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TWO NEW SPECIES IN THE GENUS *CUCULLANUS* (NEMATODA – CUCULLANIDAE) FROM THE AUSTRALIAN REGION

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Two new species of Cucullanus *are described:* C. bourdini *n. sp. and* C. laurotravassosi *n. sp.* C. bourdini *is a parasite of* Pristipomoides filamentosus, Aprion virescens *and* P. flavipinnis *(Lutjanidae) in New Caledonia. The species is closely related to* C. amadai, C. bulbosus *and* C. hians *by the disposition of the post- and ad-cloacal papillae but differs by the more posterior position of the deirids.* C. laurotravassosi *n. sp., a parasite of* Arius *sp. in Australia, is close to* C. bagre *but can be distinguished by the more posterior position of post-cloacal papillae.*

Key words: *Cucullanus* – Nematoda – fish parasites – Australian region

We studied two new *Cucullanus* species parasitic in fish of the Australian region: a species recovered from Lutjanidae, caught in the lagoon of New Caledonia and a species found in Ariidae in an Australian river.

The description of these two species is herein presented. The specimens are deposited in the collections of the Laboratoire des Vers, Muséum national d'Histoire naturelle (MNHN), Paris.

All measurements are in µm except for body length and distance of vulva from cephalic extremity, indicated in millimetres.

Cucullanus bourdini n. sp.

Fig. 1

Type material: 1 male holotype, 1 female allotype, 5 males and 6 females paratypes as well as two posterior fragments of males and two anterior fragments MNHN 513 BC.

Host: Pristipomoides filamentosus (Valenciennes, 1830) (Lutjanidae, Perciformes).

Type locality: Dumbéa, New Caledonia.

Date of collection: 21.3.1990.

Other material: – 1 male MNHN 512 BC.

Host: Aprion virescens Valenciennes, 1830 (Lutjanidae).

Locality: Koko Pass, New Caledonia.

Date of collection: 29.2.1990.

– 1 female MNHN 515 BC.

Host: Pristipomoides flavipinnis Shinohara, 1963 (Lutjanidae).

Locality: New Caledonia.

Date of collection: 13.3.1990.

DESCRIPTION

Medium sized nematodes. Body slender enlarging slightly posterior to the distal end of the oesophagus; cuticle thin (about 3 µm) with a faint transversal striation.

Cephalic extremity presenting the usual features of the genus *Cucullanus*. The membranous collarette armed with about 36 denticulations on each side. One pair of reniform chitinous structures attached to the peribuccal frame seen very clearly, the other chitinous structures weakly sclerotized. Oesophagus long and narrow, in lateral vue its anterior swelling less prominent than the posterior one. Small claw-shaped deirids situated close to the posterior extremity of the oesophagus (their position varies from one specimen to the other; they may be on the level – slightly anterior – or slightly posterior to this extremity). Excretory pore not seen.

Female: vulva not salient, somewhat posterior to the middle of the body; ovejector

