

HELMINTH PARASITES OF FISHES FROM THE HYDROELECTRIC POWER STATION OF ELETROSUL (BRAZIL). I – *PROCAMALLANUS PETTERAE* N. SP. AND *SPIROCAMALLANUS PINTOI* N. SP. (NEMATODA, CAMALLANIDAE) FROM THE RESERVOIR OF "SALTO OSÓRIO"

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Procamallanus petterae n. sp. from *Plecostomus albopunctatus* and *Spirocamallanus pintoii* n. sp. from *Corydoras paleatus* are described.

Procamallanus petterae n. sp. differs from all other species of the genus by having a buccal capsule without spiral bands, with five teeth-like structures on its base and four plate-like structures near the anterior margin; length ratio of oesophagus muscular/glandular 1:1.4; spicules short, 21 μ m and 16 μ m long and tails ending abruptly in a sharp point, in both sexes.

Spirocamallanus pintoii n. sp. is characterized by having 6 to 8 spiral thickenings in the buccal capsule of male and 9 to 10 in female, occupying 2/3 of the length of the capsule; length of glandular oesophagus more than twice the muscular; spicules short, the right 94 μ m and the left 82 μ m long.

Key words: *Procamallanus petterae* n. sp. – *Spirocamallanus pintoii* n. sp. – nematodes – freshwater fishes – Brazil

A survey of the helminth parasites of fishes from the Hydroelectric Power Station of "Centrais Elétricas do Sul do Brasil SA – ELETROSUL" was conducted during May, 1985. We present herein the first results, with the description of two new species of nematodes parasites of fishes from the reservoir of "Salto Osório", located at Iguaçu River, Paraná State.

MATERIAL AND METHODS

One male and one female of *Procamallanus petterae* n. sp. were collected from the only specimen of *Plecostomus albopunctatus* examined, and one male and two females and one immature male and one female of *Spirocamallanus pintoii* n. sp. were recovered respectively from the two specimens of *Corydoras paleatus* examined.

Parasites recovered were fixed, preserved and stained using routine parasitological procedures and deposited in the Helminthological Collec-

tion of the "Instituto Oswaldo Cruz". The illustrations were made with the aid of a Leitz drawing tube. Measurements are in micrometres unless otherwise specified.

RESULTS

Procamallanus petterae n. sp. (Figs. 1-5)

Host – *Plecostomus albopunctatus* Regan, 1908, common name "cascudo-ferro", Loricariidae, Pisces.

Site – Intestine.

Specimens deposited – Helm. Coll. of the "Instituto Oswaldo Cruz". Holotype male no. 32.430-a, holotype female no. 32.430-b.

Locality – Hydroelectric power station "Salto Osório", Iguaçu River, Paraná State, Brazil.

