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ON SOME FAMILY RELATED PARASITES (NEMATODA, CUCULLANIDAE) FROM THE MARINE FISH *PARALONCHURUS BRASILIENSIS* (STEINDACHNER, 1875) (PISCES, OSTRACIIDAE)

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Dichelyne (Cucullanellus) elongatus *(Tornquist, 1931) Petter, 1974 and* Cucullanus pulcherrimus *Barreto, 1918, from* Paralonchurus brasiliensis *(Steind., 1875) are redescribed and two specimens of* Dichelyne (Cucullanellus) *sp. are also reported in this host, despite lack of data enough to achieve their specific diagnoses.* C. pulcherrimus, *although well described previously, was again identified in Brazil since its original description and posterior illustration. The present findings represent also a new host record for the referred genera:* Dichelyne *Jagerskiold, 1902 and* Cucullanus *Mueller, 1777. D. (C.) elongatus is also referred in Brazil for the first time.*

Key words: nematodes – *Dichelyne (Cucullanellus) elongatus* – *Cucullanus pulcherrimus* – *Dichelyne (C.)* spp. – *Paralonchurus brasiliensis* – marine fish – Brazil

Over three hundred Brazilian helminth samples recovered from fishes during a couple of years and that have been deposited in our collections remain unidentified as yet. This paper deals with the diagnose of some nematodes, included among those samples, occurring in a marine fish host, consisting also in a new contribution to the surveys on the subject that have been reported and was scheduled to add new data to our previous investigations concerning helminth parasites of edible fishes.

MATERIALS AND METHODS

The studied nematodes sample formerly deposited in the Oswaldo Cruz Helminthological Collection (CHIOC) under the number 29.118, was collected in 1963 from a specimen of *Paralonchurus brasiliensis* (Steindachner, 1875) (= *Polyclemus brasiliensis* (Steind.)), common name "Maria-Luiza" captured in Marambaia Island, off the coast of Rio de Janeiro State, Brazil, during a scientific expedition.

The nematodes, preserved as wet material (Railliet & Henry's solution) were dehydrated unstained in ethanol (70° – 100°) cleared in beechwood creosote, kept in balsam as wholemounts and redeposited under new number files designated herein. Cross section of the cephalic region of one of the studied species, was obtained under stereoscopic microscope, in a drop of a 1:1 creosote/balsam mixture and detached with a sharply applied stainless steel razor blade. Figuration was performed with the aid of a tubular drawing tube connected to an Olympus light microscope. Measurements are in millimeters and means, whenever available, in parenthesis.

RESULTS

Cucullanidae Cobbold, 1864

Dichelyne (Cucullanellus) elongatus (Tornquist, 1931)

Petter, 1974

Site: Intestine

Voucher specimens deposited: CHIOC no. 32,700 a-b

The following redescription is based on one male and one female, both mature.

General: Slender nematodes, widest mostly at the middle of esophageal region, tapering toward tail. Oral opening dorsoventral slit surrounded by membranous flange of cuticle which bears numerous fine, rodlike structures.

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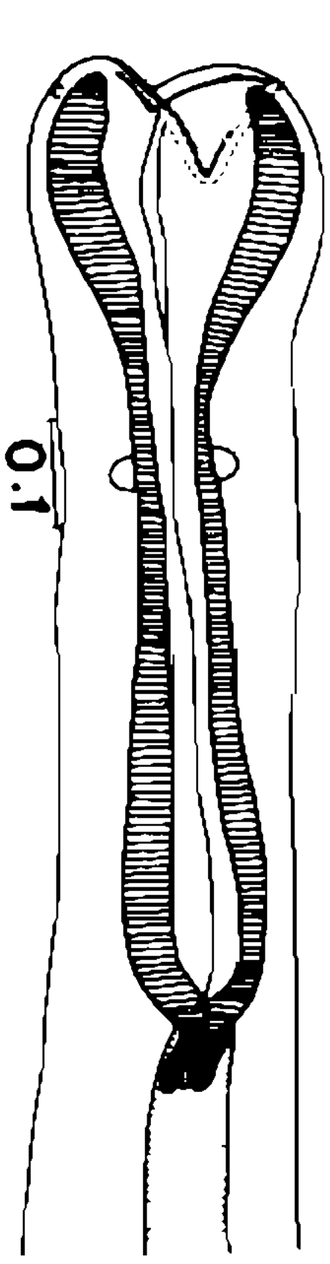

