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The parasitic Crustaceans of fishes from the Brazilian Amazon,
13, *Gamidactylus jaraquensis* gen. et sp. nov. (Copepoda: Poecilostomatoida:
Vaigamidae) from the nasal fossae of
Semaprochilodus insignis (SCHOMBURGK)

by

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Abstract

The female of *Gamidactylus jaraquensis* gen. et sp. nov. (Copepoda: Poecilostomatoida: Vaigamidae) is described from the nasal fossae of an Amazonian fish, *Semaprochilodus insignis* (SCHOMBURGK). The new genus differs from the two known species of *Vaigamus* in having a two-clawed antenna and in lacking the rostral spine.

Keywords: nasal parasite, copepods, fishes, Amazon

The new family Vaigamidae was proposed by THATCHER & ROBERTSON (in press) for ergasiloid copepods having moveable lateral retrostylets on the first thoracic segment. They presented the genus *Vaigamus* as type for the family and described the males and females of two species which had been found in Amazonian plankton samples. At the time that study was accepted for publication, another vaigamid genus had already been found in the nasal fossae of an Amazonian fish. This new genus is described herein.

Materials and Methods

The nasal cavities of fish were opened with scissors and the mucous and epithelial lining removed with forceps. Specimens of vaigamids were removed from the mucous with fine needles under a dissecting microscope. The copepods were fixed in AFA (Alcohol-Formalin-Acetic Acid) and temporary study preparations were made in phenol to which a small amount of acid fuchsin stain had been added. Permanent whole-mounts were prepared by the methods explained in THATCHER (1981) and in THATCHER &

ROBERTSON (1982). Color determinations were made with reference to SMITHE (1974). Drawings were made with the aid of a camera lucida and measurements with a measuring ocular. All measurements are expressed in micrometers.

Systematic Section

Suborder Poecilostomatoida KABATA, 1979

Family Vaigamidae THATCHER & ROBERTSON

Gamidactylus gen. nov.

Generic diagnosis. Vaigamidae. Female: Cephalothorax with prominent dorso-lateral retrostylets; rostrum unarmed. Antennule 6-segmented. Antenna 4-segmented; third segment with elongate claw-like moveable spine; fourth segment claw-like with medial simple sensillum. Legs: first endopod 2-segmented; first exopod 3-segmented; fourth endopod 2 or 3-segmented; fourth exopod 1 or 2-segmented; all rami of legs 2 and 3 of three segments; leg 5 reduced to one or two setae; sixth leg absent. Male: unknown. Female parasitic in nasal fossae of fishes; male presumably free-living.

Type species: *Gamidactylus jaraquensis* sp. nov.

Gamidactylus jaraquensis sp. nov.

(Figs. 1 - 10)

Host: *Semaprochilodus insignis* (SCHOMBURGK); "jaraqui".

Site: Nasal fossae.

Locality: Amazon River, near Manaus, Amazonas, Brazil.

Holotype (female): Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, Amazonas, Brazil.

Paratypes: INPA and Museu de Zoologia da Universidade de São Paulo, S. P., Brazil.

Male: Unknown.

Etymology: "Gami" is a name used by Amazonian amerinds of the Deçano tribe to designate a parasitic crustacean and "dactylus" refers to the finger-like spines at the end of the antenna. The specific name was derived from the common name of the host fish.

Species diagnosis (based on 32 females studied and 10 measured; Tables I and II): Cephalothorax bullet-shaped; head fused with first two thoracic segments (Fig. 2). Eye prominent, spectrum blue (Color 69 of SMITHE, 1974). Spectrum blue pigment widely scattered in body (dark spots in Fig. 2). Retrostylets long; projecting postero-laterally from first thoracic segment to level of third (Figs. 2 and 10).

Free thorax five-segmented (Fig. 2). Penultimate segment hemispherical dorsally and bears fifth leg which consists of two simple setae (Fig. 4). Genital segment sub-rectangular (Fig. 4).

Abdomen (Fig. 4) 3-segmented; provided with spinules ventrally extending along lateral borders to dorsal side. Uropod with one large and one small seta (Fig. 4).

