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A New Species of *Cryptopontius* (Crustacea: Copepoda: Siphonostomatoida) from Easter Island

RODRIGO JOHNSSON,[1] CARLOS E. F. ROCHA,[1] AND CHRISTOPHER B. BOYKO[2]

ABSTRACT

A new species of artotrogid copepod (Siphonostomatoida), *Cryptopontius tanacredii,* n. sp., associated with the scleractinian coral *Pocillopora damicornis* (Linnaeus) from Easter Island, is described. The new species can be distinguished from its 20 congeners by the combination of the following six characters: (1) 9-segmented antennule, (2) terminal segment of leg 4 exopod armed with nine elements, (3) second segment of P1 endopod with two setae, (4) two setae on outer lobe of maxillule, (5) inner lobe of the maxillule tipped with two setae, and (6) free segment of P5 present and armed with three setae. This is the first record of the genus from the eastern Pacific and the first occurring in association with a scleractinian coral.

INTRODUCTION

The distribution of the genus *Cryptopontius* Giesbrecht, family Artotrogidae, was previously known to be nearly worldwide, with species present in the Mediterranean Sea, Atlantic and Indian Oceans, and the western Pacific. The discovery of a new species collected from Easter Island is the first occurrence of the genus in the eastern Pacific, and shows the genus to be truly circumglobal. The siphonostomatoid fauna of Easter Island was also previously unknown, and the description of this new species of *Cryptopontius* is the first record of the order for the island. The association of the new species with *Pocillopora damicornis* (Linnaeus, 1758), a scleractinian coral belonging to the Pocilloporidae, is also unique, as most of the other 20 species of *Cryptopontius* have been recorded in algal associations, but none with corals.

[1] Departamento de Zoologia, Universidade de São Paulo, São Paulo, Brasil. e-mail: johnsson@ib.usp.br
[2] Research Associate, Division of Invertebrate Zoology, American Museum of Natural History. e-mail: cboyko@amnh.org

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All measurements reported below are from the holotype and allotype. Type specimens are deposited in the American Museum of Natural History (AMNH) and the Museu Nacional/Universidade Federal do Rio de Janeiro (Museu Nacional do Rio de Janeiro) (MNRJ).

ARTOTROGIDAE BRADY, 1880

CRYPTOPONTIUS GIESBRECHT, 1899

Cryptopontius tanacredii, new species

Figures 1–4

MATERIAL EXAMINED: ex *Pocillopora damicornis*, offshore from Ahu Tepeu, Easter Island (Rapa Nui), 15.1 m, 29 August 1999, coll. H. Tonnemacher: 1 female, holotype (AMNH 18380), 1 male, allotype (AMNH 18381); ex *P. damicornis*, from Motu Iti islet, off the southwest coast of Easter Island (Rapa Nui), 47.88 m, 28 August 1999, coll. H. Tonnemacher: 1 female, paratype (MNRJ 15429).

DESCRIPTION OF HOLOTYPE FEMALE (figs. 1–3c): Body length (excluding caudal setae) 1167 μm, greatest body width 667 μm; thus body 1.75 times longer than wide. Body shape cyclopiform (fig. 1a), with sensilla covering prosome; cephalosome and pedigerous somites 2 to 4 not imbricated, with epimera moderately pointed. Ratio of length to width of prosome 1.3:1, ratio of length of prosome to urosome 2.6:1. Pedigerous somite 3 with posterior margin showing denticles (fig. 1b).

Urosome (fig. 1c) five-segmented. Genital double somite 127 × 221 μm, ratio of length to width 0.6:1, rounded medially, armed with one plumose and one smooth seta near genital aperture. Three abdominal somites, all wider than long (66 × 139 μm, 48 × 125μm, 64 × 105 μm), ratio of length to width 0.5, 0.4, and 0.6:1, respectively. All somites showing sensilla. Caudal rami elongated, 57 × 43 μm, 1.3 times longer than wide, with row of hairs on inner margin and armed with six setae. Seta I absent. Length of setae II–VII, 52, 127, 350, 525, 189, and 70 μm, respectively. Setae III–VI plumose, setae II and VII smooth.