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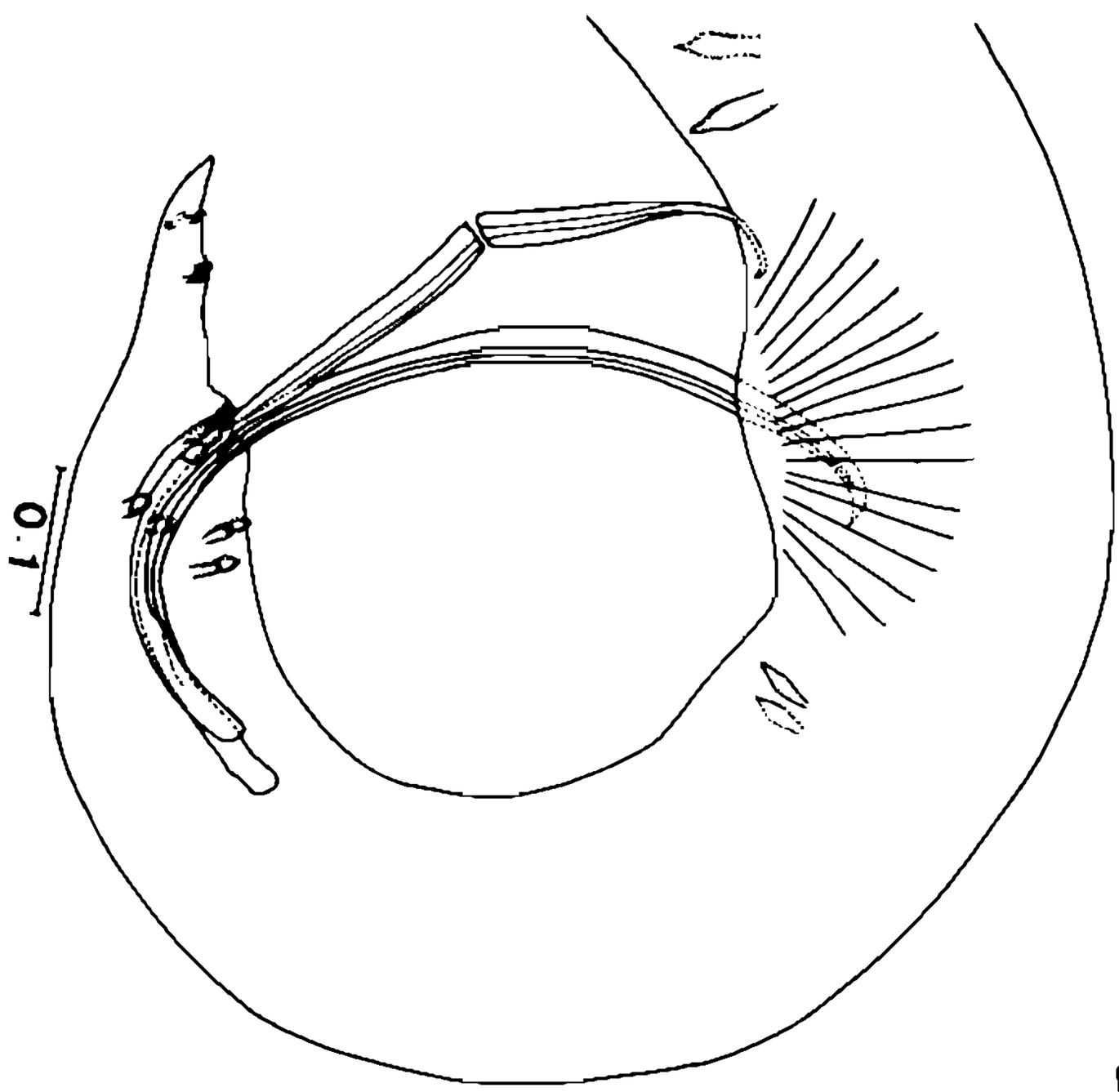

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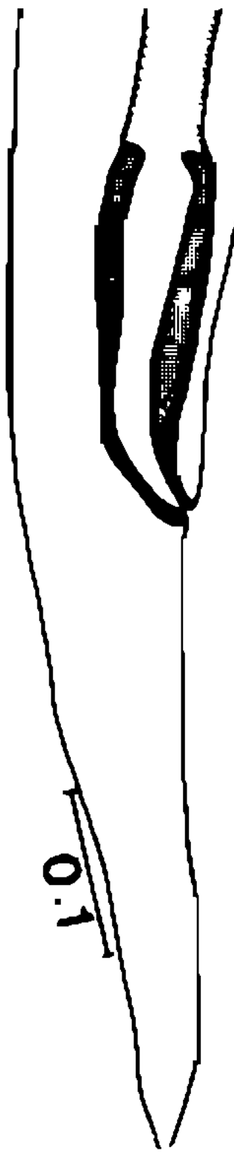

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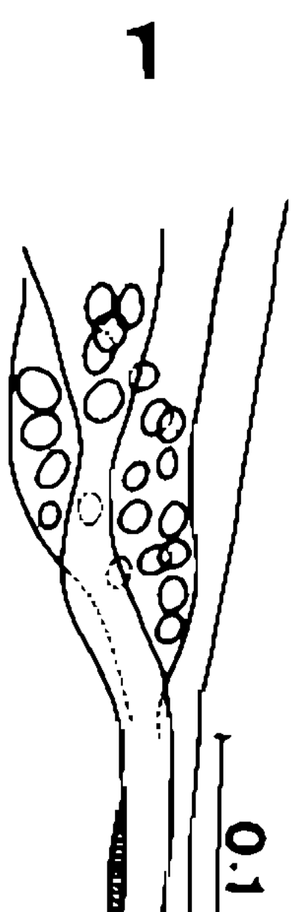

