fig. 24–30. cross sections through spicules in figure 23; 24. manubrium; Fig. 25–26. hooked portion of manubrium, main ventral element, and muscle insertion depression; 27. shoulder; 28. base of shoulder; 29. anterior shaft, beginning of main dorsal element on left; 30. shaft.



(9 ♀♀ Paratypes): L = 1.278 (range 1.057–1.530) mm; a = (specimens flattened); b = 6.5 (5.5–8.0); c = 8.9 (7.7–10.8); V = 68 (58–81) %; stoma = 0.013 (0.011–0.014) mm.

Cuticle with fine transverse striae. The underlying musculature may appear as longitudinal striae. A suggestion of four incisures in the lateral field seen in one male. Head with six slightly offset lips (Fig. 2). Stoma widened at level of lips, funnel-shaped behind lips. Prostom lining conspicuously sclerotized. *En face* views of a male and a female revealed the definite presence of a wart and three small teeth on the posterior dorsal stoma wall; due to debris in the stomata of both specimens the two pairs of subventral teeth described previously for other species (1) not definitely seen. Procorpus occupying about 55% of the esophageal length, nerve ring just anterior to basal bulb, excretory pore ventral to base of procorpus. Excretory duct leading to ventral glands within which it is considerably looped (Fig. 31).

Ovary (Fig. 31) with several oogonia at one level, leading forward from behind vulva to a flexure in anterior third of body. Most of anterior portion of ovary narrow and empty except during passage of an enlarged oocyte. Constriction at flexure leading to spermatheca. Spermatheca and uterus also separated by a constriction. Eggs within uterus in a single row in all specimens, the posterior ones with increasingly advanced embryos and larvae.

Vulva a transverse slit, vaginal lumen (Fig. 35) flattened dorsoventrally, anteriorly directed, vaginal wall heavily muscled. A projection of posterior wall just within vulva. Cuticularization of lumen gradually thicken-

ing anteriorly, thickest on ventral wall. A protrusion of ventral musculature present near anterior end.

Tails of both sexes similar, elongate conoid (Fig. 18, 19). Phasmid at 48% of tail length in allotype, not seen on any other specimen.

Spicules slender, very slightly widened at shoulder. Manubrium curved, hooked, elongate in cross section anteriorly (Fig. 4). Hook of various shapes, even within the same specimen (Fig. 1, 3, 16, 17). For example, hook of left spicule in Fig. 3 thick, hook of right spicule thinner, L-shaped in cross section (Fig. 5, 6). Manubrium not offset from shoulder dorsally, shoulder only slightly wider than shaft, with long, deep depression for muscle insertion (Fig. 7, 8). Main ventral element, arising at base of manubrium, forms a double tube at shoulder level (Fig. 7, 8, 9). Ventral tube gradually disappearing. Main dorsal element arising just within dorsal wall, forming a small dorsal tube (Fig. 10), and dorsal-most element becoming thinner. At about 60% of the spicule length main dorsal and ventral elements diverging slightly, and curve of spicule is deflected dorsally. At that level main ventral element becoming thinner and joining dorsal element, forming a sheath which encloses terminus of spicule (Fig. 11–15). Main dorsal element continuous with dorsal branch of bifurcation; ventral branch formed by new element arising about half way between deflection and terminus. Bifurcation wide, with dorsal branch considerably longer and thicker than ventral branch. Velum arising at shoulder level and extending nearly to terminus (Fig. 7–13).

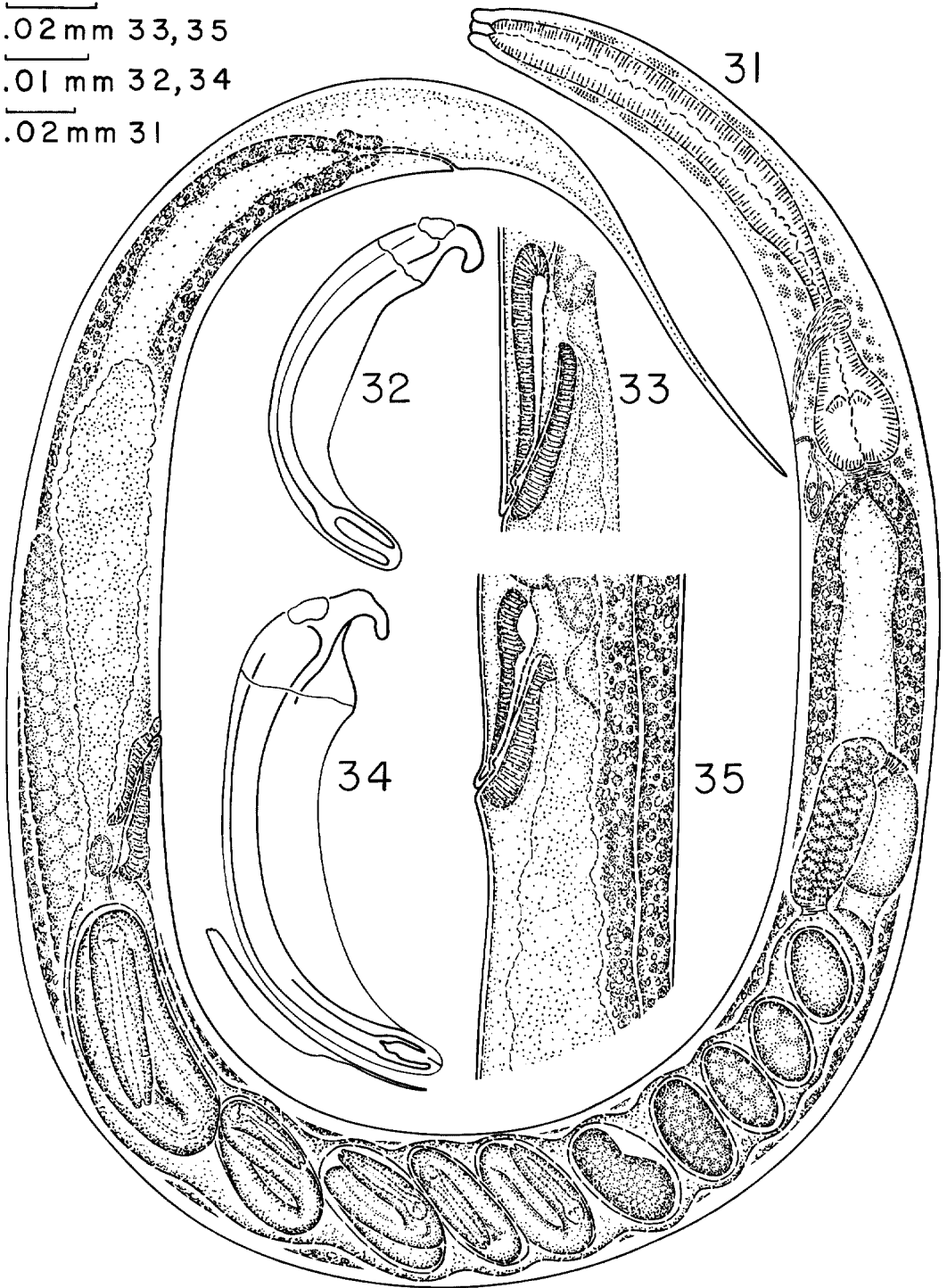
Gubernaculum surrounding spicules dorsally and laterally (Fig. 1, 3, 16, 17). Only the distal portion of the gubernaculum of a

