

A Redescription of *Riggia paranensis* Szidat, 1948 (Isopoda, Cymothoidae) Based on Thirty-two Specimens from Curimatid Fish of Rio de Janeiro, Brazil, with an Emendation of the Genus

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Riggia paranensis Szidat, 1948 is redescribed on the basis of 30 female and 2 male specimens collected from the pericardial cavities of the curimatid fish *Cyphocarax* (= *Curimata*) *gilberti* (Quoy & Gaimard). The fishes were caught in the Itabapoana River, State of Rio de Janeiro, southeastern Brazil. The presence of "dwarf" males, as reported by Szidat, was verified. The fusion of the pleonites and pleotelson in adult females was also confirmed. The generic diagnosis was emended to include details of the mouthparts and pleopods.

Key words: isopod - cymothoid - fish parasite - Brazil

In South America, there are 25 species of freshwater cymothoid isopods representing at least 10 genera. This is in contrast to the other continents since no freshwater cymothoids have been found in either North America or Europe and only 4 species are from Africa. Although many of the South American genera and species are not well defined and some were described on the basis of one or two specimens, some attempts have been made to redefine these forms (Lemos de Castro & Machado Filho 1946, Lemos de Castro 1955, 1959, Trilles 1973, Thatcher & Carvalho 1988, Thatcher 1988, 1991, 1993a,b, 1995a,b).

The present paper proposes to redefine *Riggia paranensis* which was described by Szidat (1948) on the basis of one female and one male. Studies of 30 female and 2 male specimens have made it possible to describe some features that were not mentioned by Szidat, such as the nature of the mouthparts and pleopods. Our specimens were taken from a different species of the same genus of host fish.

MATERIALS AND METHODS

A total of 96 fish locally called "sairu", *Cyphocarax* (= *Curimata*) *gilberti* (Quoy & Gaimard), from the Itabapoana River, State of Rio

de Janeiro, southeastern Brazil were examined. The fish were obtained from professional fishermen in February 1996. Prevalence and intensity are herein used in accordance with the recommendations of Margolis et al. (1982). Methods used in the collection, preparation, measurement and illustration were those described in Thatcher and Carvalho (1988).

Systematic section

Isopoda Latreille, 1817

Flabellifera Sars, 1882

Cymothoidae Leach, 1818

Riggia Szidat, 1948

Generic diagnosis - Female: body large, convex dorsally. Cephalon partly immersed in pereonite 1. Coxal plates small; pereopods short; 7th pair of dactyls not clawlike. Second pleopods with appendix masculinum modified to form accessory gill. Pleon and pleotelson fused, partially immersed in pereonite 7. Uropods long, tapering. Male: body small, slightly convex dorsally. Appendix masculinum of second pleopod slender and pointed. Pleon and pleotelson not fused and not immersed in pereonite 7.

Type species: *Riggia paranensis* Szidat, 1948

Other species: *Riggia brasiliensis* Szidat & Schubart, 1960; *Riggia nana* Szidat & Schubart, 1960.

Riggia paranensis Szidat, 1948
(Figs 1-26)

Type host: *Cyphocarax* (= *Curimata*) *platana*; from Szidat, 1948

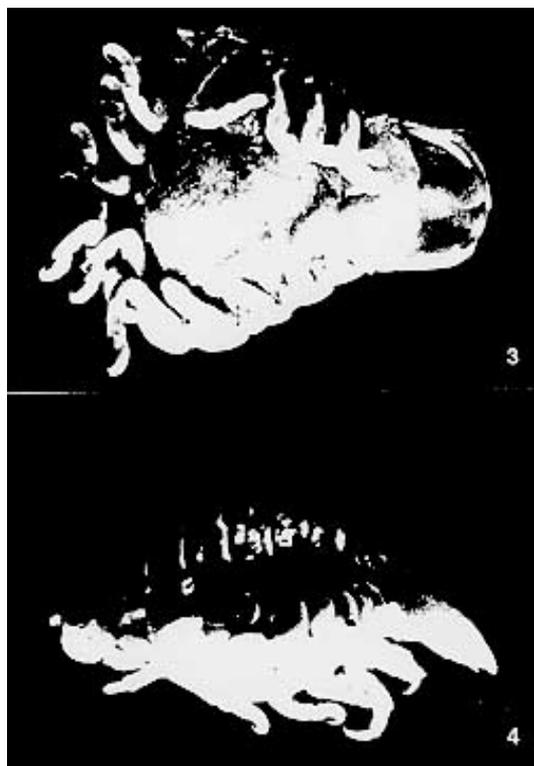
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Riggia paranensis, female. Fig. 1: dorsal view. Fig. 2: lateral view.



