Minilernaea floricapitella gen. nov., sp. nov. (Copepoda, Lernaeidae) from freshwater fishes of Southern Brazil [1]

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ABSTRACT. *Minilernaea floricapitella* **gen. nov., sp. nov.** (Copepoda, Cyclopoida, Lernaeidae) a parasite of the freshwater fishes, *Astyanax* spp. and *Corydoras ehrhardti* Regan, 1912 of Santa Catarina and Paraná States, Brazil, is described, based on 10 postmetamorphic females. The new genus and species has the following characteristics that distinguish it from all other known lernaeids: (1) The body is very small (3.4-5.8 mm in length); (2) The head is provided anteriorly with six lobes and posteriorly with four undivided anchor arms. (3) The first pair of thoracopods is on the head, 2-4 are all on the "neck"; (4) Thoracopod 5 is reduced to a simple papillus near the genital pores; (5) The genital pores are equatorial in the hindbody and there is no pre-genital prominence. Since the head and part of the neck are inserted beneath the skin, the host produces a strong encapsulating reaction.
KEY WORDS. *Astyanax*, copepod parasite, *Corydoras*, Southern Brazil.

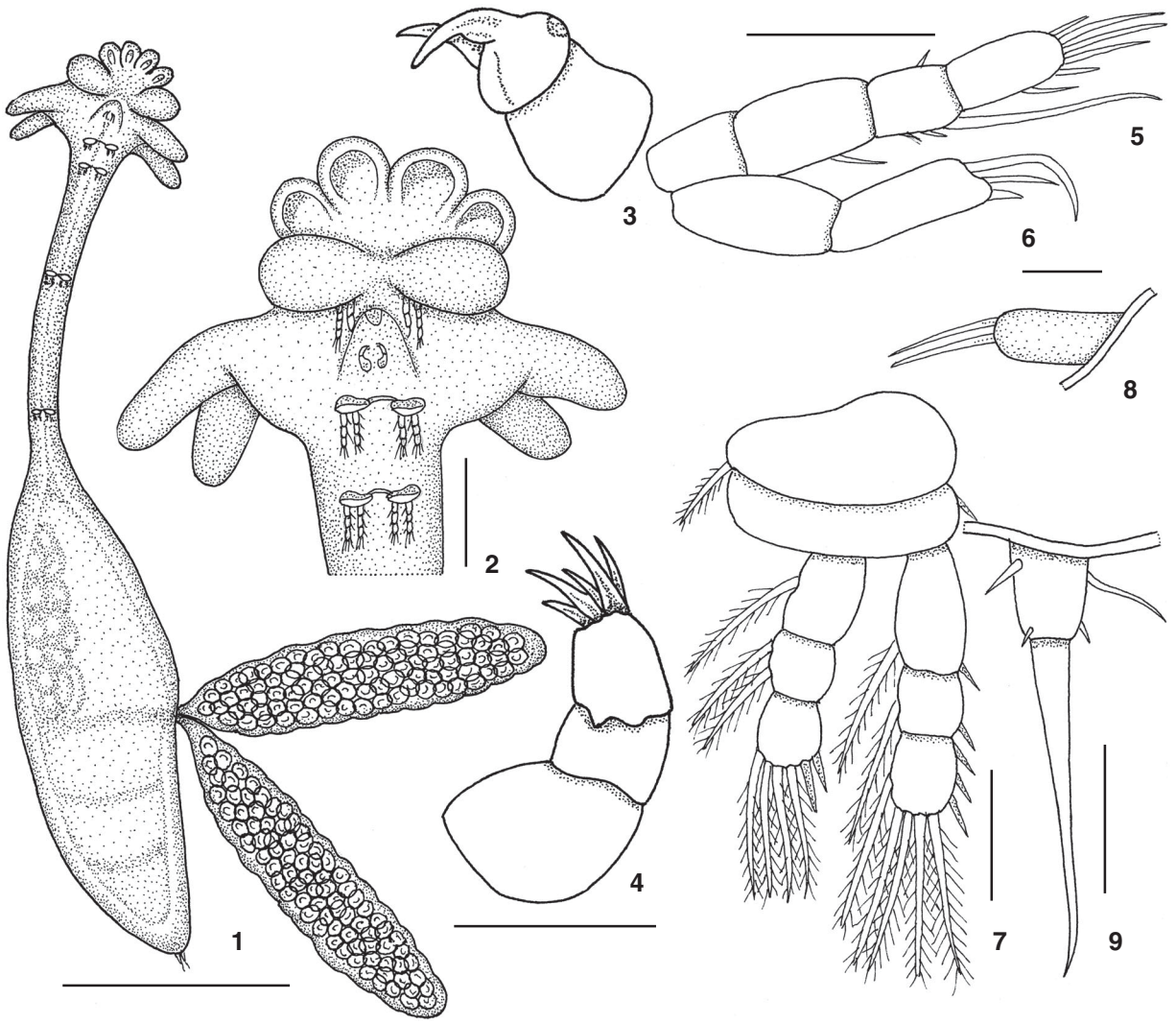
RESUMO. ***Minilernaea floricapitella* gen. nov., sp. nov.(Copepoda, Lernaeidae) de peixes de água doce do Sul do Brazil.** *Minilernaea floricapitella* **gen. nov., sp. nov.** (Copepoda, Cyclopoida, Lernaeidae) um parasito dos peixes, *Astyanax* spp. and *Corydoras ehrhardti* Regan, 1912 dos estados de Santa Catarina e Paraná, Brasil, é descrita baseada em 10 fêmeas pós-metamórficas. O novo gênero e espécie tem as seguintes características que servem para distingui-la dos demais lerneídeos: (1). O corpo é muito pequeno (3.4-5.8 mm de comprimento); (2) A cabeça é provida anteriormente com seis lóbulos e posteriormente com quatro âncoras não divididas; (3) O primeiro par de toracópodos encontra-se na cabeça, quando 2-4 estão no pescoço; Toracópodo 5 é reduzido a uma papila simples perto dos poros genitais; (5) Os poros genitais são localizados na área equatorial do corpo posterior e não existe uma proeminência pre-genital. Já que a cabeça e uma parte do pescoço são inseridas sob a pele, o hospedeiro demostra uma reação encapsuladora forte.
PALAVRAS CHAVES. *Astyanax*, copépodo parasito, *Corydoras*, Southern Brasil.