Antennule (fig. 1d) 357 μm long (not including setae), and nine-segmented. Length of segments 1–9 measured along their posterior margin: 64 μm (60 μm along anterior margin), 26, 69, 31, 16, 31, 27, 36, and 57 μm, respectively. Segmental homologies and setation as follows, romans numerals indicate the original segments followed by the number of setae in Arabic numbers, according to Huys and Boxshall (1991): I–1; II–2; III–VIII–11; IX–XIII–8; XIV–2; XV–XVI–2; XVII–XVIII–2; XIX–XX–2; XXI–XXVIII–9+ae. All setae smooth. Aesthetasc (ae) on segment XXI 100 μm long.

Antenna (fig. 1e) 172 μm long (including distal seta), with basis 55 μm long. Endopod two-segmented; first segment 24 μm long, unarmed; second segment 42 μm long with one smooth proximal seta, one smooth subdistal seta, and two plumose distal setae (51 and 62 μm long), none of them modified into a claw.

Oral cone (fig. 1a) produced into long, siphonlike distal portion, 447 μm long, 0.4 times the body length. Mandible (fig. 1f) comprising a distally toothed stylet, palp absent. Maxillule (fig. 2a) bilobed, inner lobe 127 μm, almost twice as long as outer lobe, armed with long plumose seta and short hirsute seta. Outer lobe 67 μm long, armed with two pinnate setae.

Maxilla (fig. 2b) with syncoxa 286 μm long and curved slender claw 295 μm long, with pinnate extremity and showing small spine and tooth subdistally. Maxilliped (fig. 2c) five-segmented, comprising syncoxa 80 μm long, armed with small seta on inner margin, basis 250 μm long with small seta subproximally on outer margin, and tooth subdistally on inner margin. Endopod three-segmented, 33, 61, and 48 μm long, respectively. First endopodal segment with two setae distally; second segment with single seta; and third segment bearing curved, 106 μm long claw and seta.

Swimming legs 1–3 (P1–P3; figs. 2d, e, 3a) biramous, all with three-segmented rami, P4 (fig. 3b) with three-segmented exopod and without endopod. Leg 2 with distal element plumose proximally and spinulated distally. Armature formula of legs 1–4 shown in table 1.

Fifth leg (fig. 3c) with long smooth seta near insertion of small, free segment armed with three smooth setae, two distal and third on outer margin.

DESCRIPTION OF ALLOTYPE MALE (figs. 3d, 4): Body similar to female, but much smaller (fig. 3d). Length (excluding caudal setae) 935 μm long, greatest body width 555 μm, 1.7