Riggia paranensis, female. Fig. 3: ventral view. Fig. 4: lateral view.



Riggia paranensis. Figs 5, 6: juveniles, dorsal view. Fig. 7: male, dorsal view.

New host (this paper): *Cyphocarax* (= *Curimata*) *gilberti* Quoy & Gaimard, 1824

Site: peritoneal or pericardial cavities, with the pleotelson slightly protruding from entrance wound, usually above or near the pectoral fin

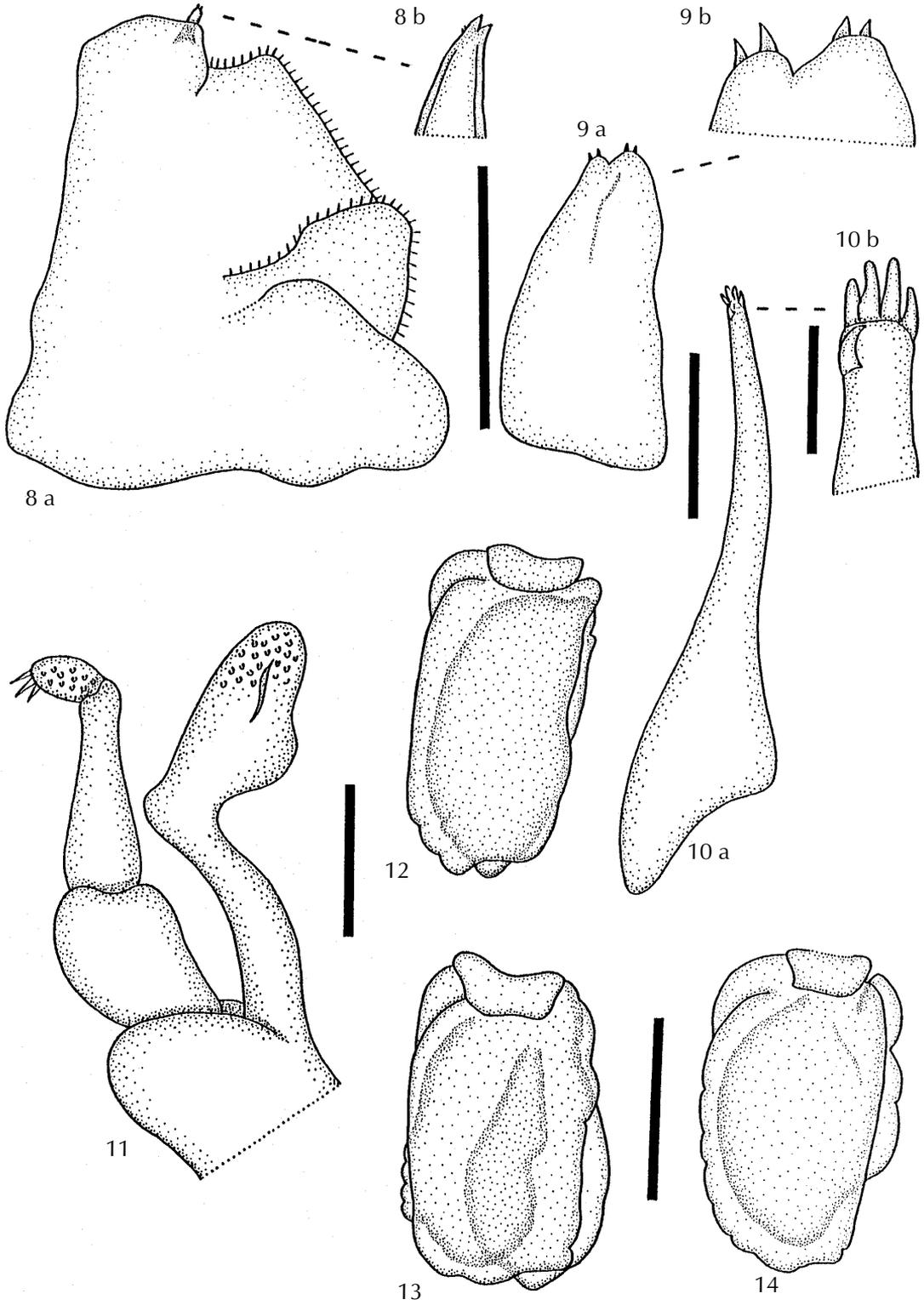
Prevalence: 32%; intensity: 1-2/host