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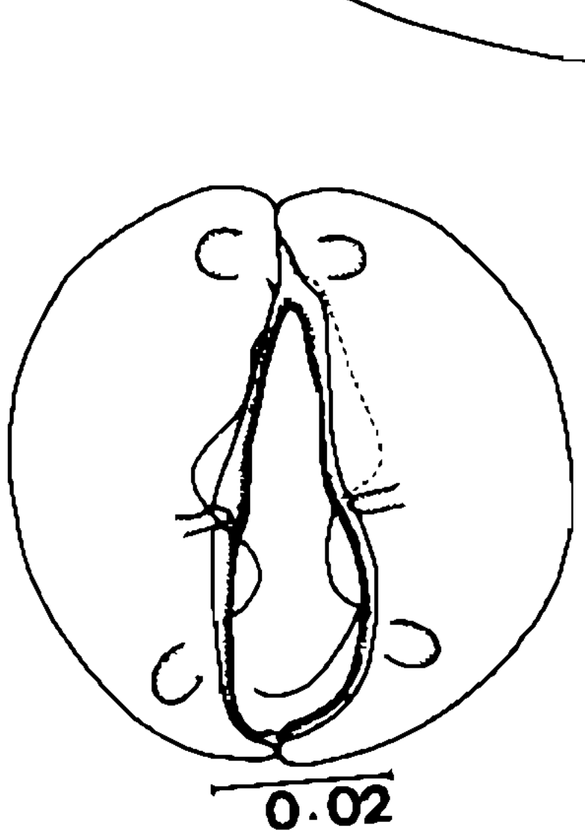

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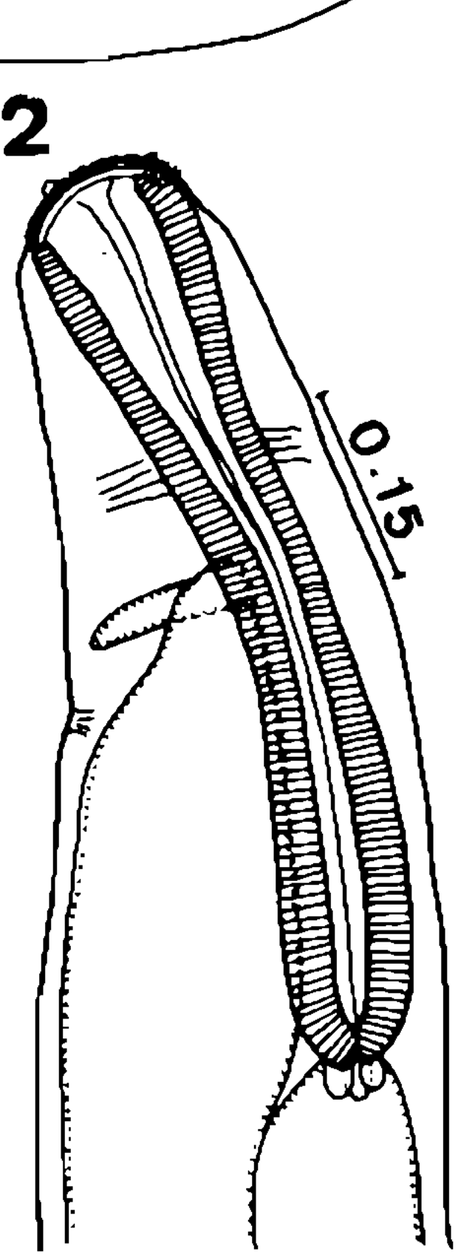

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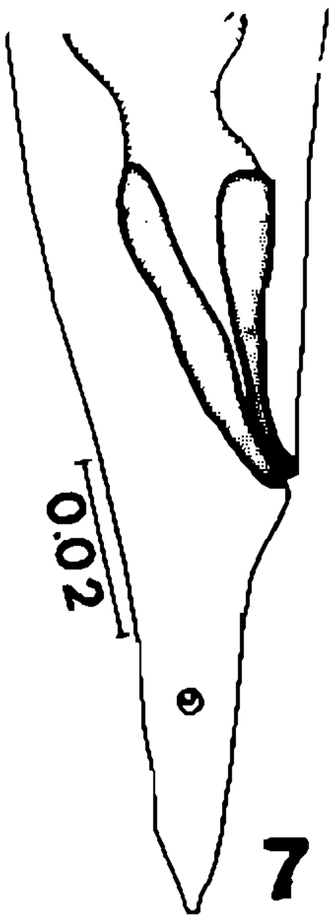