Antennule (Fig. 5) of six segments which bear simple setae; setal formula = 4 - 3 - 4 - 4 - 2 - 6; total = 23. Prehensile antenna (Fig. 1) 4-segmented; basal segment with single terminal spine; second segment with spine-like sensillum medially; segment 3 with elongate moveable spine distally; segment 4 claw-like; with simple pore-like sensillum medially; ratio of segmental lengths = 1.2 : 1.9 : 1 : 1.

Mouthparts (Fig. 9). Mandible with bristled tip, palp bristled posteriorly; maxillule vestigial; maxilla with spinules anteriorly.

Legs (Figs. 6 - 8). Leg 1 (Fig. 6); endopod 2-segmented, exopod 3-segmented: first endopodal segment pectinate laterally and with one pinnate seta medially; terminal segment pectinate laterally and with two spines and 5 pinnate setae medially; first exopodal segment pectinate and with two spines laterally and pilose medially; second segment pectinate laterally and with one pinnate seta medially; terminal segment with two elongate spines laterally and 5 pinnate setae medially; basipod of leg 1 with simple seta laterally. Leg 2 = Leg 3 (Fig. 7); both rami 3-segmented; endopodal segment 1 pectinate laterally and with single pinnate seta medially; second segment pectinate laterally and with two pinnate

Table I: Measurements (μm) of 10 adult females of *Gamidactylus jaraquensis* gen. et sp. nov.

	Length	Width
Body (less caudal setae)	410 - 470 (435)	130 - 160 (147)
Cephalothorax	205 - 247 (222)	130 - 160 (147)
Retrostylet	125 - 140 (131)	—
Free thoracic segments		
III	37 - 50 (43)	120 - 147 (129)
IV	35 - 47 (42)	90 - 117 (100)
V	27 - 37 (32)	67 - 85 (72)
VI	20 - 30 (26)	42 - 62 (50)
VII (genital)	27 - 37 (32)	47 - 62 (54)
Abdominal segments		
I	10 - 15 (12)	40 - 50 (45)
II	10 - 17 (13)	35 - 47 (38)
III	7 - 10 (9)	30 - 35 (34)
Uropod	12 - 17 (15)	12 - 15 (14)
Caudal setae	155 - 187 (170)	—

Table II: Antennal measurements (μm) of 10 adult females of *Gamidactylus jaraquensis* gen. et sp. nov.

	Length	Width
Antennule	75 - 97 (82)	15 - 20 (18)
Antenna		
Segment 1	47 - 52 (49)	35 - 42 (38)
2	52 - 70 (62)	17 - 25 (21)
3	25 - 35 (29)	10 - 13 (12)
4	42 - 45 (44)	5 - 7 (6)

setae medially; terminal segment with 4 medial pinnate setae; first exopodal segment with one short and one long spine postero-laterally; second segment with few spinules laterally and single pinnate seta medially; terminal segment with 5 pinnate setae. Leg 4 (Fig. 8); endopod 2-segmented, exopod 1-segmented; first endopodal segment pectinate laterally and with single pinnate seta medially; terminal segment with few spinules and 4 pinnate setae; exopodal segment with two small spines and 4 pinnate setae. Coxae of legs 2 - 4 spinulose laterally. Egg sac with single row of 1 - 12 eggs (Fig. 3).

Discussion

THATCHER & ROBERTSON (in press) described males and females of two new species of *Vaigamus*, namely: *V. retrobarbatus* and *V. spinicephalus*. Both of these species have simple claw-like fourth antennal segments and prominent rostral spines. *Gamidactylus jaraquensis* gen. et sp. nov. differs from these species in having an extra claw-like moveable spine projecting from the distal portion of the third antennal segment and in lacking the rostral spine. Apparently, female vaigamids are specially adapted to live in the nasal fossae of fishes while the males and young stages are free-living components of the zooplankton.

Resumo

A fêmea de *Gamidactylus jaraquensis* gen. et sp. nov. (Copepoda: Poecilostomatoida: Vaigamidae) é descrita das fossas nasais de um peixe amazônico, *Semaprochilodus insignis* (Schomburgk). O novo gênero distingue-se das duas espécies conhecidas no gênero *Vaigamus* por ter uma antena com duas garras e por faltar o espinho no rostro.