According to THATCHER (2000) only nine native species of Lernaeidae are known from South America. These are: **Lernaea lagenula* (Heller, 1868); *Areotrachelus truchae* (Brian, 1902);

Taurocherus salminisii Brian, 1924; **Lernaea argentinensis* Paggi, 1972; *Taurocherus tarangophilus* Paggi, 1976; *Perulernaea gamitanae* Thatcher & Paredes, 1985; *Amazolernaea sannerae* Thatcher & Williams, 1998; *Bedsylernaea collaris* Thatcher & Williams, 1998 and *Perulernaea pirapitingae* Thatcher, 2000. The two species described as *"Lernaea"* and marked with asterisks are thought to represent undescribed genera. In addition to the native species, three species of this family have been imported along with their fish hosts. These are: *Lernaea cyprinacea* Linnaeus, 1761; *Lernaea devastatrix* Boxshall, Montu & Schwarzbold, 1997 and *Lamproglena monodi* Capart, 1944. The pesent paper describes a new genus and species of Lernaeidae from Southern Brazil.

MATERIAL AND METHODS

Fish hosts were collected in the Iguaçu River near the town of Porto União in the Brazilian state of Santa Catarina. They were fixed in the field in a 10% formalin solution and transferred to 70% alcohol upon arrival at the laboratory. The fish were examined with a dissecting microscope and the lernaeids were removed using needles. The parasites were cleared for study in temporary mounts made in pure phenol. Sizes were determined by use of a measuring ocular and are given in microns except where specified as millimeters. The extremes are followed by the means in parentheses.