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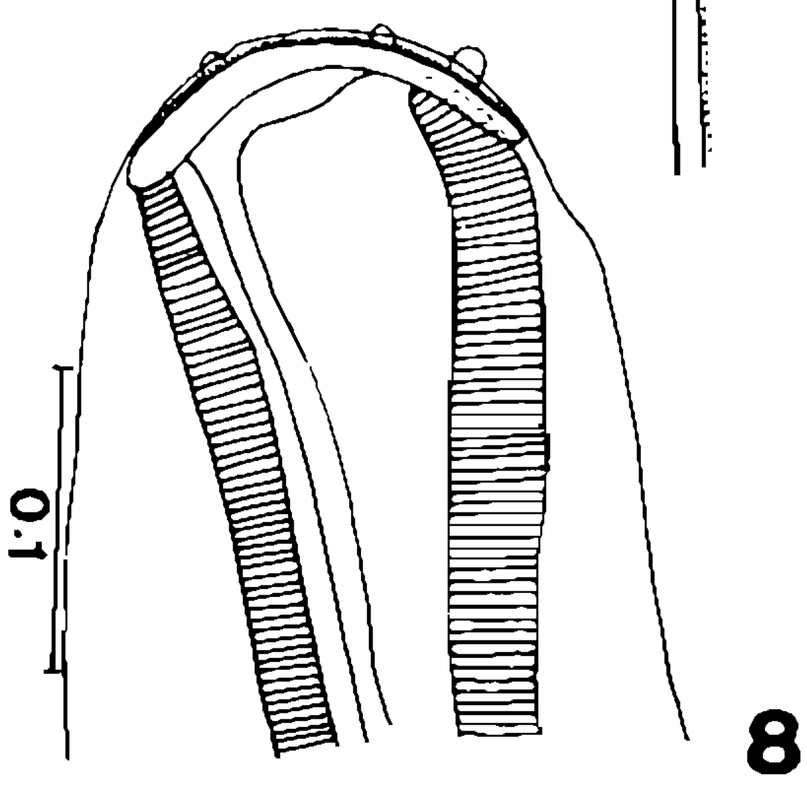

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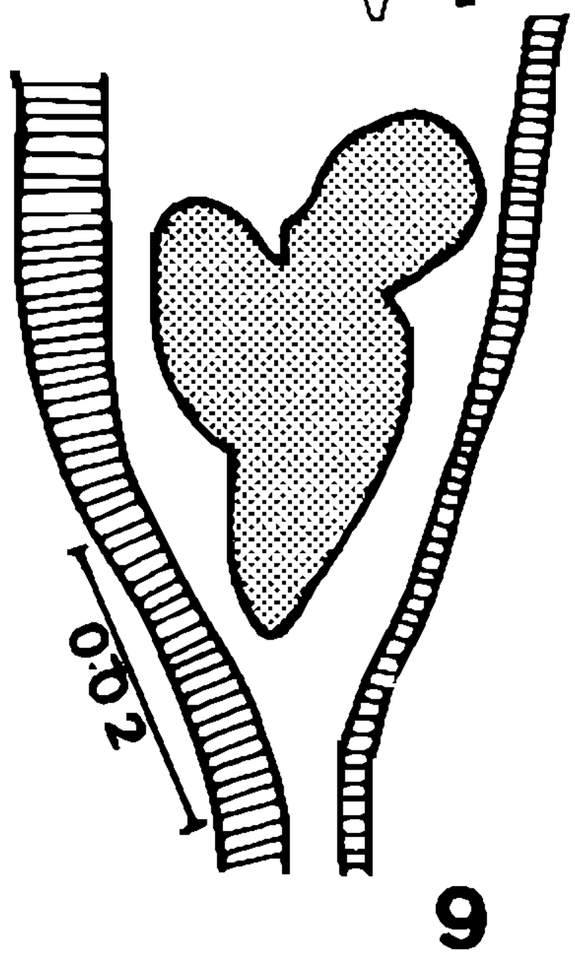

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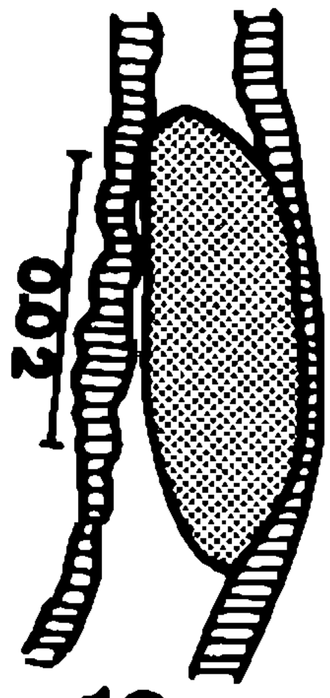
Cucullanus pulcherrimus – Fig. 1: male, anterior portion, lateral view. Fig. 2: male, posterior portion, lateral view. Fig. 3: female, posterior extremity with rectum, lateral view. Fig. 4: ovijector and vulvar aperture, lateral view. Fig. 5: female buccal aperture, "en face" view. *Dichelyne (C.) elongatus* – Fig. 6: male, anterior portion, lateral view. Fig. 7: female, posterior extremity with rectum, lateral view. Fig. 8: male, anterior extremity, lateral view. Fig. 9: female, egg mass in the upper portion of ovijector.