Geographic distribution: Paraná River, Argentina (from Szidat, 1948) and Itabapoana River, State of Rio de Janeiro, Brazil (this paper)

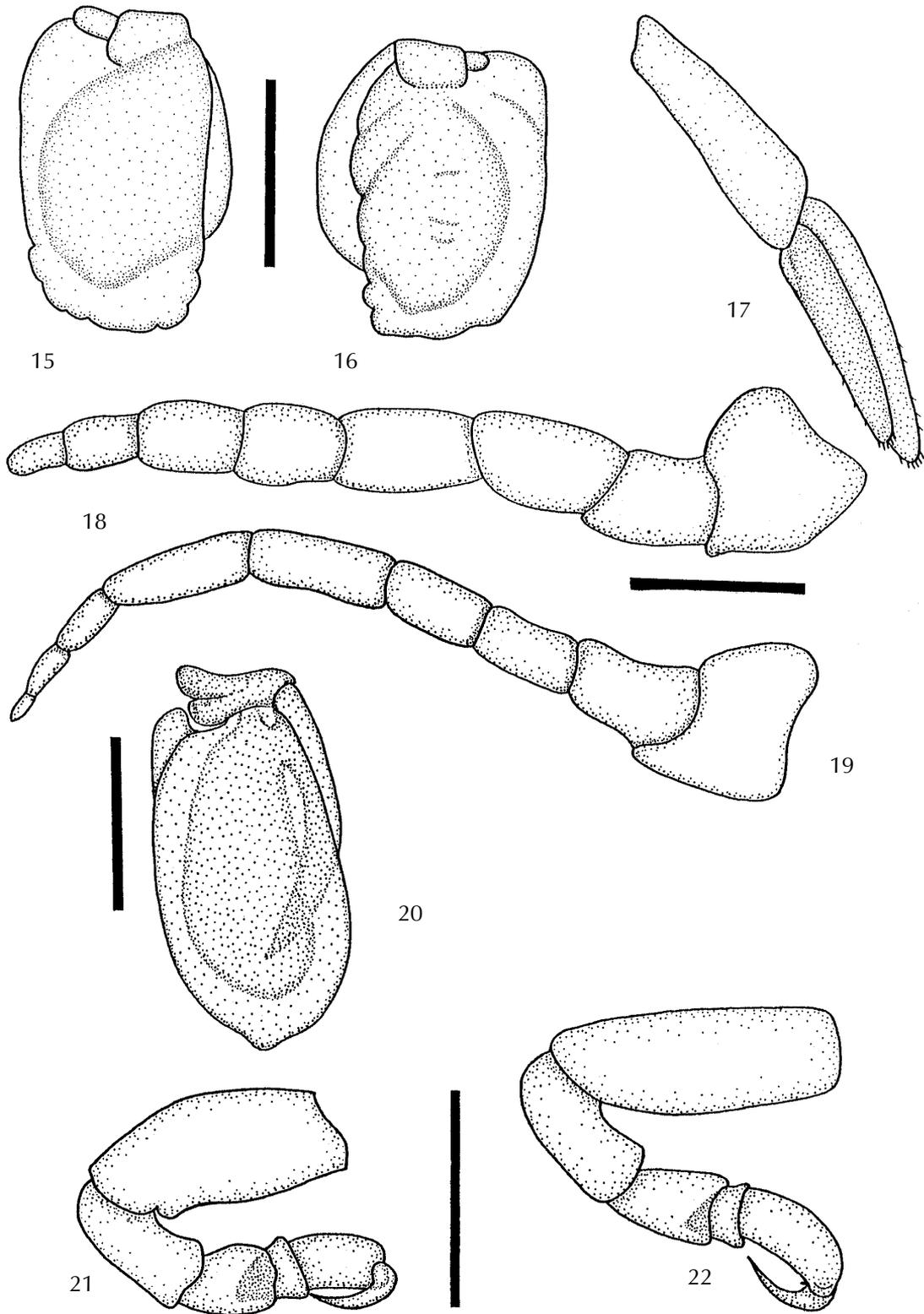
Voucher specimens deposited: 10 females and 1 male in the Invertebrate Collections of the Instituto Nacional de Pesquisas da Amazônia, Manaus, AM, Brazil, and 20 female and 1 male in the Helminthological collection of the Instituto Oswaldo Cruz, Rio de Janeiro, Brazil.