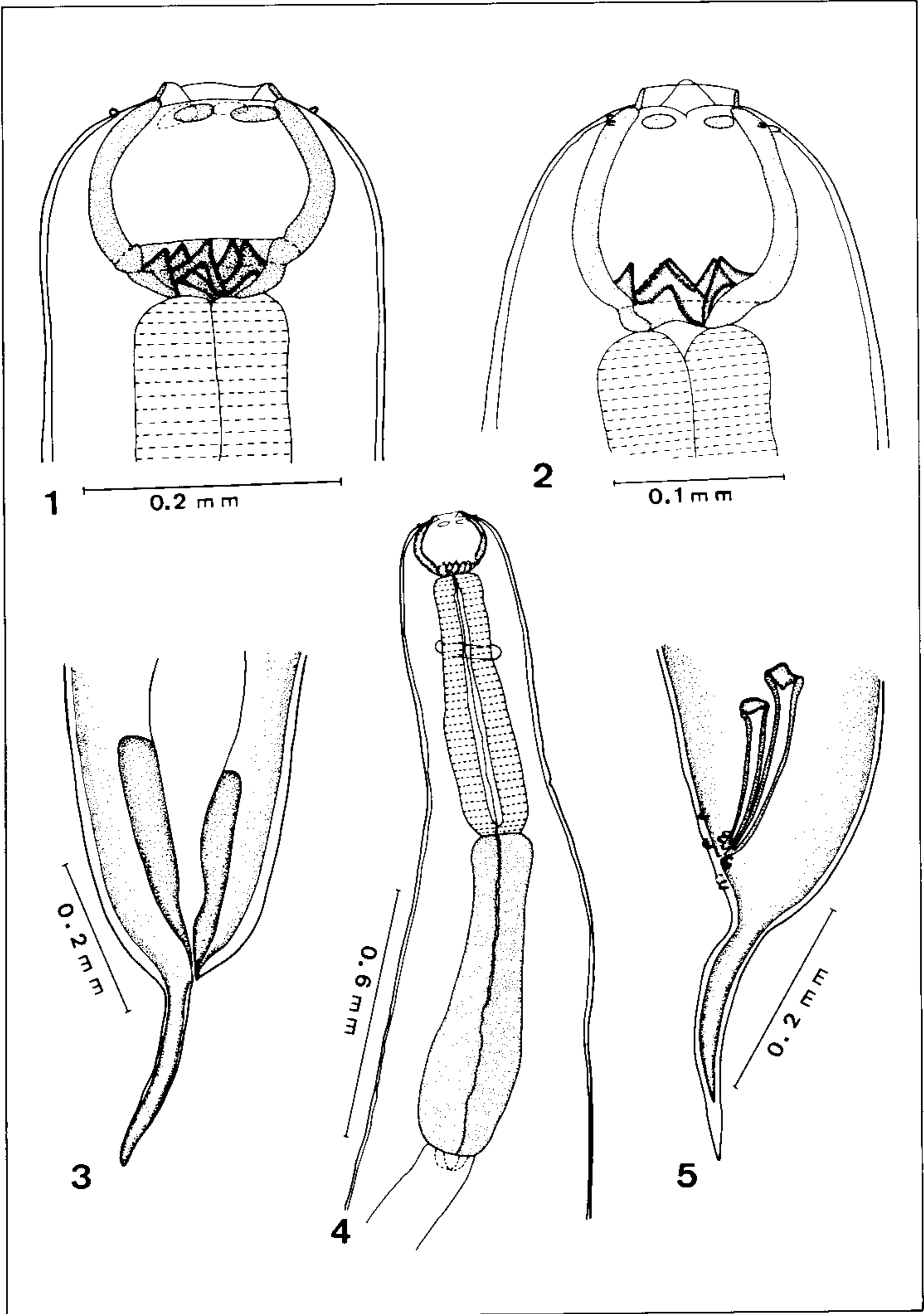
Male holotype – Nematode red when alive, smaller than female. Body 9.69 mm long by 0.50 mm wide. Cuticle smooth. Buccal capsule sclerotized, 131 long by 123 wide, without spiral bands, presents five chitinous teeth-like structures on its base, a ring-like thickening at

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Procammallanus petterae n. sp. Fig. 1: buccal capsule of female, ventral view. Fig. 2: buccal capsule of male, latero-ventral view. Fig. 3: posterior end of female, ventral view. Fig. 4: anterior region of female. Fig. 5: posterior end of male, lateral view.

the level of the teeth and four plate-like structures near anterior margin. Mouth surrounded by thin, translucent membrane, with two lips. Two pairs of cephalic papillae are present. Oesophagus divided in two club-shaped portions, an anterior muscular 625 long, 139 wide and a posterior glandular 868 long, 166 wide. Nerve ring 298 from anterior end. Excretory pore not observed. Spicules short, similar, unequal, right spicule 21 long and left spicule 16 long. Gubernaculum and caudal alae lacking. Five pairs of caudal papillae: two pre-cloacal two ad-cloacal and one post-cloacal. Cloaca at 336 from posterior extremity. Tail ending abruptly in a sharp point 260 long.