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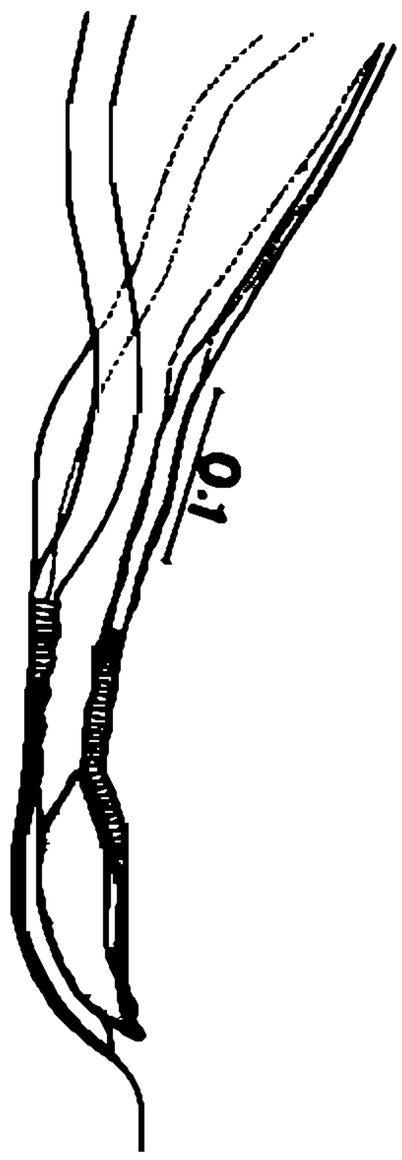

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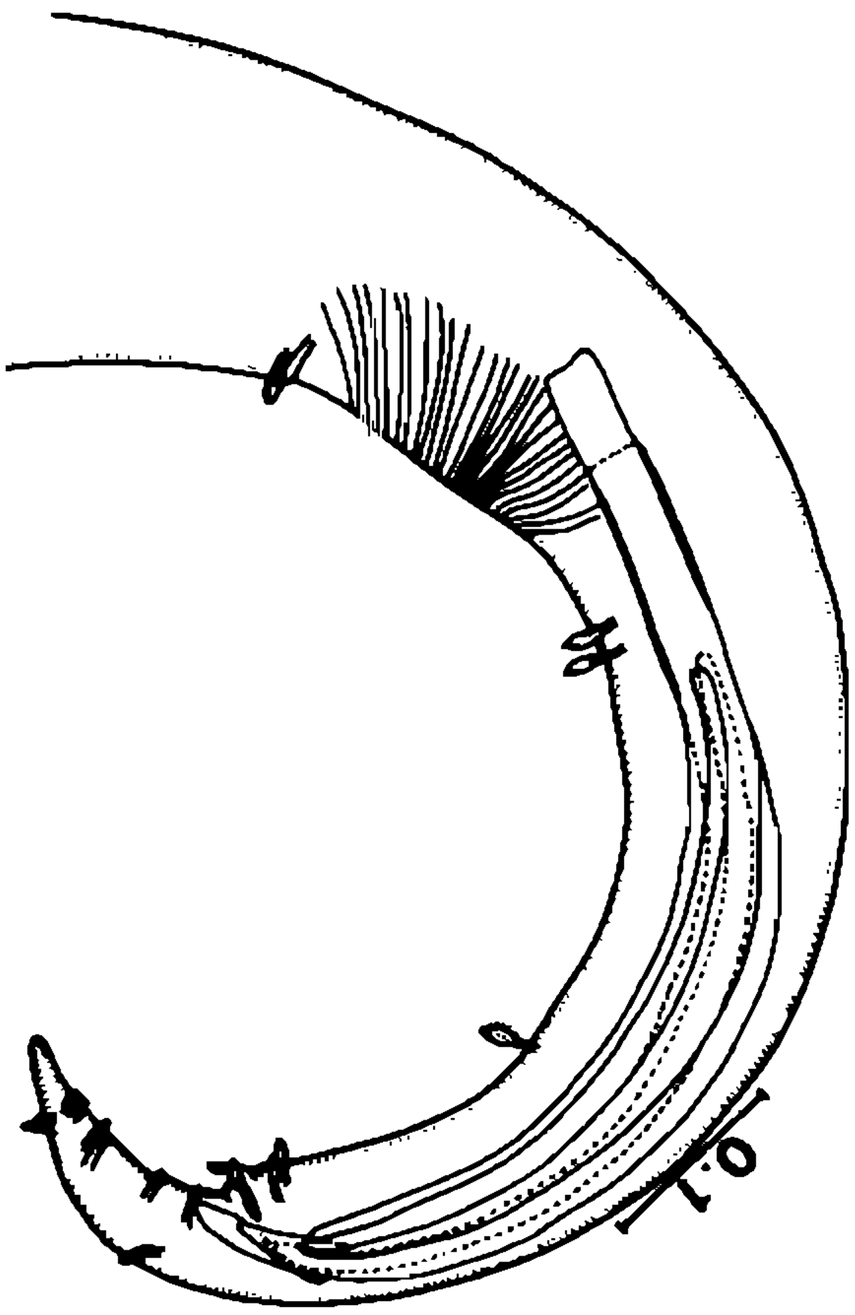