Figures 1-9. *Minilernaea floricapitella* **sp. nov.,** female: (1) entire, ventral; (2) head, ventral; (3) maxilla 1; (4) maxilliped; (5) antennule; (6) antenna; (7) leg 2; (8) leg 5; (9) caudal ramus. Scale bars: Fig. 1 = 1000 mm; Fig. 2 = 200 mm; Figs 3-5, 7 and 9 = 50 mm; Fig. 8 = 10 mm.

RESULTS

Minilernaea gen. nov.

Generic diagnosis. Cyclopoida; Lernaeidae.

Postmetamorphic female. Body divisible into head, neck and hindbody. Head bearing six lobes anteriorly, four undivided, blunt anchors posteriorly, antennae, mouthparts and first pair of thoracopods. Mouthparts: second maxillae bifurcate; maxilliped with five terminal recurved spines. Antennae: antennule with four segments; antenna with two segments. Five pairs of thoracopods present: first pair on head; pairs 2-4 on neck: pair 5 reduced to a simple papillus located on hindbody anterior to genital pores. Neck subcylindrical; representing about one-third of total body length. Genital pores equatorial on hindbody; pre-genital prominence absent. Egg sacs elongate, multiseriate. Parasites of freshwater fishes.

Male. Unknown.

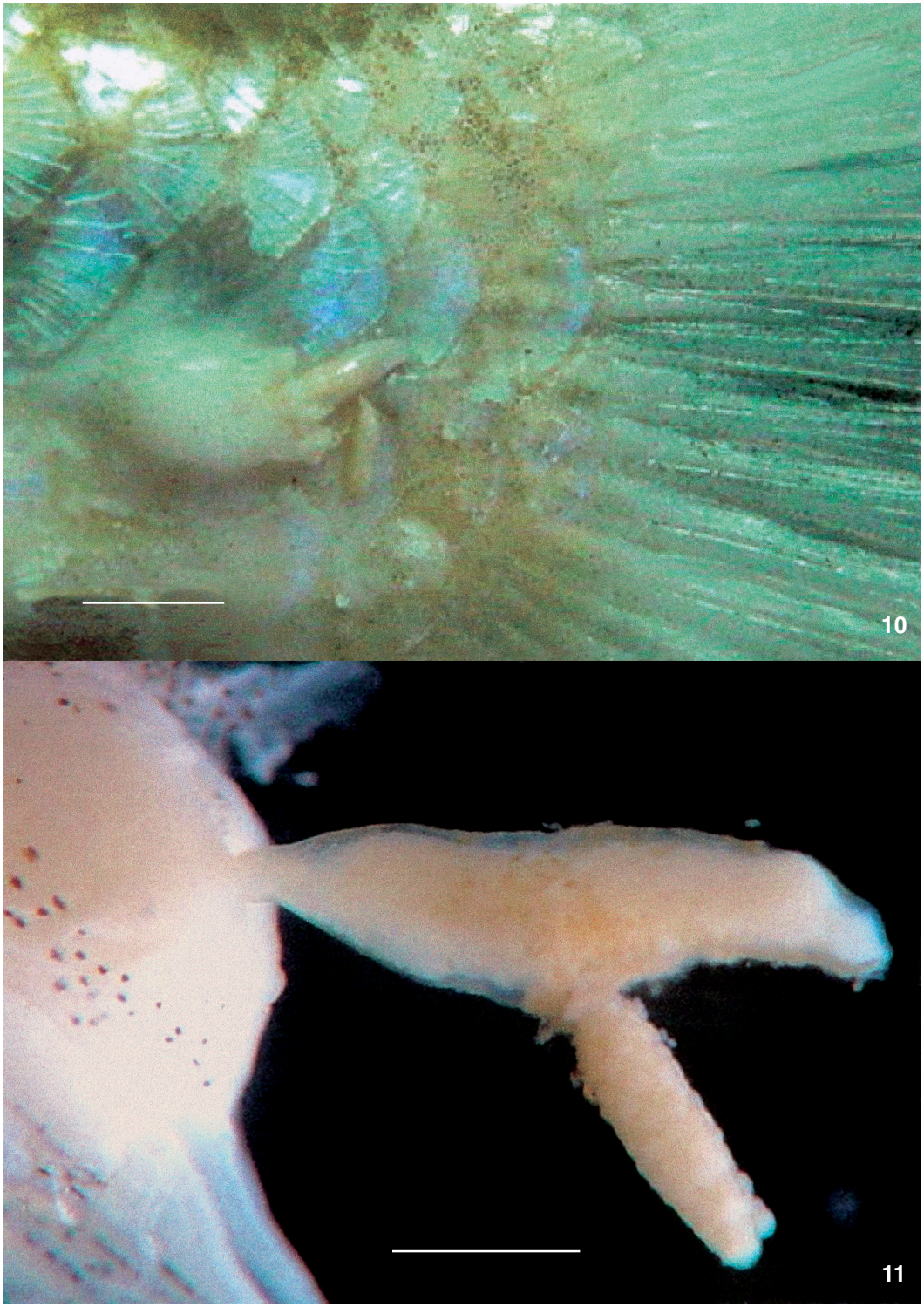
Premetamorphic female. Unknown.