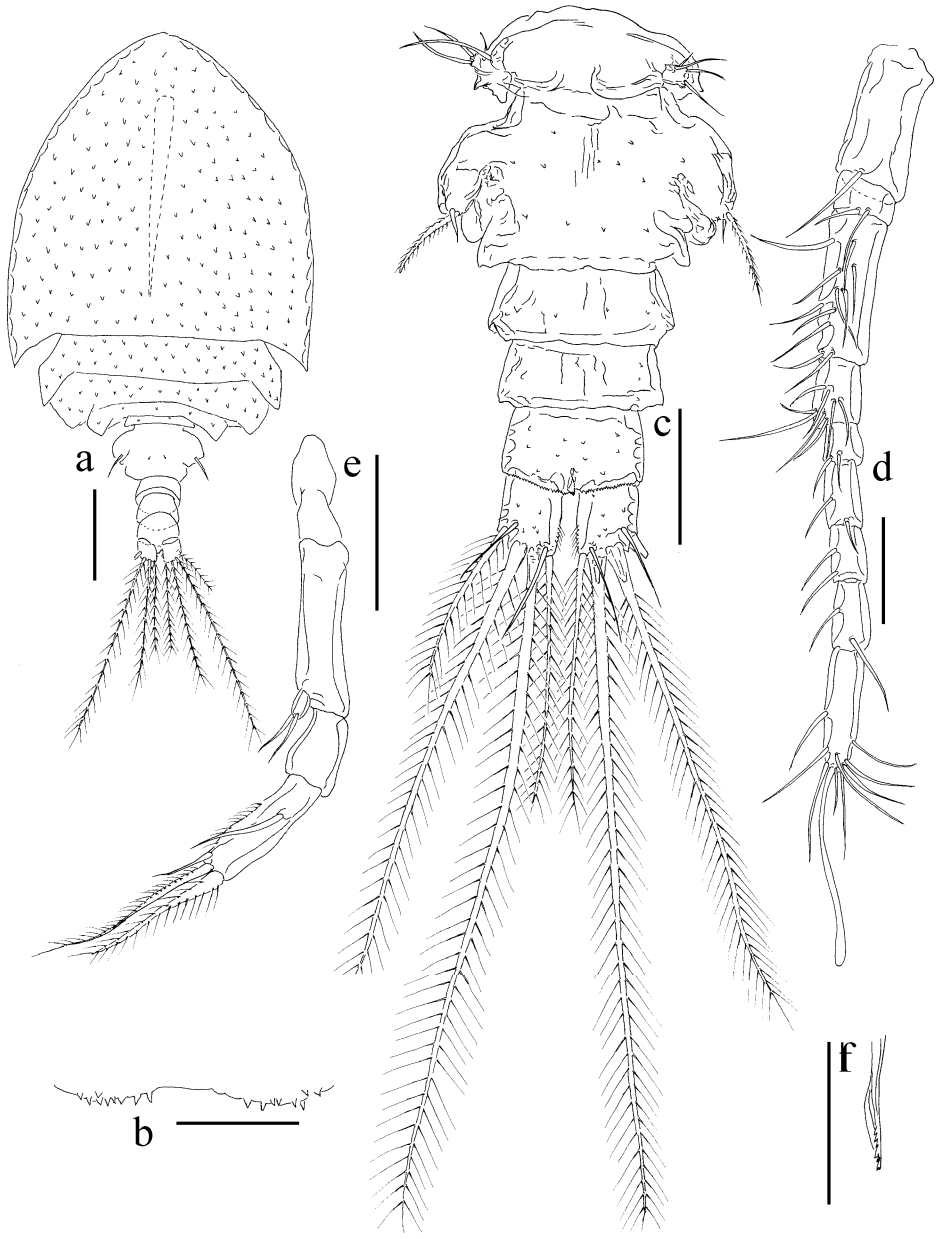

Fig. 1. *Cryptopontius tanacredii*, new species, holotype female (AMNH 18380): **(a)** habitus, dorsal, **(b)** distal margin of pedigerous somite 3, **(c)** urosome, ventral, **(d)** antennule, **(e)** antenna, **(f)** distal part of mandible. Scale bars: 200 μm (a); 100 μm (b, c); 50 μm (d–f).

times longer than wide. Prosome covered with sensilla. Ratio of length to width of prosome 1.7:1. Ratio of length of prosome to urosome 3.2:1. Cephalosome and pedigerous somites 2–4 not imbricated, with epimera slightly pointed. Urosome (fig. 4a) five-segmented. Genital somite 61 × 167 μm, ratio of length to width 0.4:1, rounded anterolaterally, with three plumose setae posteriorly. Three abdominal somites, all wider than long, 43 × 130, 35 × 120, 59 × 117 μm, ratio of length to width 0.3, 0.3, and 0.5:1, respectively. Caudal