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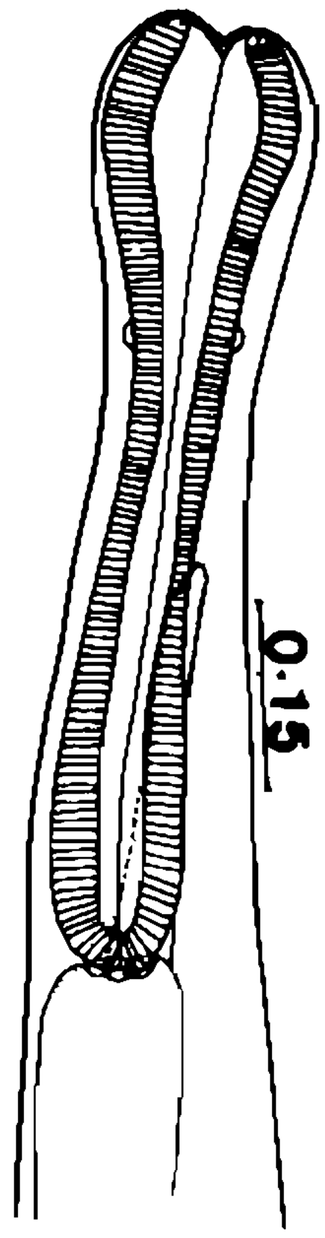

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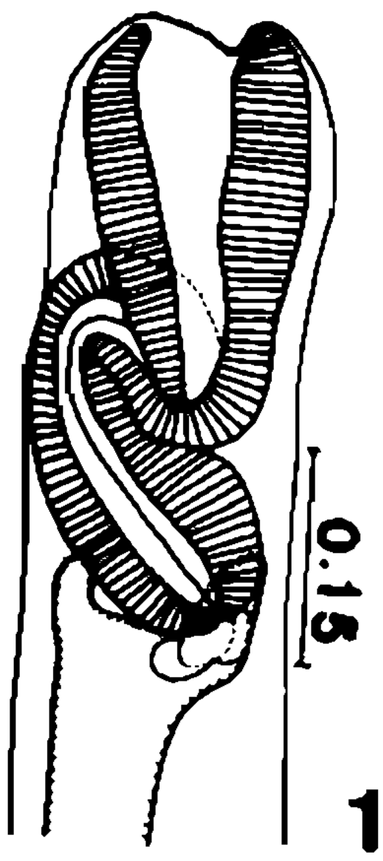

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Dichelyne (C.) elongatus – Fig. 10: female, detached egg in the median portion of evijector. Fig. 11: female, evijector distal end and vulvar aperture, lateral view. Fig. 12: male, posterior portion, lateral view. *Dichelyne (Cucullanellus)* sp. – Fig. 13: female, anterior portion, lateral view. *Dichelyne (Cucullanellus)* sp. – Fig. 14: male, anterior portion, lateral view.

Internally, buccal cavity with heavily sclerotized lining. Two amphids, four simple submedian papillae. Esophagus club-shaped; anterior portion swollen, surrounding buccal cavity; posterior portion very muscular, slightly swollen at posterior end. Esophagus opening into intestine through muscular valvular apparatus. Intestine with dorsal intestinal cecum, directed anteriorly, variable in length and shape.

Male: (Figs 6, 8, 12) length 4.90, maximum width 0.35. Esophagus 0.70 long. Nerve ring 0.25 and excretory pore 0.43 from anterior end, respectively. Preanal sucker 0.14 long. Intestinal cecum 0.50 long. Gubernaculum 0.07 long. Spicules equal, similar, 0.63 long. Eleven pairs of caudal papillae, three precloacal, three surrounding the cloacal aperture and five postcloacal. Cloaca 0.12 from posterior end.

Female: (Figs 7, 9, 11) length 8.2, maximum width 0.42. Esophagus 0.83 long. Nerve ring 0.28 and excretory pore 0.64 from anterior end, respectively. Intestinal cecum 0.50 long. Vulva 4.8 from anterior extremity. Two ovaries, amphidelfic. Ovijector 0.28 long directed forward. The few thin shelled eggs "in utero" form, at first, a compact and indistinct mass. (Fig. 9). The eggs, longer than wide, are large, 0.10 x 0.03 and as they individually detach, making their way to the vulva, occupy totally the lumen of the strongly muscular evijector or vagina, acquiring peculiar shapes in order to pass through the narrow vulvar aperture. (Fig. 11). Tail with two lateral papillae (phasmids). Rectum 0.12 long. Anus 0.18 from posterior end.