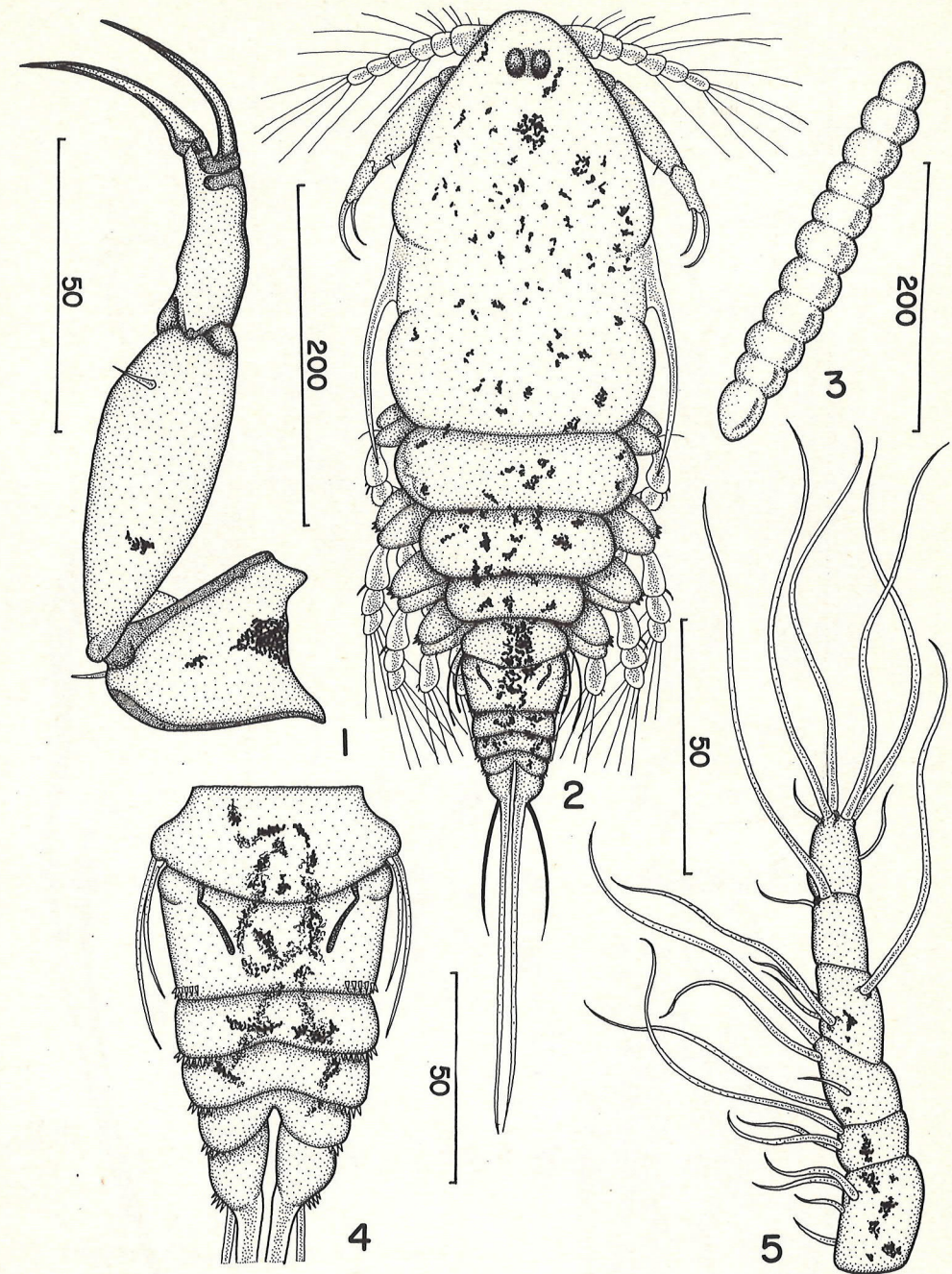
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Figs. 1 - 5:

Gamidactylus jaraquensis gen. et sp. nov. (female).

Fig. 1: Antenna. Fig. 2: Dorsal view of entire specimen. Fig. 3: Egg sac.

Fig. 4: Genital segment, abdomen and uropods. Fig. 5: Antennule.