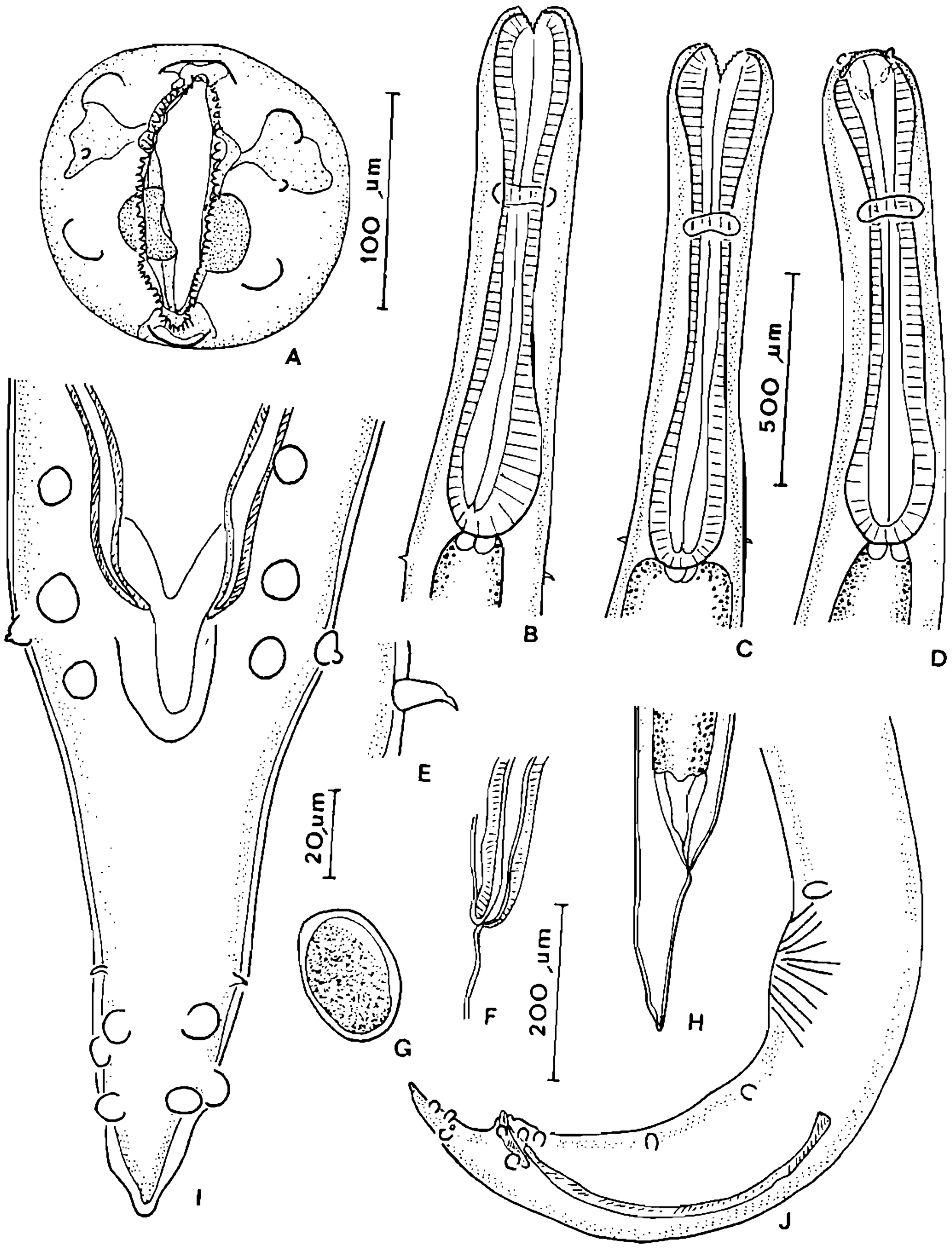

Fig. 1: *Cucullanus bourdini* n. sp. – A: apical view. B, C: anterior end, median views. D: anterior end, lateral view. E: deirid. F: vulva region. G: egg. H: tail of female. I: posterior end of male, ventral view. J: posterior end of male, lateral view. Bars: A, I, G = 100 µm; B, C, D, H, J = 500 µm; E = 20 µm; F = 200 µm.

short (about 500 µm) directed anteriorly; uteri opposed; eggs ovale, unembryonated when discharged. Tail conical.

Male: pre-cloacal sucker present; cloaca prominent with walls not sclerotized. Three pairs of pre-cloacal papillae, the anterior-most

just in front of the sucker; 4 pairs of ad-cloacal papillae: 3 sub-ventral and one lateral pair situated between the second and third sub-ventral pairs; 4 pairs of post-cloacals: 2 pairs sub-ventral, one pair lateral situated on the level-, or just in front of the anterior pair of sub-ventrals or between the two sub-ventral pairs; a pair of tiny lateral papillae (phasmids) situated anterior to the other pairs of post-cloacal papillae. Tail conical.