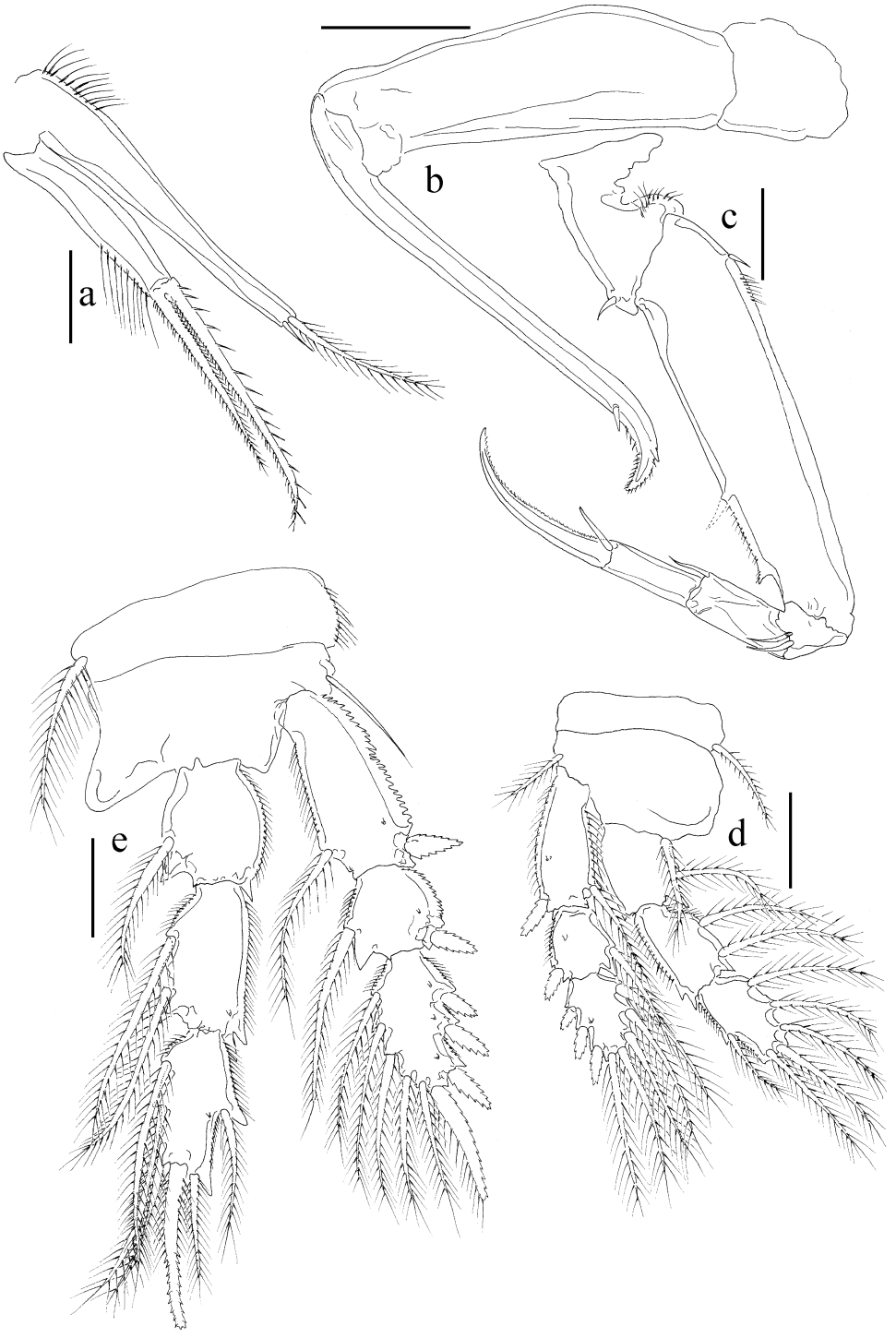

Fig. 2. *Cryptopontius tanacredii*, new species, holotype female (AMNH 18380): **(a)** maxillule, **(b)** maxilla, **(c)** maxilliped, **(d)** leg 1, **(e)** leg 2. Scale bar: 50 μm.

