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***Lernanthropus antofagastensis* sp. nov. (Copepoda: Lernanthropidae)
parasitic on *Anisotremus scapularis* in Chilean waters, and new records of
Lernanthropus trachuri (Brian, 1903)**

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Lernanthropus antofagastensis sp. nov., parasitic on *Anisotremus scapularis*, and inshore fish of Antofagasta, Chile, is described and illustrated. It resembles five other species of *Lernanthropus* in its dorsal plate and third leg, but can be distinguished from them by a combination of characters. *L. trachuri* Brian, 1903, is recorded, its male described and illustrated from specimens collected from *Seriolella violacea* and *Trachurus murphy*, taken in the same locality.

Introduction

The genus *Lernanthropus* de Blainville, 1822, the type genus of Lernanthropidae Kabata, 1979, comprizes more than 100 species. Kabata (1979) stated that the number of *Lernanthropus* species decreases with higher latitudes and lower temperatures. His statement was based mainly on data from the Atlantic and Indian Oceans. The information from the tropical Pacific, specially its eastern part, is scanty. Wilson (1921) recorded *Lernanthropus* sp. on *Scorpius chilensis* from Juan Fernández Island, tentatively suggesting that it could be *L. trachuri* Brian, 1903. Recently, Oliva and Durán (1982) described *L. pacificus*, parasitic on *Sciaena gilberti* in Peruvian waters.

This paper is a preliminary report on the genus *Lernanthropus* parasitic on fishes of Antofagasta, Chile; a new species is recorded. New host and locality records are reported for *L. trachuri*, whose male is described and illustrated.