Measurements

Male: (6 specimens) holotype, range, average in parenthesis. Length: 13.4; 10.6-14.0 (12.7); maximum width: 300, 200-400 (306); oesophagus: 1119, 1100-1240 (1123); distance from cephalic extremity of nerve ring: 400, 380-420 (400), of deirids: 1060, 1000-1240 (1096). Spicules: 850, 740-1000 (885). Tail: 300, 250-300 (270).

Female: (7 specimens) allotype, range, average in parenthesis. Length: 18.5, 18.5-21.7 (20.0); maximum width: 350, 350-700 (464); oesophagus: 1200, 1200-1400 (1294); distance from cephalic extremity of nerve ring: 400, 400-500 (458), of deirids: 1300, 1220-1440 (1348), of vulva: 11.1, 10.9-13.0 (11.8). Tail: 400, 360-450 (389).

DISCUSSION

Two species of *Cucullanus sensu* Petter (1974) were described from Lutjanidae: *C. rivulatus* Soota and Dey Sarkar, 1980 and *Cucullanus* sp. Rasheed, 1968. *C. rivulatus*, a parasite of *Lutjanus rivulatus* in India, differs from our specimens by its small size and absence of the pre-cloacal sucker. *Cucullanus* sp., a parasite of *Lutjanus* sp. in Pakistan, was described from a single female; it differs from our specimens by the more anterior position of the deirids.

We compared our specimens with species of *Cucullanus* having a pre-cloacal sucker, having comparable dimensions (especially body- and spicule length) and a comparable arrangement of the post-cloacal papillae.

Nine species, parasitic in marine fish, present these features. Among those, *C. heterochrous* Rud., 1802 (see Berland, 1970), *C. incertus* Gendre, 1927, *C. australiensis* Baylis, 1927, *C. filiformis* Yamaguti, 1935, *C. himezi* Yamaguti, 1941, all have the lateral ad-cloacal papillae situated posterior to the ad-cloacal sub-ventrals. On the other hand, in *C. robustus* Yamaguti, 1935, these papillae are situated more anterior than in our specimens. Three species show the same arrangement of the ad-cloacal papillae: *C. amadai* Yamaguti, 1941, *C. bulbosus* (Lane, 1916) and *C. hians* (Dujardin, 1845) (see Campana-Rouget & Chabaud, 1956). They differ from our specimens by the more anterior position of the deirids; moreover, *C. bulbosus* has a dorsal cuticular inflation at the anterior extremity and a prominent vulva; in *C. amadai* the cloaca is not prominent and in *C. hians* the female tail is relatively longer. Our species is thus a new one and we name it *C. bourdini* n. sp., in honour of Dr P. Bourdin, head of the IEMVT mission in New Caledonia.

Cucullanus hians is a very common species in Europe where it parasitizes Anguilliformes (*Conger conger*): Rasheed (1968) describes the species from Perciformes and Beloniformes in Pakistan. Although in his figure the deirids are presented anterior to the distal end of the oesophagus, in his table of measurements they are in most cases posterior - or only slightly anterior to this extremity; it is thus likely that these specimens are synonyms of *C. bourdini*.

Cucullanus laurotravassosi n. sp.
Fig. 2

Type material: 1 male holotype, 1 female allotype, 2 males and 3 females paratypes MNHN 485 BC.

Host: Arius* sp. (Ariidae, Siluriformes).

Type locality: Adelaide river, Northern Territory, Australia.

Collection date: May 1989. Collected by M. O'Callaghan.

Additional material: 1 male and 4 females MNHN 451 BC.

*Host: Hemiarius** sp. (Ariidae, Siluriformes).

Same geographical origine.

*These species are undescribed. Their study is in progress at the Department of Zoology, University of Adelaide, Australia.