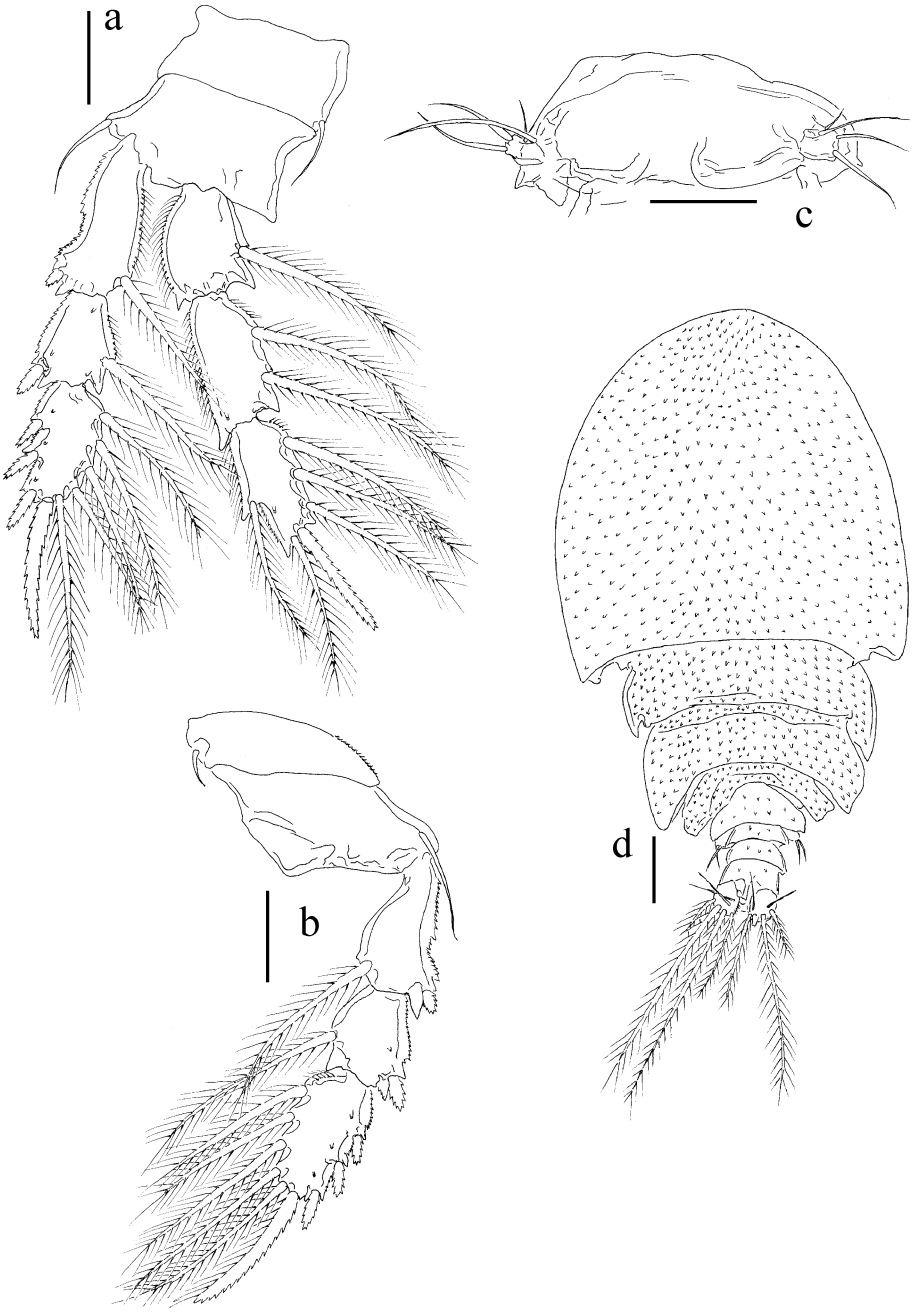

Fig. 3. *Cryptopontius tanacredii*, new species, holotype female (a–c) (AMNH 18380), allotype male (d) (AMNH 18381): **(a)** leg 3, **(b)** leg 4, **(c)** fifth pedigerous somite showing leg 5, ventral, **(d)** habitus, dorsal. Scale bars: 50 μm (a–c); 100 μm (d).