Species redescription (based on 30 females and 2 males): with the characters of the genus.

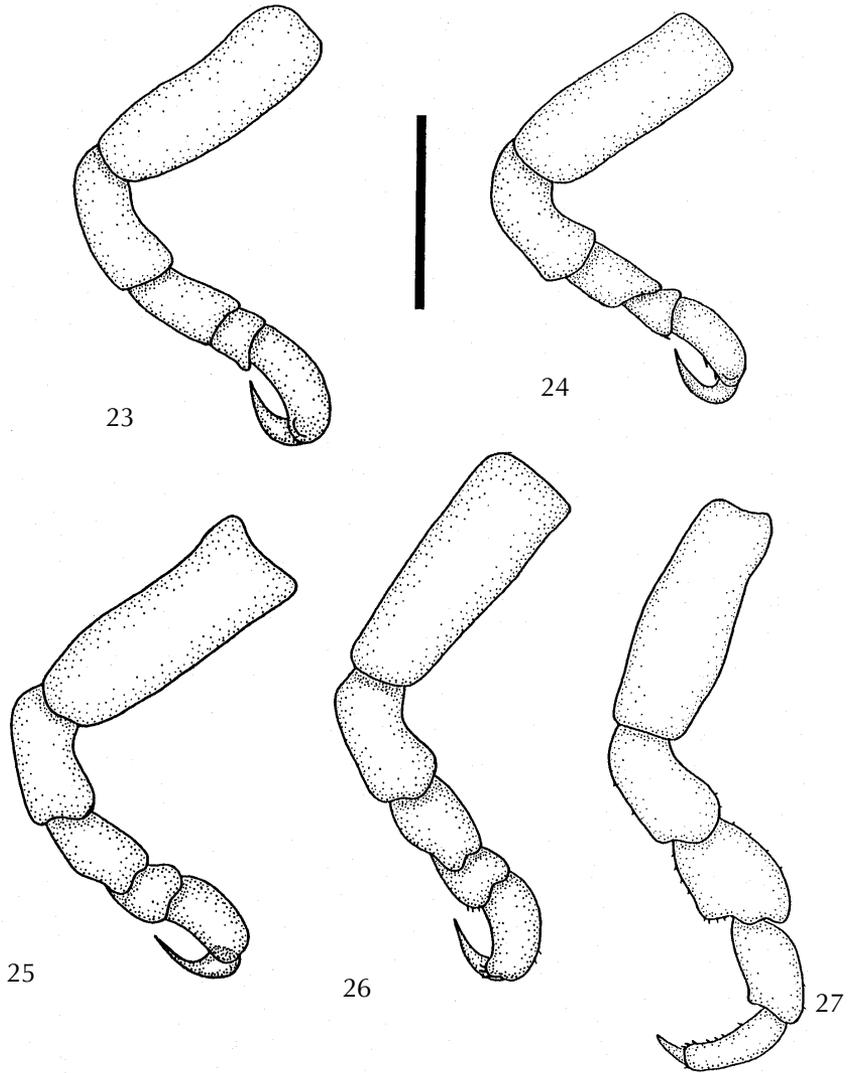
Female: body pear-shaped in dorsal view; widest at level of pereonite 3; about 1.0-1.6 times longer than wide; color yellowish with few dark melanophores. Coxal plates not surpassing posterior margins of respective pereonites; first coxal plate fused to pereonite 1. Pleotelson rounded, smooth, not keeled.