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.02 mm 33, 35

.01 mm 32, 34

.02 mm 31



single specimen could be studied in cross section. It was thin at the margins and thicker at the center (Fig. 11–13).

The general spicule shape of *P. ceylonensis* is most similar to that of *P. pycnus*. Although there is considerable variability in the shape of the manubria within both the species, the posterior portions of the spicules are consistently the same within the species and differ between species. The extreme anterior cross section of the *P. pycnus* spicule is similar to that of *P. ceylonensis* (Fig. 24). However, in the *P. pycnus* spicule the manubrium is usually more slender and angular, and it is usually offset dorsally from the shaft, as shown in Fig. 20, 21, and the right spicule in Fig. 23, although the shapes of individual manubria may differ in detail, even within the same specimen (Fig. 21, 23). The manubrium of the left spicule in Fig. 23 is curved, and not offset from the shaft. Its proximal end is flattened however, not curved as in *P. ceylonensis*. It is paired with a spicule with a typical angular manubrium. In *P. pycnus* the muscle insertion depression is round, and more shallow than in *P. ceylonensis* (Fig. 25, 26). In *P. pycnus* the double tube formed by the main ventral element and the ventral element from the manubrium rarely extends posterior to the hook (right spicule, Fig. 25–27); the situation shown in the left spicule, Fig. 23, 25–29, in which the double tube extends beyond the hook, was seen only in that one spicule of *P. pycnus*, but in all the spicules of *P. ceylonensis*. The shaft is slender in both species, with a large ventral and small dorsal tube (Fig. 10, 30), but in *P. pycnus* the shaft is not deflected dorsally. The distal portion is widened slightly in *P. pycnus*, with a constriction at about 60% of its length. The main ventral element is continuous with the ventral branch of the bifurcation, whereas it is continuous with the terminal sheath in *P.*

ceylonensis. The terminal sheath of *P. pycnus* is much wider ventrally, and in cross section forms a thickened portion of the velum (Fig. 22). The velum itself extends between the shoulder and bifurcation as in *P. ceylonensis*. The bifurcation of the *P. pycnus* spicule is smaller than in *P. ceylonensis*, and the branches are similar in size and shape, whereas the dorsal branch is larger in *P. ceylonensis*.

Diagnosis: *P. ceylonensis* is similar to *P. dubius* Sanwal, 1960, *P. redivivus* (L., 1767), and *P. pycnus*, all redescribed previously (1). It differs from *P. dubius* (Fig. 32) in the longer spicule with unequal, shorter branches of the bifurcation; from *P. redivivus* (Fig. 34) in the longer, more slender, non-tapering spicule shaft, and wider posterior branch of the bifurcation; from *P. dubius* and *P. pycnus* in the main ventral element continuous with the ventral bifurcation, not with the terminal sheath; from *P. dubius* and *P. redivivus* in the more definitely hooked manubrium; and from *P. pycnus* in the thicker spicule manubrium, thicker, longer, unequal branches of the bifurcation, and the shorter vagina with protrusion of the margin of the ventral musculature (compare Fig. 33 and 35). It differs from all three species in the dorsally deflected spicule shaft.

Type locality and habitat: Collected by C. H. Gadd in December, 1944 from latex exuding from a rubber tree at Talawakelle, Ceylon.

Specimens: Holotype on slide T-189t, allotype on slide T-190t, Paratypes 2 males, 7 females, two heads and one male tail cross section on slides T-909p–T-914p, in the U. S. D. A Nematode Collection, Beltsville, Maryland.

LITERATURE CITED

1. HECHLER, H. C. 1971. Taxonomic notes on four species of *Panagrellus* Thorne (Nematoda: Cephalobidae). *J. Nematol.* (In press).