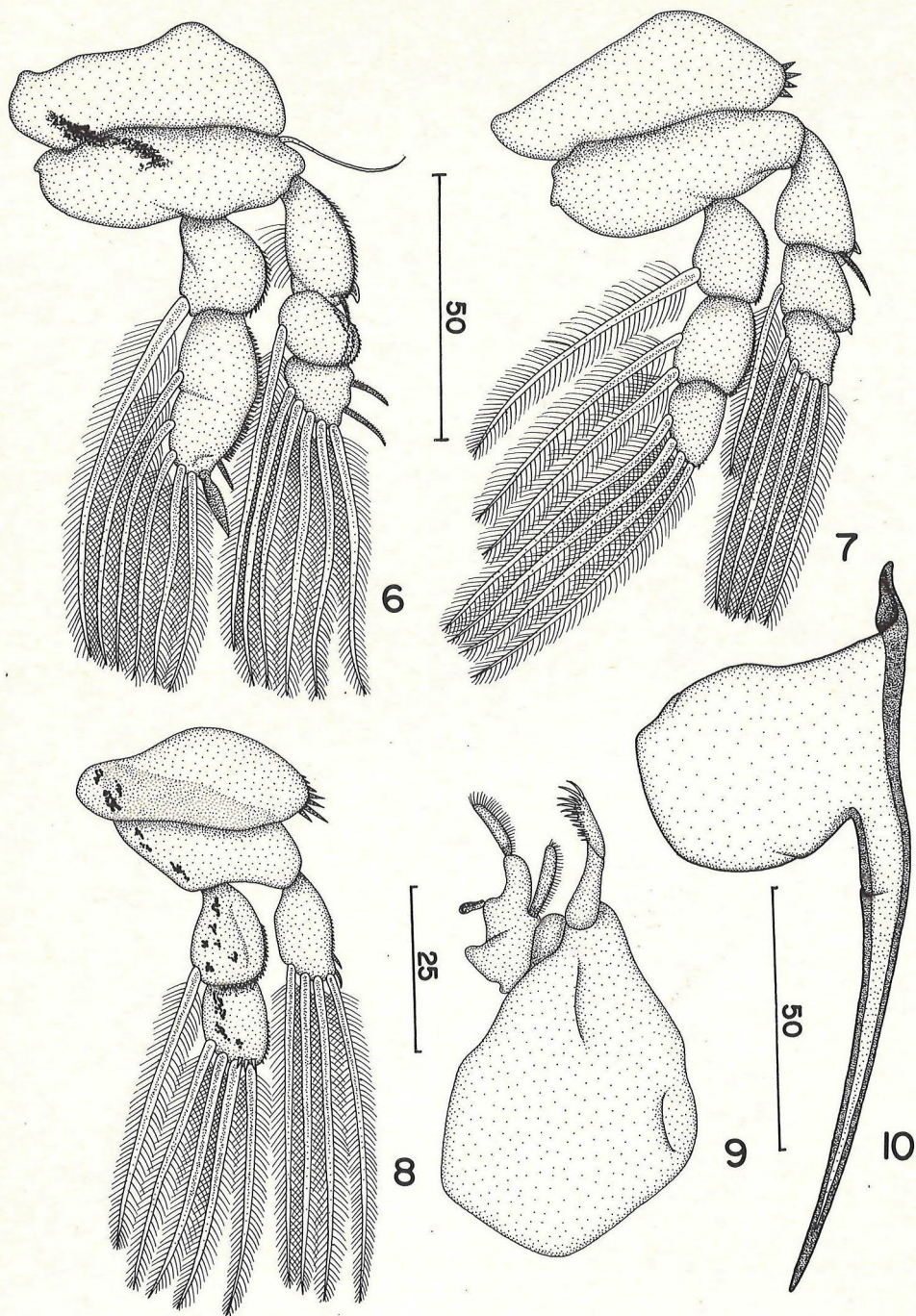


Fig. 6 - 10:

Gamidactylus jaraquensis gen. et sp. nov. (female).

Fig. 6: Leg 1. Fig. 7: Leg 2 (= Leg 3). Fig. 8: Leg 4. Fig. 9: Mouthparts. Fig. 10: Retrostylet.