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Two New Tetrphyllidean Cestodes from *Potamotrygon circularis* Garman (Chondrichthyes: Potamotrygonidae) in the Itacuaí River, Brazil^{1,2}

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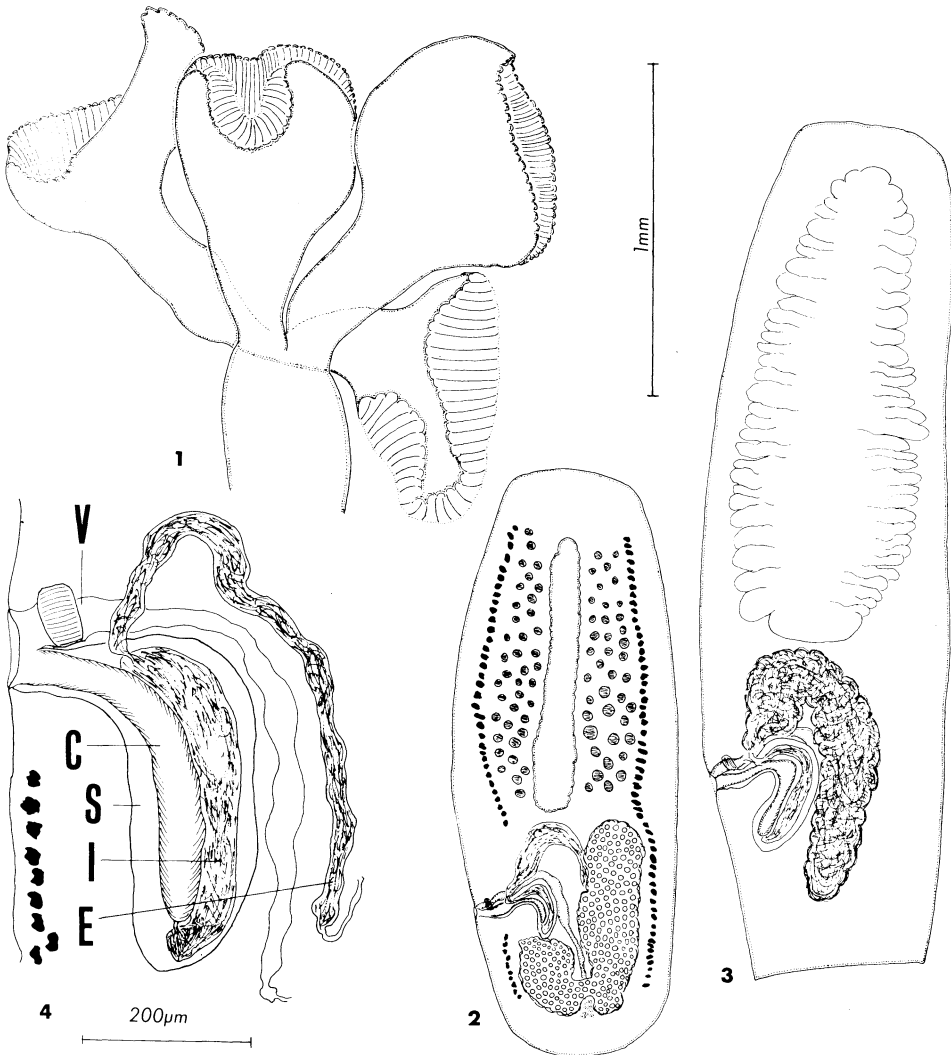
ABSTRACT: The new genus *Rhinebothroides* is proposed to include three species of *Rhinebothrium*-like cestodes parasitizing freshwater stingrays in South America. They differ from *Rhinebothrium* species by having squared rather than elongate bothridia, by possessing internal seminal vesicles, and by exhibiting terminal genitalia at the ovarian level. *Rhinebothroides circularisi* sp. n. in *Potamotrygon circularis* from the Itacuaí River in northwestern Brazil differs from *R. moralarii* by having more testes and bothridial loculi and differs from *R. scorzai* by lacking vitelline follicles proximate to the genital pore, by having a straight rather than coiled vagina, and by possessing craspedote rather than acraspedote proglottids. *Potamotrygon circularis* from the Itacuaí River also hosted *Potamotrygon-ocestus amazonensis* sp. n. which differs from the only other member of the genus, *P. magdalenensis*, by having bothridial hooks 58-78 μm long rather than 43-55 μm long, by possessing a shallow genital atrium rather than lacking one, and by having follicular rather than compact vitellaria.