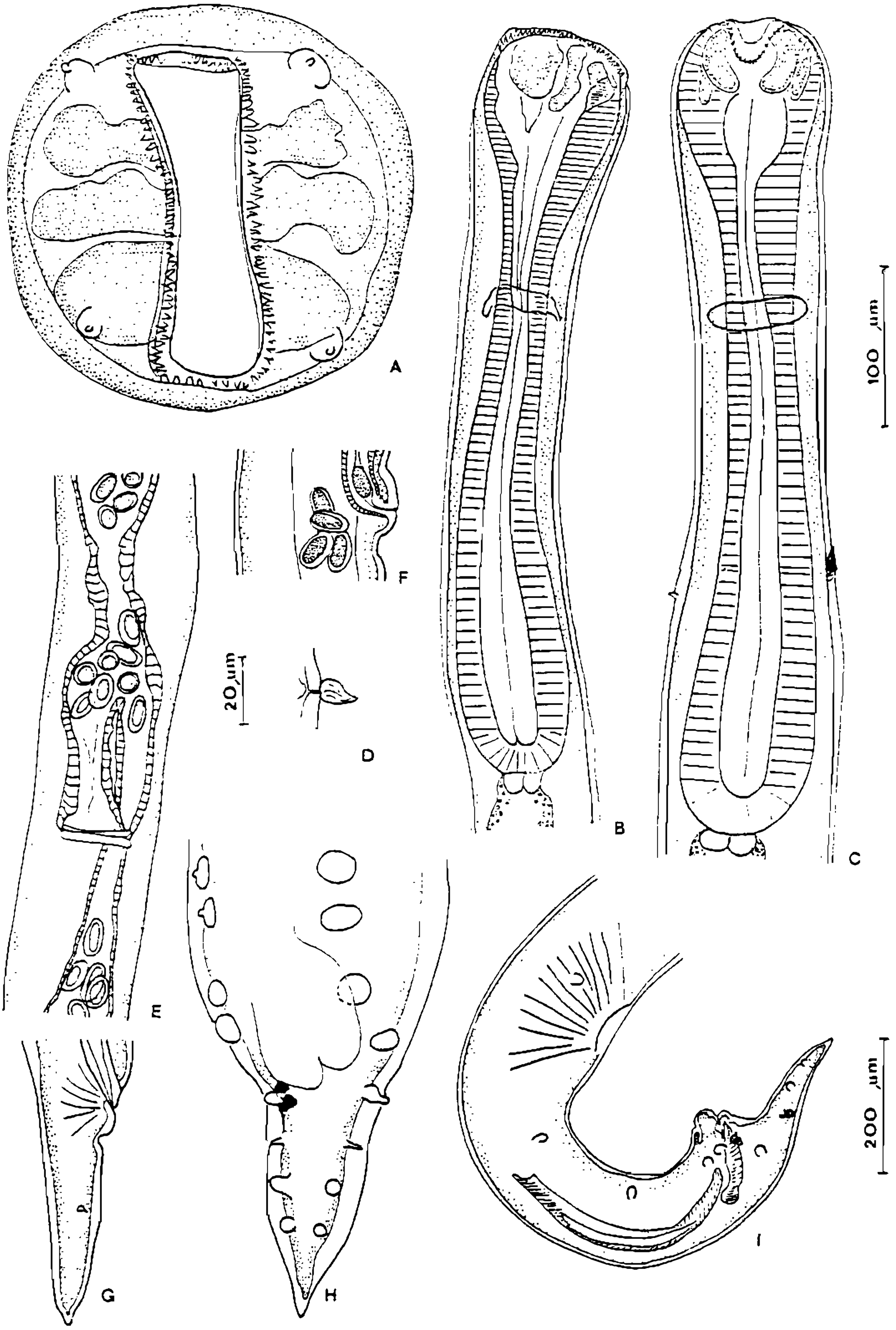

Fig. 2: *Cucullanus laurotravassosi* n. sp. – A: apical view. B: anterior end, lateral view C: anterior end, median view. D: deirid. E: vulva region, ventral view. F: vulva region, lateral view. G: tail of female. H: posterior end of male, ventral view. I: posterior end of male, lateral view. Bars: A, H = 100 µm; B, C, E, F, G, I = 200 µm; D = 20 µm.

DESCRIPTION

Medium sized nematodes; body slender; cuticle thin (about 5 μm in thickness), transversal striation faintly marked.