Riggia paranensis, female. Fig. 8a: maxilliped. Fig. 8b: tip of maxilliped. Fig. 9a: maxilla. Fig. 9b: tip of maxilla. Fig. 10a: maxillule. Fig. 10b: tip of maxillule. Fig. 11: mandible and palp. Fig. 12: pleopod 1. Fig. 13: pleopod 2. Fig. 14: pleopod 3. Scale bars: Figs 8a, 9a = 1 mm. Fig. 10a = 500 μ m. Figs 8b, 9b, 10b = 100 μ m. Fig. 11 = 500 μ m. Figs 12-14 = 4 μ m.



Riggia paranensis, female. Fig. 15: pleopod 4. Fig. 16: pleopod 5. Fig. 17: uropod. Fig. 18: antennule. Fig. 19: antenna. Fig. 20: pleopod 2 of male. Fig. 21: pereopod 1 of female. Fig. 22: pereopod 2 of female. Scale bars: Figs 15, 16 = 4 mm. Figs 17, 21, 22 = 2 mm. Figs 18, 19 = 500 μ m. Fig. 20 = 1 mm.



Riggia paranensis, female. Fig. 23: pereopod 3. Fig. 24: pereopod 4. Fig. 25: pereopod 5. Fig. 26: pereopod 6. Fig. 27: pereopod 7. Scale bar = 2 mm.

Antennae subequal in length; antennule of 8 articles and antenna of 9 articles. Mouthparts: mandible rounded, lacking incisor; palp short; maxillule with 5 recurved spines 4 being terminal and 1 being subterminal; maxilla bilobed with 2 small spine on each lobe; maxilipedal palp with 2 spines. Pereopods short, 7 slightly longer than others; 1-6 terminating in small clawlike dactyls; 7 without distinct claw. Pleopods lamellar, elongate, rounded distally accessory gill of pleopod 2 nearly as large as endopod; lateral peduncular lobes and proximomedial lobes present on all pleopods. Uropods elongate, tapering; not surpassing pleotelson posteriorly.

Male: body small, about one fifth as long as adult female; about 2.5 times longer than wide;

prominent rows of melanophores dorsally and laterally. Cephalon not immersed in pereonite 1; pleonites and pleotelson not fused and not immersed in pereonite 7; pleotelson shield-like, pointed posteriorly. Pleopod 2 with well developed, pointed appendix masculinum (Table).

REMARKS

Szidat's description (1948) of *R. paranensis* was based on a single female, of about 22 mm in length, and a single male, said to measure 5.1 mm. The two were found together possibly in a copulatory position since the male was clinging to the female near the bases of the pleopods. In the present series, it was possible to verify the presence of a "dwarf" male in the company of each of two fe-

males. Most of the other females had already copulated, as evidenced by the developing larvae in their brood pouches. No males were found with such females suggesting that the little male departs and perhaps dies after impregnating the female.

Other morphological details provided by Szidat were also verified. The antennules are of 8 articles and the antennae of 9. The pleonites and pleotelson are fused into a single unit, but only in adult females. Adding to the description of Szidat, it was found that the mandible is boot-like and lacks an incisor and that the maxillule has four terminal and one subterminal recurved spines. In the male the appendix masculinum on the second pleopod is slender and pointed, whereas in the female it is expanded to form an accessory gill.

TABLE

Ranges of measurements (mm) of 30 females and 2 males of *Riggia paranensis* (means in parentheses)

	Body	Pleon and pleotelson
	Females	
Length	14-28 (21)	5-10 (7,7)
Width	10-20 (16)	4-9 (7,2)
	Males	
Length	4-8 (6)	1.8-4.5 (3)
Width	2-5 (3,5)	1-2 (1,5)

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