Female holotype — Body red when alive, 21.8 mm long by 0.72 mm wide. Buccal capsule 180 long by 187 wide, similar to male. Muscular anterior oesophagus 644 long, 177 wide; glandular posterior portion 887 long, 233 wide. Nerve ring 326 from anterior end. Excretory pore not observed. Vulva not visualized because of the great amount of larvae filling the body. Rectum 373 long and anus at 281 from posterior extremity. Tail ending abruptly in a sharp point 270 long.

REMARKS

P. petterae n. sp. differs from all other species of the genus by having buccal capsule smooth, without spiral bands, with five teeth-like structures on its base and four plate-like structures near anterior margin.

In possessing cephalic plate-like structures, *P. petterae* n. sp. resembles *P. intermedia* Siddiqi & Khattak, 1984, but differs in having teeth-like structures in the base of the buccal capsule instead of a finger-like projection.

Procamallanus peraccuratus Pinto et al., 1976, the other Brazilian species of the genus, has a smooth buccal capsule without ornamentations.

This species is named after Dr Annie J. Petter from "Muséum National d'Histoire Naturelle (Paris)", by her contribution to the knowledge of Camallanidae.

Spirocamallanus pinto n. sp.
(Figs. 6-12)

Host — *Corydoras paleatus* (Jenyns, 1842), common name "cascudinho", Callichthyidae, Pisces.

Site — Intestine.

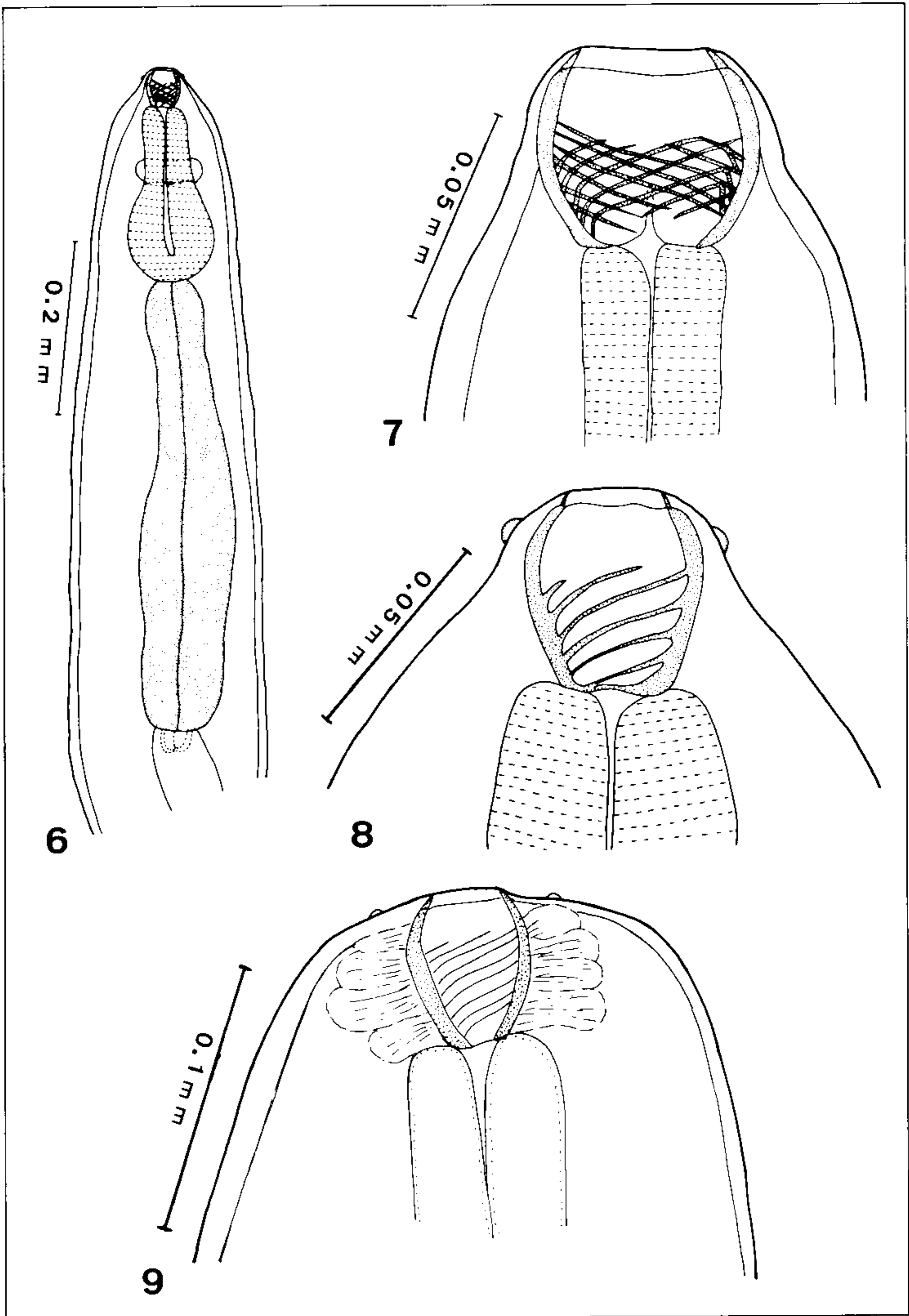
Specimens deposited — Helm. Coll. of the "Instituto Oswaldo Cruz". Holotype male no. 32.432-a, holotype female no. 32.431-a and paratypes nos. 32.431-b and 32.432-b-c.