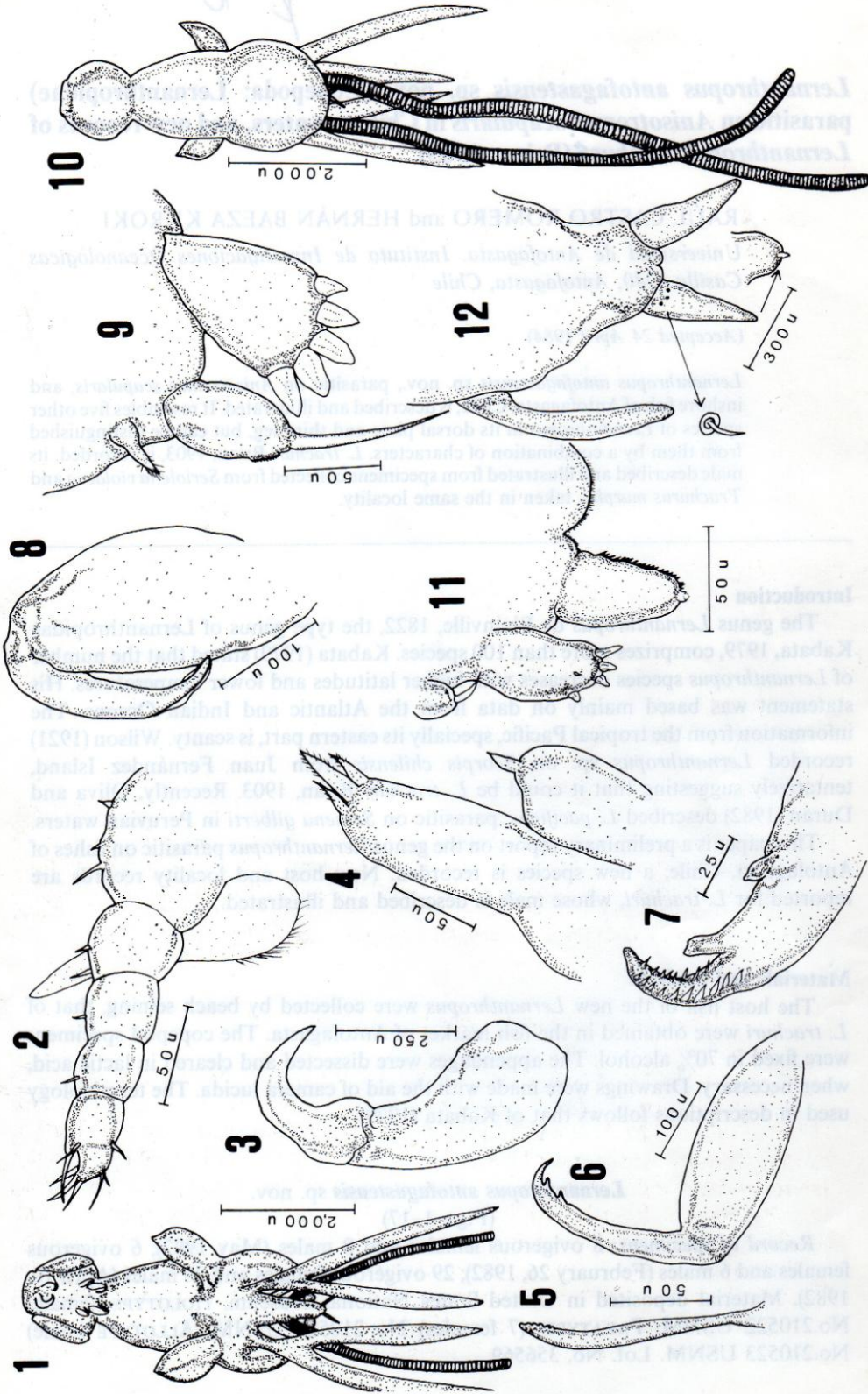
Materials and methods

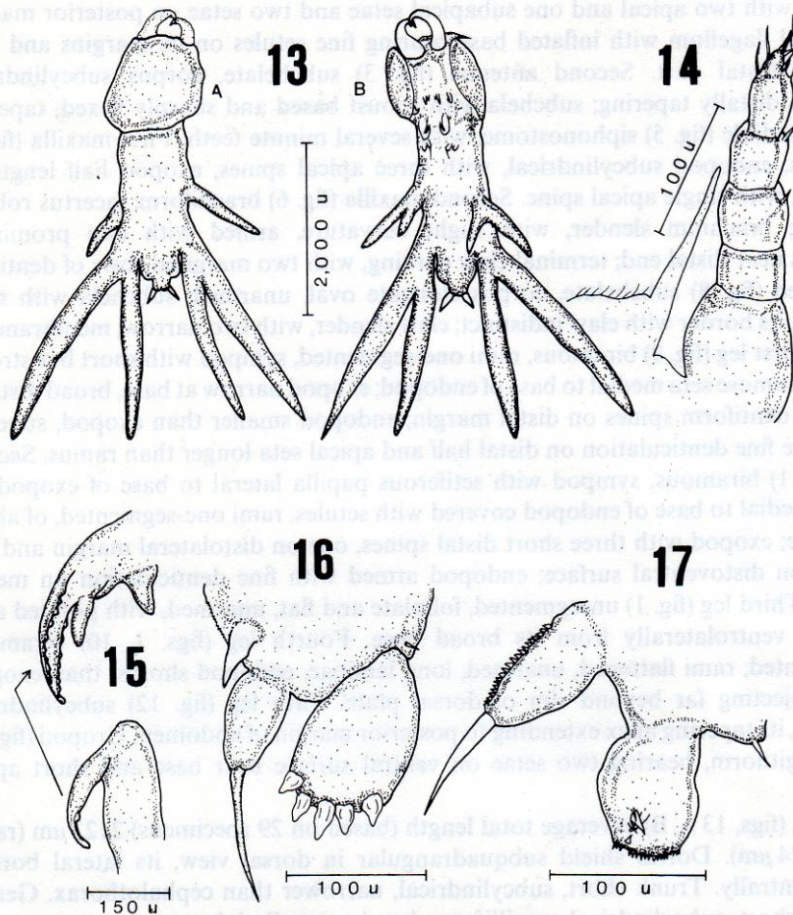
The host fish of the new *Lernanthropus* were collected by beach seining, that of *L. trachuri* were obtained in the fish market of Antofagasta. The copepod specimens were fixed in 70% alcohol. The appendages were dissected and cleared in lactic acid, when necessary. Drawings were made with the aid of camera lucida. The terminology used in descriptions follows that of Kabata (1979).