Four reports (Lopez-Neyra and Diaz-Ungria, 1958; Brooks and Thorson, 1976; Rego and Dias, 1976; Mayes et al., 1978) list a total of seven species of tetrphyllidean cestodes parasitizing freshwater stingrays in South America. We collected specimens of two new species from the stingray *Potamotrygon circularis* Garman occurring in the Itacuaí River in northwestern Brazil. Worms were removed from their hosts' spiral valves and examined alive before fixing in hot AFA or were fixed in situ with 10% formalin; all were then stored in 70% ethanol. Some specimens were stained with Mayer's hematoxylin and mounted in Histo-clad (commercial mounting medium produced by Clay Adams) or Canada balsam for study as whole mounts. Others were cut in serial cross sections at 8 μm and stained with hematoxylin-eosin for confirmation of some aspects of proglottid morphology. Measurements are in micrometers unless otherwise stated; figures were drawn with the aid of a drawing tube.

Three species of tetrphyllidean cestodes, including a new species described herein, resemble members of *Rhinebothrium*-like genera (*Rhinebothrium*, *Caulobothrium*, *Rhabdotobothrium*) but differ by possessing squared or quadrate rather than elongate bothridia and an internal seminal vesicle (see Brooks and Thorson, 1976, also Fig. 4 of this paper). They further differ by exhibiting reduced poral ovarian lobes and terminal genitalia at the ovarian level. Because of the above consistent morphological differences and the species' present restriction to freshwater stingrays, we propose the following new genus to accommodate them.

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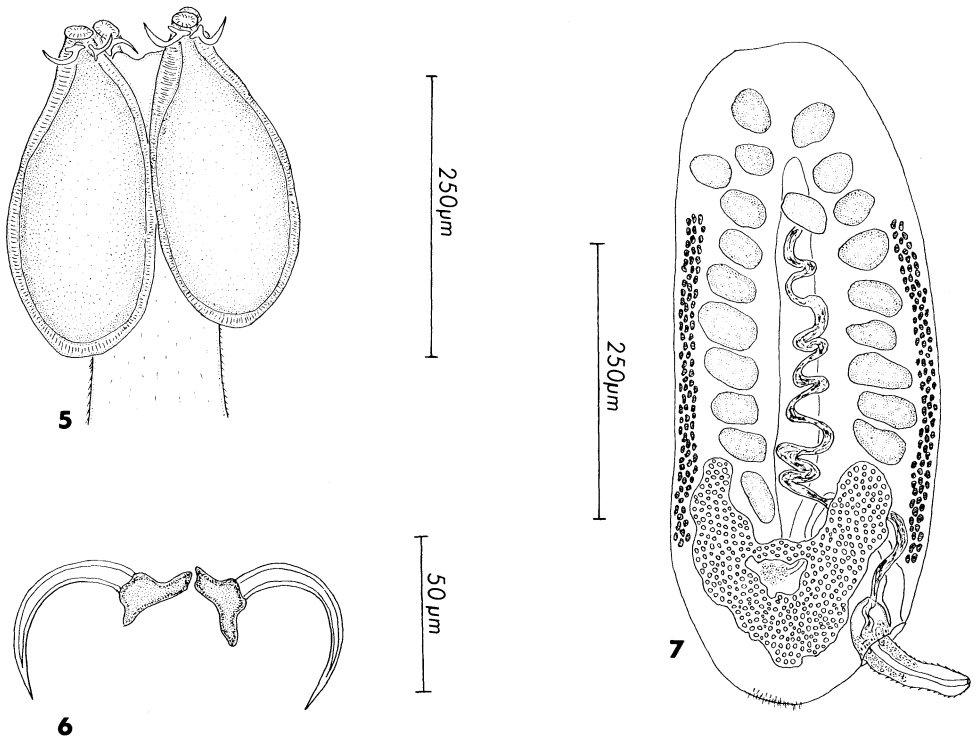
Figures 1–4. *Rhinebothroides circularisi*. 1. Scolex. 2. Mature proglottid. 3. Gravid proglottid. 4. Terminal genitalia. Abbreviations: V = vagina; C = cirrus; S = cirrus sac; I = internal seminal vesicle; E = external seminal vesicle.