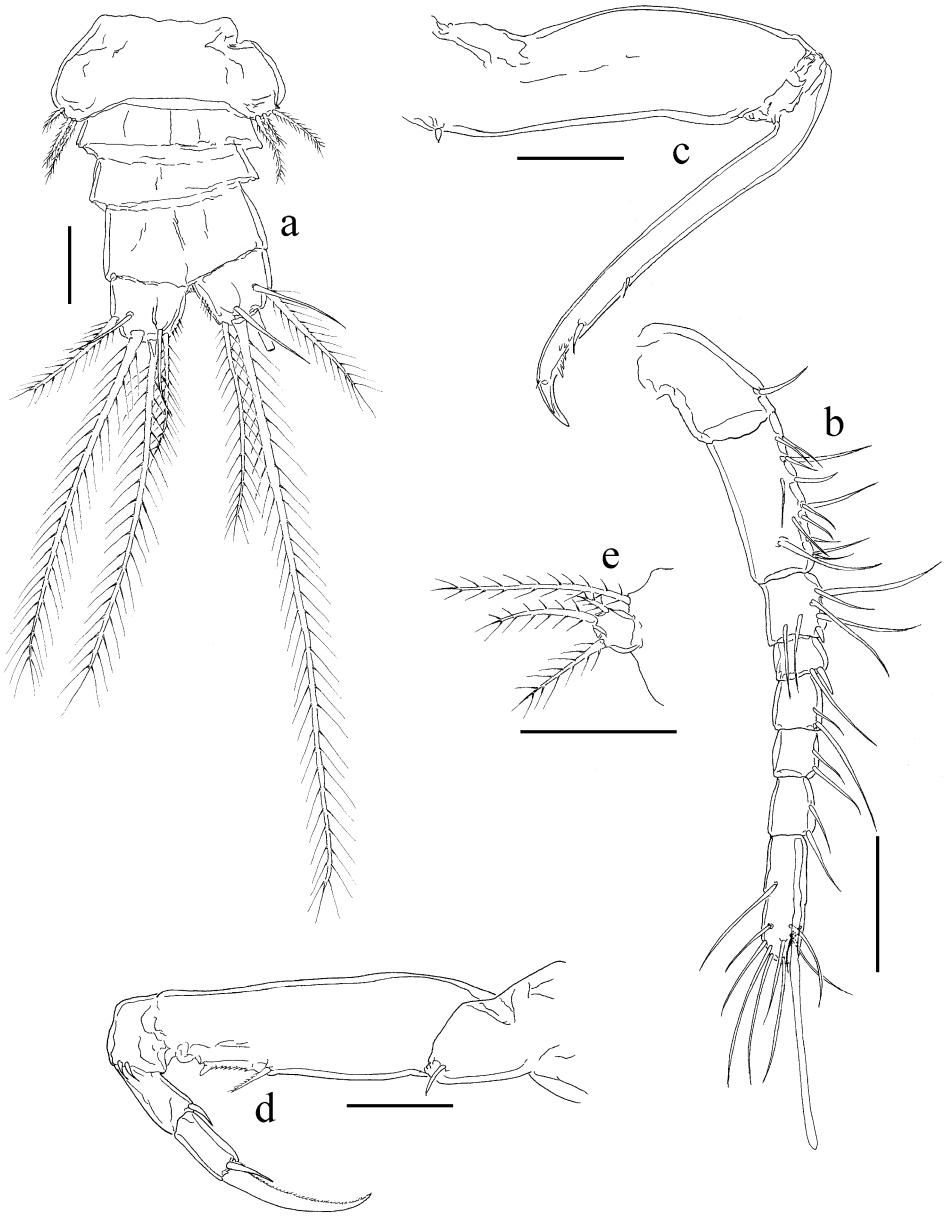

Fig. 4. *Cryptopontius tanacredii*, new species, allotype male (AMNH 18381): **(a)** genital double-somite and abdomen, ventral, **(b)** antennule, **(c)** maxilla, **(d)** maxilliped, **(e)** leg 5. Scale bar: 50 μm.

rami 39 × 54 μm, wider than long, with row of hairs on inner margin and armed with six setae. Seta I absent. Length of setae II–VII, 50, 80, 252, 417, 65, and 47 μm, respectively. Setae II and VII smooth, remaining setae plumose.

Antennule (fig. 4b) 256 μm long (not including setae), and eight-segmented. Length of segments 1–8 measured along their posterior margin 62 μm (61 μm along anterior margin), 54, 23, 12, 21, 17, 21, and 46 μm, respectively. Segmental homologies and setation as follows: I-1; II-VIII-14; IX-XIII-6+spine; XIV-1+spine; XV-XVI-2; XVII-XVIII-2; XIX-XX-2; XXI-XXVIII-10+ae. All setae smooth, aesthetasc on segment XXI

TABLE 1
***Cryptopontius tanacredii*, new species, Armature Formula of Legs 1–4**

	Coxa	Basis	Exopod	Endopod
Leg 1	0-1	1-1	I-1; I-1; III,2,3	0-1; 0-2; 1,2,3
Leg 2	0-1	1-0	I-1; I-1; III,I,5	0-1; 0-2; 1,1 + I,3
Leg 3	0-1	1-0	I-1; I-1; III,I,5	0-1; 0-2; 1,1 + I,3
Leg 4	0-1	1-0	I-1; I-1; III,I,5	—

78 μm long. Maxilla (fig. 4c) with long syncoxa, 180 μm long, with small tooth proximally on inner margin, curved claw 221 μm long, toothed distally and showing two small setae subdistally.