***Lernanthropus antofagastensis* sp. nov.**

(Figs. 1-17)

Record of specimens: 8 ovigerous females and 8 males (May 1982); 6 ovigerous females and 6 males (February 26, 1982); 29 ovigerous females and 30 males (April 10, 1982). Material deposited in United States National Museum. HOLOTYPE (female) No.210522 USNM; PARATYPES (7 females) No 210524 USNM; ALLOTYPE (male) No.210523 USNM. Lot. No. 356569.





FIGS. 1-17. *Lernanthropus antofagastensis* sp. nov. 1, female, ventral; 2, first antenna; 3, second antenna; 4, first maxilla; 5, mandible; 6, second maxilla; 7, second maxilla, detail of distal end; 8, maxilliped; 9, first leg; 10, female, dorsal; 11, second leg; 12, genito-abdomen, fifth leg and uropods; 13 A, male, dorsal; 13 B, same, ventral; 14, first antenna; 15, second maxilla and detail of the distal end; 16, first leg; 17, second leg.

Host.—*Anisotremus scapularis* (Tschudi)

Habitat.—Gills.

Locality.—Isla Santa María, Antofagasta, Chile (23°27'S; 70°25'W).

Description, Female (figs 1-10). Average total length (based on 25 specimens) 4490 μ m (range 3626-5151 μ m). Cephalothorax subcircular, with posterior margin indistinct, delimited from trunk by neck-like constriction; trunk with slightly diverging antero-lateral margins; dorsal plate subcircular, its posterior margin not extending beyond uropods. Fourth and fifth pedigerous segments forming subcylindrical, tapering tagma, merging with subconical genito-abdomen without marked boundary.

First antenna (fig. 2) six-segmented, boundary between fifth and sixth segment indistinct; basal segment longest, with three setae on anterior border; second segment bearing two, third and fourth one seta; fifth segment with one seta on inner margin near distal border and two (one aesthete) in similar position on outer margin; conical sixth

segment with two apical and one subapical setae and two setae on posterior margin. Parabasal flagellum with inflated base bearing fine setules on its margins and long flattened distal part. Second antenna (fig. 3) subchelate, corpus subcylindrical, unarmed, distally tapering; subchela with robust based and sharply flexed, tapering claw. Mandible (fig. 5) siphonostome, with several minute teeth. First maxilla (fig. 4) biramous; endopod subcylindrical, with three apical spines; exopod half length of endopod, with single apical spine. Second maxilla (fig. 6) brachiform; lacertus robust, unarmed; brachium slender, with slight curvature, armed with two prominent processes near distal end; terminal claw curving, with two marginal rows of denticles. Maxilliped (fig. 8) subchelate, corpus elongate oval, unarmed; subchela with shaft unarmed, its border with claw indistinct; claw slender, with two narrow, membraneous flanges. First leg (fig. 9) biramous, rami one-segmented, sympod with short but strong, distally plumose seta medial to base of endopod; exopod narrow at base, broad distally, with five dentiform spines on distal margin; endopod smaller than exopod, suboval, with some fine denticulation on distal half and apical seta longer than ramus. Second leg (fig. 11) biramous, sympod with setiferous papilla lateral to base of exopod, its border medial to base of endopod covered with setules, rami one-segmented, of about equal size; exopod with three short distal spines, one on distolateral margin and one spinule on distoventral surface; endopod armed with fine denticulation on medial margin. Third leg (fig. 1) unsegmented, foliolate and flat, unarmed, with pointed apex pointing ventrolaterally from its broad base. Fourth leg (figs. 1, 10) biramous, unsegmented; rami flattened, unarmed, long laminae, endopod shorter than exopod, both projecting far beyond rim of dorsal plate. Fifth leg (fig. 12) subcylindrical, unarmed, its tapering apex extending to posterior margin of abdomen. Uropod (fig. 12) short, digitiform, bearing two setae on ventral surface near base and short apical spinules.