Dichelyne (Cucullanellus) sp.

Site: Intestine

Voucher specimen deposited: CHIOC no. 32,702

The following data are based on one mature female specimen (Fig. 13).

Length: 13.7, maximum width 0.38. Esophagus 1.06 long. Nerve ring 0.43 from anterior extremity. Intestinal cecum 0.32 long. Vulva 7.7 from anterior extremity. Eggs 0.07 long by 0.04 wide. Rectum 0.19 long. Anus 0.33 from posterior extremity.

Dichelyne (Cucullanellus) sp.

Site: Intestine

Voucher specimen deposited: CHIOC no. 32,703

The following data are based on one mature male specimen (Fig. 14).

Length: 13.2, maximum width 0.33. Esophagus 0.90 long. Preanal sucker 0.56 long. Intestinal cecum U or cup-shaped, with branches 0.12 and 0.16 long, respectively. Gubernaculum 0.05 long. Right spicule 0.73 and left 0.60 long respectively. Anus 0.16 from posterior extremity.

Cucullanus pulcherrimus Barreto, 1918

Site: Intestine

Voucher specimens deposited: CHIOC no. 32,701 a-f

The following redescription is based on two and three mature males and females, respectively.

General: Slender to more or less stout nematodes. Oral opening dorsoventral slit surrounded by membranous flange of cuticule which bears numerous rodlike structures; buccal capsule (pseudocapsule) formed by dilatation of anterior end of esophagus which is also enlarged posteriorly and club-shaped. Intestine simple.

Male: (Figs 1, 2) length 10.3 – 12.2 (11.2), maximum width 0.24 – 0.27 (0.25). Esophagus 0.90 – 1.00 (0.95) long. Nerve ring 0.37 – 0.40 (0.38) and excretory pore 0.9 – 1.1 (1.0) from anterior end, respectively. Preanal sucker 0.18 long. Gubernaculum 0.10 – 0.13 (0.11) long. Spicules subequal. Right spicule 0.75 and left 0.68 long. Ten pairs of caudal papillae, three precloacal, four surrounging the cloacal aperture and three postcloacal. Cloaca 0.15 – 0.18 (0.16) from posterior end.

Female: (figs 3, 5) length 12.3 – 14.2 (13.2), maximum width 0.30 – 0.33 (0.31). Esophagus 0.95 – 0.99 (0.97) long. Nerve ring 0.36 – 0.40 (0.38) and excretory pore 1.0 from anterior end, respectively. Vulva 8.08 – 8.50 (8.29) from anterior extremity. Two ovaries, amphidelphic Ovijector 0.47 – 0.57 (0.52) long. Eggs 0.057 – 0.075 (0.066) x 0.043 – 0.046 (0.044). Rectum 0.19 – 0.20 (0.19) long. Anus 0.33 – 0.36 (0.34) from posterior end.

REMARKS

In a previous paper (Vicente et al., 1989) correlating the South American species under *Dichelyne (Cucullanellus),* several parameters were evaluated and among them, the host/parasite specificity was strongly emphasized. Nevertheless, the present observations do not sustain the prior hypothesis, for when considering the single host species and its helminth fauna, this assumption seems to be controversial. In fact, in the present study, some parasites of a same group, were found to be fully adapted to their host and this relationship suggests that this nonspecific physiological host/parasite interaction, may be due to as yet unidentified mechanisms operating in the several and different ecosystems where the captures were conducted and helminths collected, allowing the parasites to develop completely, reaching maturation and posterior oviposition, as well. In this way, in a single specimen of *Paralonchurus brasiliensis* (Steindachner, 1875) the finding of the four nematode species reported herein, reinforces this lack of specificity regarding the studied parasite group x parasitized host species. *P. brasiliensis* has already been assignaled in Brazil harboring other nematode species, namely *Procamallanus (Spirocamallanus) macaensis* Vicente & Santos, 1972 (Vicente & Santos, 1973) and *P. (S.) pereirai Annereaux,* 1946 (Pinto et al., 1984) and is also a new host record for the two presently reported genera, i.e., *Dichelyne* Jägerskiold, 1902 and *Cucullanus* Mueller, 1777.