Rhinebothroides gen. n.

DIAGNOSIS: Tetraphyllidea, Phyllobothriidae. Scolex with 4 pedicellated quadrate bothridia; bothridia with shallow horizontal loculi. Ovary bilobed with greatly reduced poral lobe in frontal view; X-shaped in cross section. Testes pre-ovarian. Cirrus sac at ovarian level, containing spined eversible cirrus and internal seminal vesicle. Uterus with lateral diverticula. Parasites of freshwater stingrays (family Potamotrygonidae). South America.

TYPE SPECIES: *Rhinebothroides moralarai* (Brooks and Thorson, 1976) comb. n. (synonym *Rhinebothrium moralarai* Brooks and Thorson, 1976).

OTHER SPECIES: *R. scorzai* (Lopez-Neyra and Diaz-Ungria, 1958) comb. n.



Figures 5-7. *Potamostrongyloides amazonensis*. 5. Scolex. 6. Bothridial hooks. 7. Mature proglottid. Note tegumental spines at posterior end.

(synonym *Rhinebothrium scorzai* Lopez-Neyra and Diaz-Ungria, 1958), *R. circularisi* sp. n.

***Rhinebothroides circularisi* sp. n.**

(Figs. 1-4)

DESCRIPTION (based on 10 specimens): Strobila acraspedote, apolytic, up to 27 mm long, composed of 18-24 proglottids ($n = 10$). Scolex 912-1,490 wide. Cephalic peduncle contractile, up to 360 long. Bothridia 675-1,000 long by 400-530 wide, divided longitudinally by indistinct median septum and transversely by 33-38 septa forming 2 parallel rows of 34-39 loculi plus terminal loculus at tip of each lobe; total number of loculi 70-80. Immature proglottids longer than wide; mature ones 1,000-1,440 long by 620-960 wide. Testes in 2 broad fields in anterior $\frac{2}{3}$ of proglottid, 66-88 ($\bar{x} = 78$, $n = 25$) in number, 46-74 long by 25-80 wide. External seminal vesicle extending entire length of cirrus sac, joining cirrus sac near poral end and vas deferens near posterior end of ovary. Genital atrium shallow; genital pores alternating irregularly, 28-39% of proglottid length from posterior end. Vagina anterior to cirrus sac; vaginal sphincter present; posterior portion dilated to form seminal receptacle. Ovary with aporal lobe 360-540 long, not extending into anterior $\frac{1}{2}$ of proglottid; poral lobe shorter, extending to posterior margin of cirrus sac. Ovarian isthmus posteromedian to cirrus sac, 300-400 wide. Vitelline follicles lateral, extending from level of ovarian isthmus to near

anterior end of proglottid, interrupted near genital pore on poral side, 12–30 in diameter. Gravid proglottids 2,160–3,756 long by 786–1,320 wide, devoid of testes. Uterus saccate with 49–80 (\bar{x} = 70, n = 15) lateral diverticula. Eggs 18–29 in diameter in utero, oncospheres 11–18 in diameter, unembryonated.

HOST: *Potamotrygon circularis* Garman.

SITE OF INFECTION: Middle $\frac{1}{3}$ of spiral valve.

LOCALITY: Itacuaí River, 5 km south Atalaia do Norte, Brazil.

HOLOTYPE: USNM Helm. Coll. 76361.

PARATYPES: USNM Helm. Coll. No. 76362; University of Nebraska State Museum, Manter Laboratory No. 21020.

ETYMOLOGY: The species is named after its host species.