Male, (figs. 13 A, B): Average total length (based on 29 specimens) 2123 μm (range 1515–2424 μm). Dorsal shield subquadrangular in dorsal view, its lateral borders folded ventrally. Trunk short, subcylindrical, narrower than cephalothorax. Genital segment short, subcylindrical, papilliform, bearing small abdomen.

First antenna (fig. 14); second antenna (fig. 13 B); first and second maxilla (fig. 15); maxilliped and first leg (fig. 16) similar to those of female. Second leg (fig. 17) with somewhat peduncular exopod, latter with group of spines on distoventral surface and row of denticles in distal margin; endopod with denticulated medial margin and long, strong terminal seta. Third leg (figs. 13 A, B) biramous, unsegmented, projecting obliquely posteroventrally, endopod shorter than exopod. Fourth leg (figs. 13 A, B) similar to that of female, but with rami of more equal length.

Discussion

The third leg with bases separate from each other, with laminiform, slightly upturned and diverging rami, and dorsal plate subcircular, with margin entire, allow this species to be distinguished from the females of the majority of its congeners. It shows close similarity to *L. rathbuni* Wilson, 1922, *L. pami* Tripathi, 1959; and *L. sarbae* Kensley and Grindley, 1973. There is also some resemblance between it and *L. otolithi* Pillai, 1963 and *L. pacificus* Oliva and Durán, 1982. A combination of characters differentiates the authors' specimens from these species.

The new species differs from *L. rathbuni* in lacking a notch at the mid-posterior point of the dorsal plate, in having one-segmented rather than two-segmented abdomen and in relative length of genital segment. It can be distinguished from *L. pami*

by the structure of the third and fifth legs, the shape of the genito-abdomen and the length of the uropods. *Lernanthropus sarbae* may be separated from the present species on the shape of the dorsal plate, which covers the abdomen dorsally in present species but exposes it in *L. sarbae*; *L. otolithi* and *L. pacificus* can be distinguished from the authors' species by their fourth legs and the proportions of the abdomen and the dorsal plate.

Unable to place their specimens in any of the existing species of *Lernanthropus*, the authors propose to create for it a new taxon, *Lernanthropus antofagastensis*.

Etymology.—The specific name *antofagastensis* refers to the locality where the copepods were found.

***Lernanthropus trachuri* Brian, 1903.**

(Figs. 18–31)

This species parasitized the gills of *Trachurus murphy* Nichols and *Seriolella violacea* (Guichenot) off Antofagasta, Chile. This record is the first in the Pacific, and provides two new host records.

L. trachuri was originally described from Porto Ferrario, in the Mediterranean, where it was parasitic on the gills of *Trachurus trachurus* Castelnau and on those of *Lichia vadiago* Lowe from Nice (Brian 1903). Delamare Deboutteville and Nunes-Ruivo (1954) found it on *T. trachurus* in Algeria, whereas Capart (1959) discovered it on *Paracubiceps ledanoisi* Belloc on the Atlantic coast of Africa.

Female: Since it has been described earlier in sufficient detail, the female of the species will be dealt with here only to bring out some differences between earlier descriptions and present specimens.