Type and only species. *Minilernaea floricapitella* **sp. nov.**

Minilernaea floricapitella sp. nov.

Figs 1-11

Species diagnosis(based on 10 mature, postmetamorphic females). With the characters of the genus. Body 3.4-5.8 (4.7) mm in total length (Fig. 1). Head 647-862 (754) wide. Anterior head lobes petal-like (Figs 1-2). Hindbody 616-816 (714) in di-



Figures 10-11. *Minilernaea floricapitella* **sp. nov.**: (10) photomicrograph of a lateral view of a female. The head is embedded near the caudal fin of the host. The arrow indicates an egg sac. Note encapsulating reaction of host. Scale bar = 1000 mm. (11) lateral view of a female projecting from host defensive capsule. Scale bar = 500 mm.

ameter (Fig. 10). Neck slender, subcylindrical; thoracopods 1-4 with both rami tri-articulate (Fig. 7); 4 some distance anterior to hindbody; 5 reduced to simple papillae (Fig. 8). Egg sacs measure 1.39-1.88 (1.64) mm long and 246-462 (392) in diameter (Figs 1, 10). Caudal rami bi-articulate with few spines and setae (Fig. 9).

Hosts. *Astyanax* spp. and *Corydoras ehrhardti* Regan, 1912.

Sites: Skin, near fins.

Localities. Iguaçu River, Santa Catarina State, Brazil,and Piraquara River, Paraná State, Brazil.

Type material. Holotype female and 6 paratype females. Deposited in the Crustacean Collection of the Instituto Nacional de Pesquisas da Amazônia, Manaus, Amazonas, Brazil.

Etymology. The generic name was chosen to indicate the small size of this genus and the specific name is in reference to the flower-like appearance of the head.

DISCUSSION

The small size (3.4-5.8 mm) of *Minilernaea* gen. nov. serves to distinguish it from the other known genera of Lernaeidae. Thatcher & Williams (1998) gave length ranges for several genera and species, as follows: *Amazolernaea sannerae* (8.5-10.8 mm); *Bedsylernaea collaris* (13-16 mm) and *Perulernaea gamitanae* (18-22 mm). Thatcher (2000) described *Perulernaea pirapitingae* and reported its length to be 8.9-11.4 mm. Paggi (1972) reported *"Lernaea" argentinensis* with a length of about 22 mm and *Taurocherus salminisii* at 23 mm. Later, Paggi (1976) described *Taurocherus tarangophilus* which, based on his figures, ranges in size from 20-24 mm. Species of *Lernaea generally range from 10-20 mm in length.*

Another important character for the separation of these genera is the position of the thoracopods. The genera mentioned here all have one or two pairs of thoracopods on the hindbody except for *Amazolernaea*. The latter has a distribution of thoracopods similar to that of the new genus (that is: one pair on the head and three on the neck)however it lacks the anterior petal-like projections that characterize *Minilernaea* **gen. nov.**

The insertion of the head and the anterior part of the neck of this lernaeid provokes a strong host reaction. At first there are infiltrations of cells followed by the formation of fibrous encapsulating tissues (Figs 10-11).

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