Rhinebothroides circularisi resembles *R. moralarai* by possessing a straight vagina and acraspedote proglottids, and by exhibiting vitelline follicles interrupted on the poral side of the proglottid in the area of the genital pore. The new species differs from *R. moralarai* by having more testes (an average of 78 rather than 63) and more bothridial loculi (70–80 rather than 46–48). *Rhinebothroides circularisi* resembles *R. scorzai* in number of testes and in bothridial loculi number, but examination of specimens of the latter species (Brooks, Mayes, and Thorson, unpublished) show that *R. scorzai* possesses craspedote proglottids and a coiled vagina, and exhibits no vitelline interruption.

***Potamotrygonocestus amazonensis* sp. n.**

(Figs. 5–7)

DESCRIPTION (based on 5 specimens): Strobila acraspedote, hyperapolytic, 1,254–3,534 long, composed of 10–13 proglottids. Scolex 240–300 long by 240–300 wide, comprising 4 sessile nonseptate bothridia each with apical sucker and pair of simple hooks. Scolex and neck spinose, strobila sparsely spinose (Fig. 7), spines 5–15 long. Bothridia 330–408 long by 135–210 wide. Accessory suckers 38–55 in diameter. Hook prongs 58–78 long (\bar{x} = 66, n = 12), bases 26–35 long (\bar{x} = 30, n = 12). Neck 115–200 long. Immature proglottids initially wider than long, becoming longer than wide. Mature attached proglottids 420–690 long by 270–330 wide. Testes in 2 longitudinal rows in anterior $\frac{2}{3}$ of proglottid, 21–24 (\bar{x} = 23, n = 10) in number, 29–50 in diameter. Cirrus sac near posterior end of proglottid, 73–93 long by 44–50 wide, containing spined eversible cirrus. Everted cirrus in one proglottid 52 long by 20 wide. Genital atrium shallow; genital pore dextral or sinistral. Vagina anterior to cirrus sac with dorsal tegumental membrane. Ovary in posterior $\frac{1}{3}$ of proglottid, 132–240 long by 102–162 wide at isthmus; ovarian lobes fused posteriorly. Vitellaria follicular; follicles in 2 lateral longitudinal rows extending from level of ovarian isthmus to within 32–38% of total proglottid length from anterior end; follicles 29–37 in diameter. Gravid proglottids not collected.

HOST: *Potamotrygon circularis* Garman.

SITE OF INFECTION: anteriormost chamber of spiral valve.

LOCALITY: Itacuaí River, 5 km south Atalaia do Norte, Brazil.

HOLOTYPE: USNM Helm. Coll. No. 76363.

PARATYPES: University of Nebraska State Museum, Manter Laboratory No. 21019.

ETYMOLOGY: The species is named for the major river system drainage in which it occurs.

Potamotrygonocestus amazonensis differs from *P. magdalenensis* Brooks and Thorson, 1976, the only other known species, by having a shallow genital atrium rather than lacking one, by exhibiting follicular rather than compact vitellaria, and by having bothridial hooks 58–78 μm long rather than 43–55 μm long.

Literature Cited

- Brooks, D. R., and T. B. Thorson. 1976. Two tetraphyllidean cestodes from the freshwater stingray *Potamotrygon magdalenae* Dumeril, 1852 (Chondrichthyes: Potamotrygonidae) from Colombia. *J. Parasitol.* 62:943–947.
- Lopez-Neyra, C. R., and C. Diaz-Ungria. 1958. Cestodes de Venezuela. V. Cestodes de vertebrados Venezolanos (segunda nota). *Nova Cienc.* 23:1–41.
- Mayes, M. A., D. R. Brooks, and T. B. Thorson. 1978. Two new species of *Acanthobothrium* Van Beneden, 1849 (Cestoidea: Tetraphyllidea) from freshwater stingrays in South America. *J. Parasitol.* 64:838–841.
- Rego, A. A., and A. P. L. Dias. 1976. Estudos de cestoides de peixes do Brasil. 3a nota: cestoides de raias fluviais paratrygonidae. *Rev. Bras. Biol.* 36:941–956.

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