Locality — Hydroelectric power station "Salto Osório", Iguaçu River, Paraná State, Brazil.

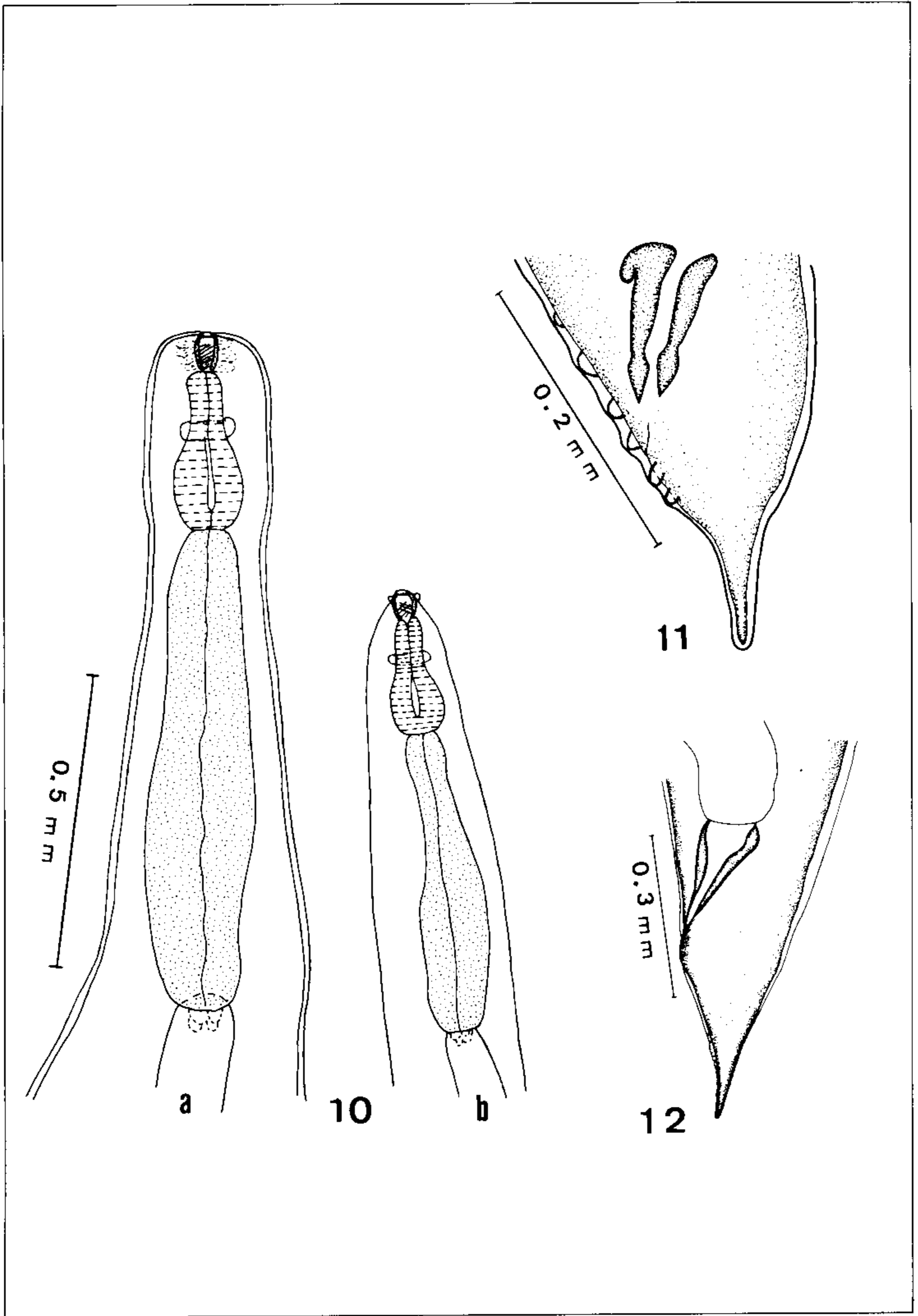
Male holotype — Body 4.67 mm long by 0.25 mm wide. Cuticle with fine transverse striations. Buccal capsule continuous, 54 long by 45 wide, with 6 spiral thickenings occupying only 2/3 of the capsule, the anterior two incomplete. Two pairs of cephalic papillae, one on each lateral side of head. Lips absent. Oesophagus divided in two club-shaped portions, an anterior muscular 228 long, 108 wide and a posterior glandular 587 long, 121 wide. Nerve ring 112 from anterior end. Excretory pore 156 from anterior extremity. Spicules short, similar, subequal, with arrow-like tips, right spicule 94 and left 82 long. Gubernaculum absent. Caudal alae lacking. Six pairs of caudal papillae, of which four pairs are pre-cloacal and two pairs post-cloacal. Tail conical. Cloaca 120 from posterior extremity.