Cephalic extremity presenting the usual *Cucullanus* features. Membranous cephalic collarette armed with about 50 denticulations on each side. Three pairs of clearly visible sclerotized structures attached to the chitinous peribuccal frame; oesophagus long and narrow, the anterior swelling more prominent than the posterior one; small pointed deirids situated in front of the distal end of the oesophagus; excretory pore situated close to the deirids, visible only in a few specimens.

Female: vulva with prominent lips, slightly posterior to middle of body; ovejector short (about 300 μm); uteri opposed, eggs ovale, not embryonated when discharged (70/50 μm). Tail conical.

Male: precloacal sucker present; cloaca prominent with non-sclerotized walls; spicules short, equal; gubernaculum strongly sclerotized. Three pairs of pre-cloacal papillae of which the anterior-most on the level of the sucker or slightly anterior to it; 4 pairs of ad-cloacals: 3 sub-ventral and one lateral situated posterior to the sub-ventrals; 4 pairs post-cloacal: 2 sub-ventral and 2 lateral of which one pair of very small papillae are phasmids; the lateral pairs are situated in front of the sub-ventrals; the phasmids are either in front or posterior to the other lateral pair. Tail conical.

Measurements

Male: (4 specimens) holotype, range, with average in parenthesis. Length: 10.4, 10.4-11.8 (11.2); maximum width: 200, 175-200 (185); oesophagus: 1200, 1080-1200 (1157); distance from anterior extremity of nerve ring: 440, 380-440 (411), of deirids: 840, 750-860 (812). Spicules: 400, 310-400 (357). Tail: 250, 200-250 (212).

Female: (8 specimens) allotype, range, average in parenthesis: Length: 16.2, 14.7-18.3 (16.1); maximum width: 260, 200-300 (244); oesophagus: 1290, 1100-1300 (1199); distance from anterior extremity of nerve ring: 430, 360-430 (406), of deirids: 900, 860-1125 (989), of vulva: 9.9, 9.0-11.5 (9.9). Tail: 350, 300-360 (329).

DISCUSSION

Four species of *Cucullanus* with a precloacal sucker have the same arrangement of post-cloacal papillae as our specimens: post-cloacal laterals (n° 8 and phasmids, conf. Petter, 1974) anterior to the post-cloacal sub-ventrals (n° 9 and 10).

Among these, *C. filiformis* Yamaguti, 1935, a parasite of Anguilliformes, *C. bulbosus* (Lane, 1916) and *C. pulcherrimus** Barreto, 1918, parasites of Carangidae (Perciformes), have spicules longer than our specimens; moreover, in *C. pulcherrimus* and *C. bulbosus*, the ad-cloacal lateral papillae (n° 4) are situated more anteriorly. The species most close to ours by the length of the spicules and arrangement of cloacal papillae is *C. bagre* Petter, 1974, parasite of a marine Ariidae (*Bagre bagre*) on the South-American Atlantic Coast. We compared our specimens to type-material of *C. bagre* and concluded that there are many differences between these two species: the anterior oesophageal swelling is less marked in *C. bagre*, the posterior-most pair of post-cloacal papillae is situated twice the distance from the posterior extremity of the body and the anterior-most pair of precloacal papillae is situated further from the precloacal sucker.

Among the *Cucullanus* species in which the disposition of the cloacal papillae is not known sufficiently there are 4 species parasitic in fresh-water Siluriformes in India having spicules similar in size to those of our specimens: *C. mystusi* (Gupta and Naqvi, 1983), *C. lucknowi* Campana-Rouget, 1961, *C. pseudeutropi* Agrawal, 1967 and *C. vinodae* (Gupta and Naqvi, 1983), but they are distinguished by having a distinctly shorter oesophagus.

This species is thus a new one and we name it *C. laurotravassosi* n. sp. in the memory of Professor Lauro Travassos.

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*In *C. pulcherrimus*, only one pair of lateral post-cloacal papillae is described; the phasmids are not reported.

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