Dichelyne elongatus (Tornquist, 1931) Petter, 1974 – This is the first report of *D. (C.) elongatus* in Brazil. The species was recently reviewed (Vicente et al., 1989) with comments on its actual status. The male herein studied presents a caudal papillar structure delicate, elongated, sharply projected from the body (Fig. 12), while in specimens of *D. (C.) elongatus* previously described, the papillae are stout, shorter and different in shape, some of them with a conical aspect, instead of club-shaped as actually observed, as well as, re-

TABLE I

Comparative data on *Dichelyne (Cucullanellus) elongatus* (Tornquist, 1931) Petter, 1974

Parameter Character	Tornquist (1931)		Campana-Rouget (1957)		Freitas et al. (1969)		Vicente et al. (1989)		Present Paper	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Length of body	4.39-5.89	4.32-6.19	3.75-4.47	6.77	6.41-7.74	7.38-8.26	2.52-4.32	3.85-4.86	4.90	8.20
Spicules	0.65	–	0.60-0.80	–	0.67-0.69	–	0.32-0.50	–	0.63	–
Gubernaculum	0.05	–	0.07	–	0.08	–	0.07	–	0.07	–
Relation body spicules size	1:0.12	–	1:0.16-17	–	1:0.10	–	1:0.11	–	1:0.12	–
Caudal papillae (pairs)	11	–	11	–	11[a]	–	11	–	11	–
Vulva to anterior extremity	–	2.49-4.30	–	3.7	–	3.17-3.33	–	2.20-2.59	–	4.8
Eggs		0.07-0.09 x 0.055	–	0.05-0.06 x 0.03-0.04	–	0.08-0.09 x 0.05	–	0.06 x 0.05	–	0.10 x 0.03
Host	Scianidae fishes		*Umbrina canariensis*		*Paralonchurus peruanus*		*Micropogonias furnieri*		*Paralonchurus brasiliensis*	
Geographical distribution	Iceland		Africa		Peru		Venezuela		Brazil	

a · reviewed herein.

TABLE II

Comparative data on *Cucullanus pulcherrimus* Barreto, 1918

Parameter/Character	Barreto (1918, 1922)		Campana Rouget (1957)		Present paper	
	Male	Female	Male	Female	Male	Female
Length of body	13.3	15.9	13.3	15.9-18.0	10.3-12.2	12.3-14.2
Width	0.44	0.47	0.44	0.45-0.47	0.24-0.27	0.30-0.33
Esophagus	1.59	1.59	1.5	1.6	0.90-1.0	0.95-0.99
Nerve ring from anterior extremity	0.65	0.65	0.65	0.60	0.37-0.4	0.36-0.40
Right spicule	0.62	–	0.62	–	0.75	–
Left spicule	0.62	–	0.62	–	0.68	–
Gubernaculum	0.13	–	0.13	–	0.10-0.13	–
Anus from posterior end	0.37	–	–	–	0.15-0.18	0.33-0.36
Sucker (length)	0.27	–	–	–	0.18	–
Rectum	–	–	–	–	–	0.19-0.20
Caudal papillae (pairs)	10	–	11	–	10	–
Vulva to anterior extremity	–	–	–	11.7	–	8.08-8.50
Eggs	–	0.083 x 0.053	–	0.08 x 0.04-0.053	–	0.057-0.075 x 0.043-0.046
Host	*Caranx lugubris*		*Trachinotus maxillosus*		*Paralonchurus brasiliensis*	
Geographical distribution	Brazil		Africa		Brazil	

garding the female, the eggs are somewhat longer and narrower, although within acceptable variation ranges. In the opportunity, an element of the figuration of *D. (C.) elongatus* is rectified, since the ovijector is directed forward and not backward as shown in the upside down Fig. 7 of Vicente et al., (1989) due to a misprint.

In this group the relation between length of body/length of spicules is a specific parameter, among others, to be considered as a reliable one, since it seems to maintain quite defined in the different samples of a same species. Data on *D. (C.) elongatus* after Campana-Rouget (1957) were overlooked by Vicente et al. (1989) and are now included (Table I).

Cucullanus pulcherrimus Barreto, 1918 – Proposed by Barreto (1918) parasitizing *Caranx lugubris* Poey, from Trindade Island, Brazil, illustrated by Barreto (1922) with the same descriptive version of the former text, *C. pul-*

cherrimus was briefly rewiewed by Campana-Rouget in 1957 from *Trachinotus maxillosus* Cuv. & Val., captured in West Africa. This species was only listed previously by Törnquist (1931) and more recently by Petter (1974) and Vicente et al. (1985). Considering that no remarkable differences were evinced during comparative morphometric analyzed data between the actually studied samples and those originally diagnosed, it seems more reasonable, for the moment to consider some of the detected variations, to be ruled by a natural adaptation of the parasite to the host species and/or due to metabolic factors, suggesting, at the most, reconsiderations related to the original proposition of *C. pulcherrimus*. This is the first finding of the species in Brazil, after its diagnosis in 1918 and in a new host, as well (Table II).

Note: Type specimens of *C. pulcherrimus* studied by Barreto (1918) also deposited in the CHIOC, are under the number 1591, instead of 1491 as originally stated.

Dichelyne (Cucullanellus) spp. – The specific diagnoses of two distinct samples under the group (Figs 13, 14) were not achieved, due to the few and inconclusive data obtained after their morphometric analysis. The proper identification deserves, however, further studies to be based on a larger number of samples, whenever available.

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