One immature male 2.16 mm long by 0.15 mm wide, has a buccal capsule 52 long by 56 wide, with 8 spiral bands (Fig. 8).

Female (n = 3) — Much larger than male, body 21.8 – 26 mm long by 0.95 – 1.16 mm maximum width. Cuticle with fine transverse striations. Buccal capsule continuous, 60 – 71 long by 49 – 56 wide, with 9 – 10 internal spiral bands, from which the two most anterior are incomplete. Structures possibly of glandular nature, surround the buccal capsule. Two pairs of cephalic papillae present. Anterior muscular section of oesophagus 266 – 296 long by 111 – 135 wide; glandular oesophagus about 3 times longer than muscular, 862 – 1045 long by 223 – 229 wide. Nerve ring 120 – 158 from anterior end. Excretory pore about 300 from anterior extremity. Vulva slightly posterior to middle of body, 7.9 mm from posterior end, in one specimen. Anus 223 – 392 from posterior end. Rectum 279 long. Tail conical.



Spirocamallanus pintoï n. sp. Fig. 6: anterior region of male, lateral view. Fig. 7: buccal capsule of male, ventral view. Fig. 8: buccal capsule of immature male, lateral view. Fig. 9: buccal capsule of female, lateral view.



Spirocamallanus pintoï n. sp. Fig. 10-a: anterior region of female. Fig. 10-b: anterior region of male. Fig. 11: posterior end of male, lateral view. Fig. 12: posterior end of female, lateral view.

