

A NEW SPECIES OF *PARACAPILLARIA* (NEMATODA: CAPILLARIIDAE) PARASITIZING THE BRAZILIAN SANDPERCH, *PINGUIPES BRASILIANUS* (PISCES: PINGUIPEDIDAE), FROM ARGENTINA

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ABSTRACT: A new species, *Paracapillaria argentinensis* n. sp., is described from the pinguipedid fish *Pinguipes brasilianus* Cuvier, 1829 from waters off Mar del Plata, Argentina (38°08'S, 57°32'W) (prevalence 22.2%; mean intensity \pm SD, 4.42 \pm 5.19). The new species is assigned to the subgenus *Paracapillaria* Moravec, 1987. Of the 10 species so far known in the subgenus, the new species more closely resembles *P. (P.) plectroplites*, from which it is distinguished by having a spicule with an expanded anterior end and a slender medial section. A similar spicular morphology is observed in *P. (P.) epinepheli*; however, it shows shorter spicules and a highly reduced caudal bursa. This is the first record of *Paracapillaria* in the southwestern Atlantic Ocean.

Paracapillaria Mendonça, 1963 includes 22 species of nematodes parasitic on fishes, amphibians, reptiles, birds, and mammals. This genus, at present, includes 10 species parasitizing fishes, all of them belonging to the subgenus *Paracapillaria* Mendonça, 1963 (Moravec, 2001).

During a parasitological survey carried out on samples of *Pinguipes brasilianus* Cuvier, 1829, landed by fishermen at Mar del Plata Port, Argentina, parasitic nematodes referable to a new species of *Paracapillaria* (*Paracapillaria*) were found in the stomach of fishes; these parasites are herein described, and a first record of the genus is reported for the southwestern Atlantic Ocean.

MATERIALS AND METHODS

In total, 54 specimens of *P. brasilianus* caught by commercial trawlers at the Mar del Plata port (38°08'S, 57°32'W), during October 2006, were examined for nematodes immediately after capture. Fish were dissected, and the stomachs were removed and examined under a stereoscopic microscope. In total, 53 capillariid nematodes were collected and fixed in 4% formaldehyde, preserved in 70% alcohol, cleared in glycerin-water for several hours, and then studied and measured by light microscopy. Drawings were made using a drawing tube. All measurements are given in micrometers, unless otherwise indicated. Prevalence and mean intensity were calculated according Bush et al. (1997). The studied material was deposited in the Helminthological Collection of the Museo de La Plata (CHMLP), La Plata, Argentina.

DESCRIPTION

Paracapillaria (Paracapillaria) argentinensis n. sp. (Figs. 1–9)

General: Small-sized nematodes, males smaller than females. Cephalic end narrow and rounded. Cephalic papillae indistinct. Cuticle smooth. Two lateral bacillary bands extending along whole body. Nerve ring in first third of muscular esophagus. Muscular esophagus–stichosome junction oblique. Stichosome a single row of 30–36 stichocytes bearing a medium-sized, irregular, central nucleus. Anterior part of stichosome long, light in color, stichocytes alternating with short, darker stichocytes; posterior part of stichosome formed by uniformly larger stichocytes, each subdivided in approximately 6–7 annuli. Two large glandular cells at esophagus–intestinal junction.

Male (means followed by range in parentheses): Body 4.1 (3.4–4.8) mm long and 40.9 (36.0–45.0) maximum wide. Bacillary bands 16.3 (12.0–20.0) wide at middle region of body. Nerve ring situated at 80.3 (60.0–92.5) from apex. Muscular esophagus 228.1 (212.5–257.50) long; stichosome 2.0 (1.7–2.2) mm long, composed of 30–36 stichocytes;

entire oesophagus 2.2 (1.9–2.5) long, representing 54.1 (47.1–63.6)% of body length. Testis present from level of esophagus–intestinal junction to 658.7 (512.5–937.5) from caudal end. Seminal vesicle not differentiated from vas deferens and testis, ejaculatory duct saclike, 277.8 (212.5–340.0) long. Intestine joining cloaca immediately posterior to ejaculatory duct. Cloaca 457.0 (387.5–502.5) long, representing 11.2 (1.0–13.8)% of body length, anterior cloaca 91.1 (67.5–112.5) long, posterior cloaca 370.0 (320.0–390.0) long. Spicule smooth, well sclerotized, with expanded anterior end, posterior end rounded, and slight constriction at mid-length, 298.7 (250.0–370.0) long, representing 7.3 (6.0–9.5)% of body length, 6.9 (5.0–8.0) wide at proximal end, 4.7 (3.8–5.0) wide at mid-length and 7.0 (5.0–7.5) wide near tip, in lateral view. Spicular canal, short almost absent. Spicular sheath smooth (maximum length when evaginate, observed in 1 specimen) 340.0 long. Caudal end rounded, bearing a cuticular membranous bursa. Bursa supported by 2 lateral rays, each bearing large papilla at base. Rays not reaching posterior border of bursa.