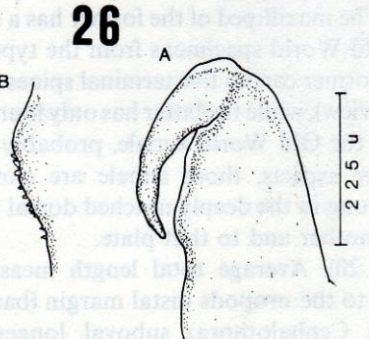
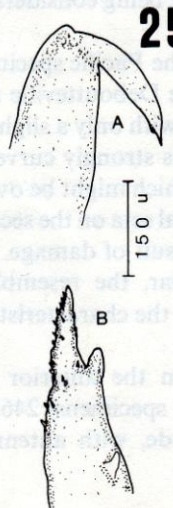
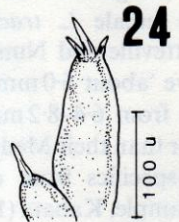
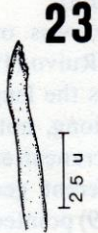
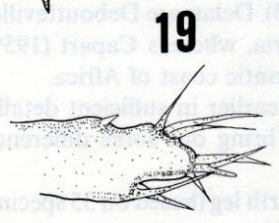
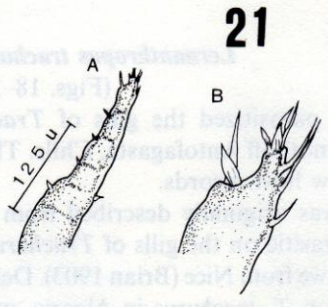
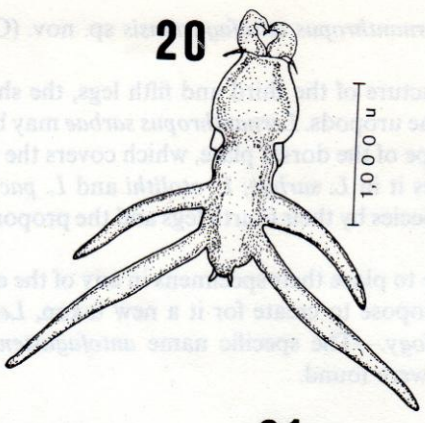
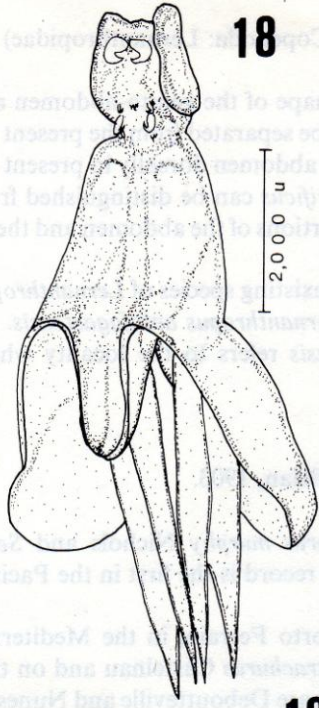
Average total length not including fourth leg (based on 35 specimens from *Seriolella violacea*) 7333 μm (range 6363–8240 μm).

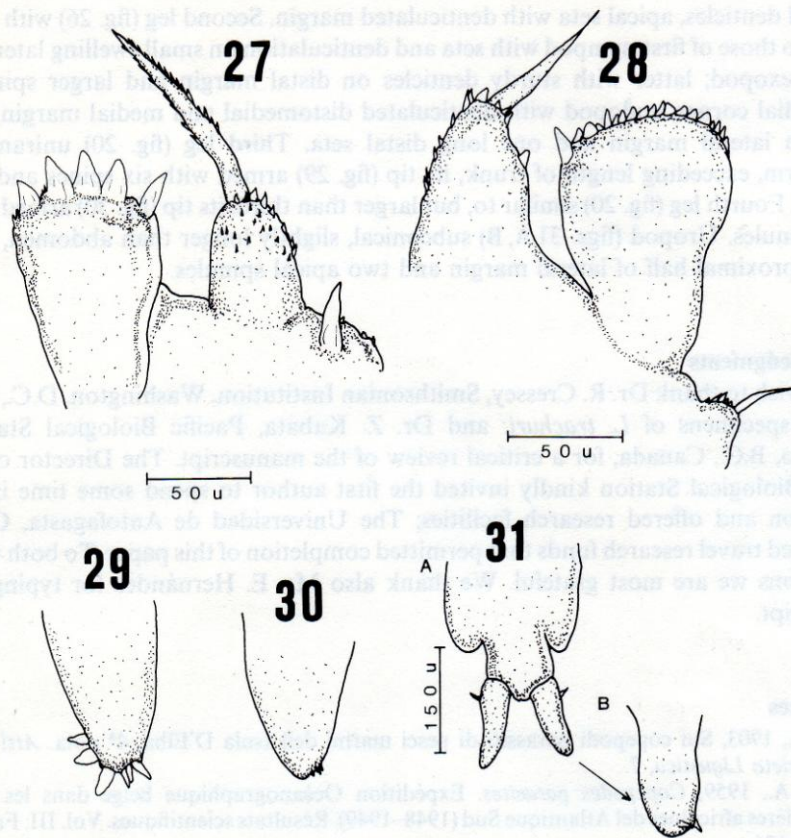
Brian's (1903) female *L. trachuri* was only 3.0 mm long, those described by Delamare Deboutteville and Nunes-Ruivo (1954) 4.0–4.5 mm (fourth legs included); Capart (1959) gave 'about 6.0 mm' as the length of the female. The specimens from Antofagasta were from 6.4–8.2 mm long, not including the fourth legs. They were significantly longer than their Mediterranean and Atlantic relatives. Such differences in size between conspecifics from different geographical regions are, however, not unknown. (For example, Kabata (1969) pointed out size differences between Palearctic and Nearctic *Salmincola edwardsii* (Olsson, 1869), the latter being considerably smaller than the former).