REMARKS

Spirocamallanus pintoi n. sp. belongs to the group of species that, after Petter (1979), have caudal alae absent or very narrow, with sessile or slightly pedunculated papillae, equal or subequal spicules smaller than $130\mu\text{m}$, and length of glandular oesophagus more than twice the muscular. From the species of this group, *S. pintoi* n. sp. closely resembles *S. hilarii* (Vaz & Pereira, 1934) and *S. incarocai* (Freitas & Ibanez, 1970), but differs mainly in the smaller number of spiral bands in the buccal capsule. *S. cearensis* (Pereira, Dias & Azevedo, 1936), the other Brazilian species of this group, is considered a synonym of *S. hilarii* (Kloss, 1966). From the other species with equal or subequal spicules *S. pintoi* n. sp. differs in the ratio muscular/glandular oesophagus.

The species is named after Dr Roberto Magalhães Pinto from "Instituto Oswaldo Cruz (Rio de Janeiro)", for his contribution to the study of the Brazilian nematodes.

RESUMO

Helmintos parasitos de peixes das Usinas Hidrelétricas da ELETROSUL (Brasil). I — *Procamallanus petterae* n. sp. e *Spirocamallanus pintoi* n. sp. (Nematoda, Camallanidae) do reservatório de Salto Osório — São descritos *Procamallanus petterae* n. sp. parasito de *Plecostomus albopunctatus* e *Spirocamallanus pintoi* n. sp. de *Corydoras paleatus*. *P. petterae* diferencia-se das demais espécies do gênero por apresentar cápsula bucal sem estrias, com cinco estruturas em forma de dentes na base e quatro estruturas em forma de placas próximo da margem anterior; relação do comprimento do esôfago muscular/glandular 1:1,4; espículos curtos com 21 e $16\mu\text{m}$ de comprimento respectivamente e terminação caudal afilando-se abruptamente e terminando em ponta, em ambos os sexos. *S. pintoi* n. sp. caracteriza-se por possuir cápsula bucal com 6 a 8 espirais no macho e 9 a 10 na fêmea, ocupando somente 2/3 do com-

primento da cápsula; comprimento do esôfago glandular mais de duas vezes o muscular e espículos curtos, direito medindo $94\mu\text{m}$ e esquerdo $82\mu\text{m}$ de comprimento. *S. pintoi* n. sp. é mais próxima de *S. hilarii* (Vaz & Pereira, 1934) e de *S. incarocai* (Freitas & Ibanez, 1970), das quais se diferencia principalmente pelo menor número de espirais na cápsula bucal.

Palavras-chave: *Procamallanus petterae* n. sp. — *Spirocamallanus pintoi* n. sp. — nematóides — peixes de água doce — Brasil

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REFERENCES

- FREITAS, J. F. T. & IBANEZ, N. H., 1970. Fauna helmintológica del Perú — nuevo nematodo Camallanideo parasito de pez. *Archos. Peru. Patol. Clín.*, 24: 205-210.
- PEREIRA, C.; DIAS, M. & AZEVEDO, P., 1936. Biologia do nematóide *Procamallanus cearensis* n. sp. *Arq. Inst. Biol. São Paulo*, 7: 209-226.
- PETTER, A. J., 1979. Essai de classification de la sous-famille des Procamallaninae (Nematoda, Camallanidae). *Bull. Mus. natn. Hist. Nat.*, Paris, 4^e sér., 1 sec. A: 219-239.
- PINTO, R. M.; FÁBIO, S. P.; NORONHA, D. & ROLAS, F. J. T., 1976. Novas considerações morfológicas e sistemáticas sobre os *Procamallanus* brasileiros (Nematoda, Camallanoidea). *Mem. Inst. Oswaldo Cruz*, 74: 77-84.
- SIDDIQI, M. N. & KHATTAK, A. R., 1984. Three new species of nematodes from fishes of N. W. F. P. (Pakistan). *Pakistan Vet. J.*, 4: 7-11.
- VAZ, Z. & PEREIRA, C., 1934. Contribuição ao conhecimento dos nematóides de peixes fluviais do Brasil. *Arq. Inst. Biol.*, São Paulo, 5: 87-103.