Maxilliped (fig. 4d) five-segmented, with syncoxa 50 μm long, armed with smooth seta. Basis 160 μm long, with small seta medially and subdistal tooth on inner margin. Endopod three-segmented, 36, 43, and 33 μm long, respectively. First segment armed with two setae distally, second segment with one seta and third segment with one seta and claw curved distally, 71 μm long.

Leg 5 (fig. 4e) with free segment armed with three plumose setae. All other appendages as in the female.

ETYMOLOGY: The specific name "*tanacredii*" honors Dr. John T. Tanacredi of the U.S. National Park Service, Gateway National Recreation Area, whose efforts made the Invertebrate Survey of Easter Island possible.

DISCUSSION: The 21 species of *Cryptopontius* can be divided into three groups according to the number of segments on the antennules (8, 9, or 10). *Cryptopontius tanacredii*, n. sp., belongs to the group having nine-segmented antennules, which also includes *C. brevicaudatus* (Brady, 1899); *C. brevifurcatus* (Giesbrecht, 1895); *C. graciloides* Ummerkutty, 1962; *C. gracilis* Wilson, 1932; *C. longipes* Nicholls, 1944; a new species from Madeira, Portugal (fide Johnsson, in press); *C. orientalis* Ummerkutty, 1962; *C. paracapitalis* Eiselt, 1961 (new name for *C. latus* Nicholls, 1944, non *C. latus* (Brady, 1910); erroneously credited to Nicholls by Eiselt, 1961); *C. proximus* Nicholls, 1944, and *C. tenuis* (Giesbrecht, 1895).

Among these 11 species, *C. longipes* is the only one with eight elements on the third exopodal segment of P4 (Nicholls, 1944), while the other 10 species, including *C. tanacredii*, n. sp., all have nine elements. *Cryptopontius tanacredii*, n. sp., has its second endopodal segment of P1 with two setae, as is also true of *C. brevifurcatus*, *C. paracapitalis*, *C. graciloides*, the new species from Madeira, and *C. brevicaudatus*. The remaining four species (*C. proximus*, *C. gracilis*, *C. tenuis*, and *C. orientalis*), have only one seta on the second endopodal segment of P1 (Giesbrecht, 1899; Wilson, 1932; Nicholls, 1944; Ummerkutty, 1962).

Of the six species cited above as having the second endopodal segment of P1 with two setae, *Cryptopontius brevifurcatus* is the only one with three setae on the outer maxillule lobe (Giesbrecht, 1899); all other species have two setae on the outer lobe. *Cryptopontius paracapitalis* has one seta on the inner maxillule lobe (Nicholls, 1944); *C. brevicaudatus* has three setae (Eiselt, 1961); and *C. tanacredii*, n. sp., *C. graciloides*, and the new species from Madeira have two setae each (Ummerkutty, 1962; Johnsson, in press).

Cryptopontius graciloides has the free segment of leg 5 reduced to a group of setules, the maxilliped with two endopodal segments, the antennal exopod with one seta, and the second endopodal segment with two setae. *Cryptopontius tanacredii*, n. sp., differs in having the free segment of P5 present with three setae, a three-segmented endopod of the maxilliped, an antennal exopod with two setae and the second endopodal segment bearing three setae distally. The new *Cryptopontius* species from Madeira has only two setae distally on the second endopodal segment of the antenna, one of them modified into a claw; this is not present in *C. tanacredii*. Additionally, the antennule of the new species from Madeira has the proximal pattern of I, II-VII, VIII, while in *C. tanacredii* it is I, II, III–VIII.

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