Female (means followed by range in parentheses): Body 6.6 (5.6–76.2) long and 63.5 (57.5–70.0) maximum wide. Bacillary bands 26.8 (22.5–32.5) wide at level of vulva. Nerve ring situated at 80.0 (75.0–87.5) from apex. Muscular esophagus 238.5 (180.0–300.0) long; stichosome 2.5 (1.9–3.1) mm long, composed of 30–36 stichocytes; entire esophagus 2.7 (2.1–3.4) long, representing 41.7 (28.2–45.7)% of body length. Vulva with no elevated lips, situated at 25.3 (5.00–47.50) from esophagus end, vagina directed posteriorly from vulva, 130.8 (100.0–177.5) long, containing eggs arranged in 1 row. Eggs elongate, with slightly protruding polar plugs and uncleaved content, 63.4 (57.5–70.0) long 25.8 (22.5–30.1) wide; polar plugs 5.0–6.50 long, 6.0 wide; egg wall thick; 2 layers observed, an inner hyaline layer and a thicker outer layer with fine longitudinal sculpture; thickness of entire wall 2.0–2.5. Ovary extending to approximately the distal end of intestine, at 65.0 (50.0–85.0) from caudal end. Rectum 77.5 (70.0–87.5) long. Caudal end rounded, anus subterminal. Tail 6.1 (5.0–8.7) long.

Taxonomic summary

Type host: *Pinguipes brasilianus* Cuvier, 1829 (Perciformes: Pinguipedidae).

Site: Stomach.

Type locality: Mar del Plata (Buenos Aires Province, Argentina, 38°08'S, 57°32'W).

Date of collection: October 2006.

Type specimens: Holotype: 1 male (CHMLP 5647); allotype: 1 female (CHMLP 5648); paratypes: 5 males and 5 females (CHMLP 5649).

Prevalence: 22.2%.

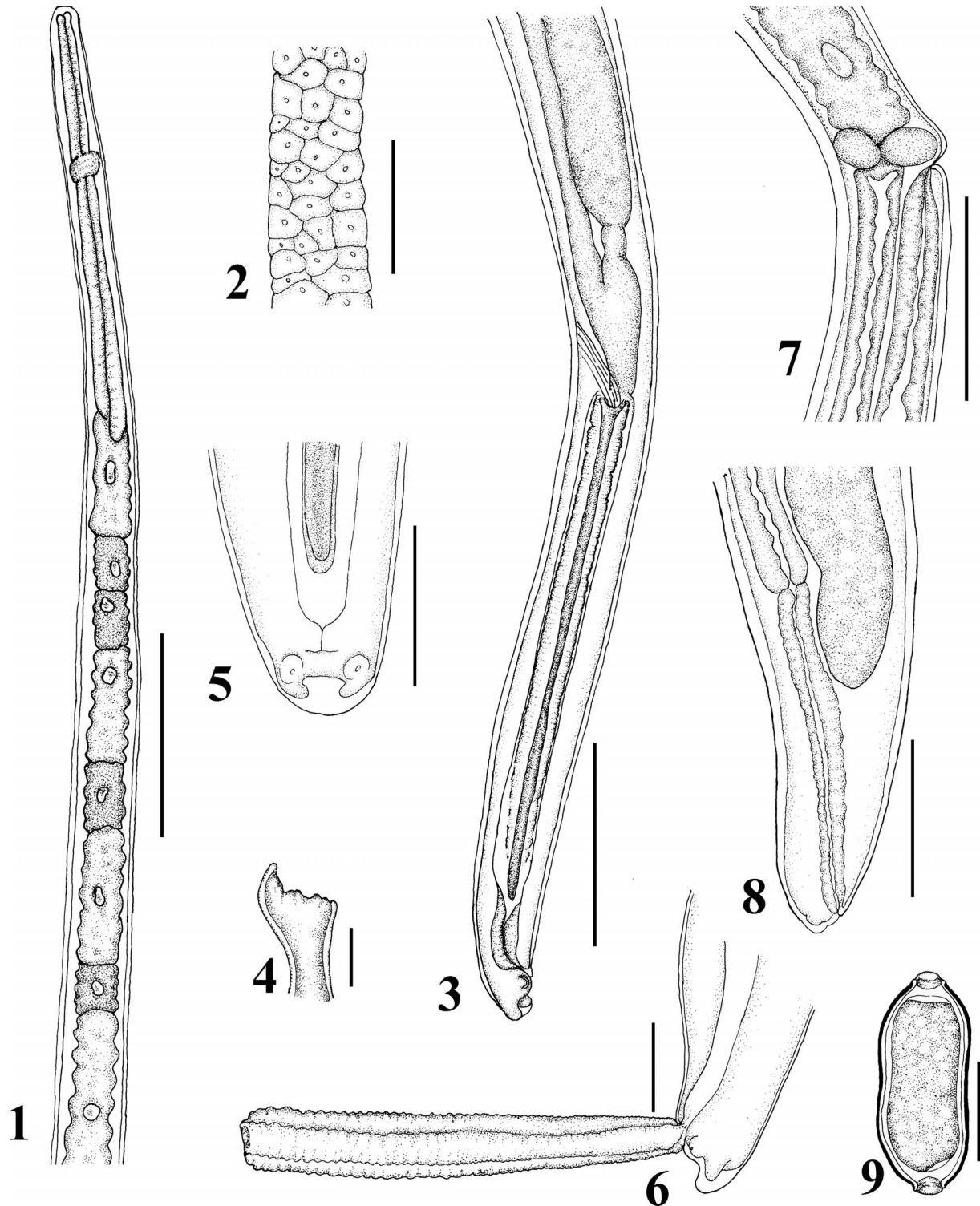
Mean intensity \pm SD (range): 4.42 \pm 5.19 (1–19).