The terminal segment of the first antenna (fig. 19) on the Pacific specimens carries seven setae, only five having been described by Delamare Deboutteville and Nunes-Ruivo (1954). The maxilliped of the former has a subchela with only a slight curvature, while in the Old World specimens from the type host it is strongly curved. The first exopod of the former carries five terminal spines (one of which might be overlooked in some angles of view), while the latter has only four. The distal seta on the second exopod is absent from the Old World female, probably as the result of damage.

In all other aspects, those female are closely similar, the resemblance being particularly strong in the deeply notched dorsal plate and the characteristic third legs fused to one another and to that plate.

Male: (fig. 20). Average total length measured from the anterior end of the cephalothorax to the uropods distal margin (based on 12 specimens) 2463 μm (range 1999–2666 μm). Cephalothorax suboval, longer than wide, with antennary region





FIGS. 18–31. *Lernanthropus trachuri* Brian, 1903. 18, female, ventral; 19, distal end of first antenna; 20, male, dorsal view; 21 A, first antenna, entire; 21 B, same, detail of distal segment; 22, second antenna; 23, mandible; 24, first maxilla; 25 A, second maxilla; 25 B, same, detail of distal end; 26 A, maxilliped, entire lateral view; 26 B, same, detail of myxal area; 27, first leg; 28, second leg; 29, third leg, detail of distal end; 30, fourth leg, detail of the distal end; 31 A, abdomen and uropods; 31 B, same, detail of distal end.

clearly set off, separated from trunk by shallow constriction. Trunk narrower than cephalothorax, subcylindrical. Genital complex conical, abdomen one-segmented, small, papilliform.

First antenna (figs. 21 A, B) similar to that of female, seven-segmented (border between sixth and seventh segment obsolete), distal segment with four apical and three subapical setae. Second antenna (fig. 22) also similar to that of female, but distinguished by two spiniform processes on inner margin of subchela. Mandible (fig. 23) with seven teeth, sometimes differing in shape in two mandibles of same specimens. First maxilla (fig. 24) similar to that of female. Second maxilla (figs. 25 A, B) brachiform, with armature usual for genus, but claw distinguished by several rows of denticles. Maxilliped (figs. 26 A, B) with myxal area of corpus slightly inflated and armed with fine denticles; subchela curved, division between shaft and claw obsolete.

First leg (fig. 27) biramous, rami one-segmented, setiform process on sympod medial to base of endopod; exopod wider at apex, with five apical spines and some minute denticles in distolateral corner; endopod subconical, its distal half armed with

scattered denticles, apical seta with denticulated margin. Second leg (fig. 26) with rami similar to those of first, sympod with seta and denticulation on small swelling lateral to base of exopod; latter with sturdy denticles on distal margin and larger spine in distomedial corner; endopod with denticulated distomedial and medial margin, one tooth on lateral margin and one long distal seta. Third leg (fig. 20) uniramous, laminiform, exceeding length of trunk, its tip (fig. 29) armed with six spines and two spinules. Fourth leg (fig. 20) similar to, but larger than third, its tip (fig. 30) armed with three spinules. Uropod (figs. 31 A, B) subconical, slightly longer than abdomen, with seta on proximal half of lateral margin and two apical spinules.

Acknowledgments

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