Etymology: The specific name refers to the geographic region where parasites were found, the Argentine Sea.

Remarks

By the presence of elongate stichocytes with medium-sized nuclei, by the production of eggs instead of larvae by females, and by having

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FIGURES 1–9. *Paracapillaria (Paracapillaria) argentinensis* n. sp. (1) Anterior end, lateral view. (2) Bacillary band, at level of stichosome. (3) Male posterior end, lateral view. (4) Proximal end of spicule. (5) Male tail, ventral view. (6) Male tail, lateral view. (7) Female, region of vulva, lateral view. (8) Tail of female, lateral view. (9) Egg. Bars = 1, 3: 100 μ m; 2, 6, 7, 8: 50 μ m; 4: 10 μ m; 5: 30 μ m; and 9: 25 μ m.

a fish as a definitive host, the new species is included in the subgenus *Paracapillaria* Mendonça, 1963. Ten species, parasites of fish, are so far known in *Procapillaria*. According to the key provided by Moravec (2001), and by having elongate stichocytes and similar morphometric features. The new species most closely resembles *P. (P.) plectroplites*

(Johnston et Mawson, 1940) Moravec, 1987, a parasite of freshwater perciform fish from southern Australia (Moravec, 2001). However, the new species is readily distinguished by having eggs with slightly protruding polar plugs and by the spicular morphology, which has a non-expanded anterior end and lacks the medial constriction in *P. (P.) plectroplites*

tropilites. In this case, the spicule of the new species is similar to that of *P. (P.) epinepheli*, Moravec, Mendoza-Franco et Vargas-Vázquez, 1996, a parasite of serranid fishes from the Gulf of Mexico; nevertheless, in this species, the spicule is shorter (0.180–0.195 mm) and the caudal bursa is highly reduced (Moravec et al., 1996). Therefore, a new species *Paracapillaria (Paracapillaria) argentinensis* is proposed.

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LITERATURE CITED

- BUSH, A. O., K. D. LAFFERTY, J. M. LOTZ, AND A. W. SHOSTAK. 1997. Parasitology meets ecology on its own terms: Margolis et al. revisited. *Journal of Parasitology* **83**: 575–583.
- MORAVEC, F. 2001. Trichinelloid nematodes parasitic in cold-blooded vertebrates. Academia, Praha, Czech Republic, 429 p.
- , E. MENDOZA-FRANCO, AND J. VARGAS-VÁZQUEZ. 1996. *Paracapillaria epinepheli* n. sp. (Nematoda: Capillariidae) from the red grouper *Epinephelus morio* (Pisces) from Mexico. *Systematic Parasitology* **33**: 149–153.