

New species of parasitic copepods of the Genus *Acusicola* (Poecilostomatoidea: Ergasilidae) from gill filaments of coastal and freshwater Brazilian fishes, and proposition of *Acusicola rogeri* n. sp. for *A. tenax* sensu Cressey & Collette (1970)

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Abstract

Four new species of *Acusicola* are described based on adult females found on gill filaments of several species of coastal and freshwater fishes caught in Brazilian basins. The distribution area of the genus in Brazil is significantly enlarged, since until now the previous Brazilian species had been known only from Amazonian fishes. The specimens identified as *Acusicola tenax* by Cressey and Collette (1970) are considered representatives of a new species, *A. rogeri*. A key for identification of the species of *Acusicola* is provided.

Introduction

The genus *Acusicola* was erected by Cressey (in Cressey & Collette, 1970) to accommodate *Ergasilus tenax* Roberts, 1965, the type species, and a new species *Acusicola cunula*. Kabata (1979) rejected this genus and transferred these two species to *Ergasilus* Nordmann, 1832. Thatcher & Boeger (1983) described *A. lycengraulidis* and *A. pelloneidis* from gill filaments of Amazonian fishes. Later, Thatcher (1984) redefined the genus, added the species *A. tucunarense*, and proposed the subfamily Acusicolinae for the ergasilid genus having latching antennae. Thatcher and Paredes (1985) included their new genus *Amplexibranchius* in this subfamily.

Copepods of Acusicolinae and some species of *Ergasilus* have peculiar antennae which encircle the gill filaments of fishes. However only Acusicolinae have the claw of each antenna locking in a groove located on the third segment of the opposite antenna. Thus, the copepod embraces the filament and uses the claws to latch the antennae together, producing a tourniquet effect. The antennae of *Acusicola* bear a

hyaline process of variable extensions in the different species.

In the present paper, descriptions of 4 new Brazilian species of *Acusicola* are provided. Another new species is proposed to include the specimens identified by Cressey & Collette (1970) as *A. tenax* (Roberts). The distribution area of the genus is widened by new records in the Amazonian region as well as in estuaries along the eastern coast of Brazil.

Material and methods

Specimens of *Acusicola* were collected from fishes deposited in the Museu de Zoologia, Universidade de São Paulo. Gill filaments with copepods were removed and preserved in 4% formalin.

Whole specimens were examined in temporary lactic acid mounts in different positions. Fragments of cover glass were used to support the cover glass of the preparation. After examination the specimens were preserved in 70% ethanol.

Dissections were made in glycerine and the dissected parts placed on slides and sealed with Glyceel.

Drawings were prepared using a camera lucida on Leitz SM-Lux microscope. Specimens were deposited in the collections of the Museu de Zoologia and Departamento de Zoologia, Universidade de São Paulo.

Descriptive part

Acusicola brasiliensis n. sp. (Figures 1–11)

Type material: Female holotype MZUSP 11492; female paratypes MZUSP 11493.

Type locality: Camboriú Beach, Vitória, State of Espírito Santo.

Material examined. Brazil: *State of Espírito Santo:* Vitória, Camboriú Beach, 18 females in *Xenomelaniris brasiliensis*, (Qouy & Gaimard, 1824) team of the Departamento de Biologia of the UFES col., 1978; 4 females in *Lili piquitinga* (Schreiner & Ribeiro) (Clupeidae), A. V. Alcantara col., 1978. *State of Pará:* Alegre, 4 females in *L. piquitinga*, P. E. Vanzolini col., 1975. *State of Bahia:* Itaparica Island, 2 females in *L. piquitinga*, N. Menezes col., 1974. *State of Sergipe:* São Cristovão Beach, 2 females in *L. piquitinga*, A. V. Alcantara col., 1971. *State of Paraná:* Valadares, Itiberê River, 7 females in *Opisthonema oglinum* (LeSueur) (Clupeidae) col. unknown, 1973.

Female. Total length without caudal setae 571 μm ; prosome length 425 μm ; urosome length 146 μm ; genital double somite length 67 μm ; caudal ramus length 20 μm .

Cephalosome (Figures 1–2) about as long as wide. Antennal area expanded laterally. First pediger free and almost as large as cephalosome. Remaining prosomites diminishing gradually in length and width toward urosome. First urosomite (Figure 2) very reduced. Genital double somite (Figure 3) about 1.3 times wider than long, with ventral posterior border straight and serrate. Posterior border of first two abdominal somites with a row of fine spinules. Third abdominal somite with a row of spinules as shown in Figure 3. Last two presenting median longitudinal notch. Caudal rami (Figure 3) 1.2 times longer than wide, with 4 setae each. Innermost seta longer than others. Middle setae similar in length each other. Outermost seta short and dorsally placed.

Antennule (Figure 4) 5-segmented. Armed as follows: 11, 5, 4, 2, 6. First segment 1.4 times longer than

broad, and similar to second segment in length. Last 3 segments narrowing toward apex of antennule. Fourth and fifth segments bearing a aesthete.

Antenna (Figure 5) composed of 3 segments and terminal claw. Coxobasis small and unarmed. First endopodal segment about 5.5 times longer than wide, with hyaline process along inner side. Second endopodal segment 1/3 of length of first endopodal segment, with hyaline process on outer margin of proximal third. Claw curved and with fossa on inner margin near tip.

Mandible, maxillule and maxilla as in Figure 6.

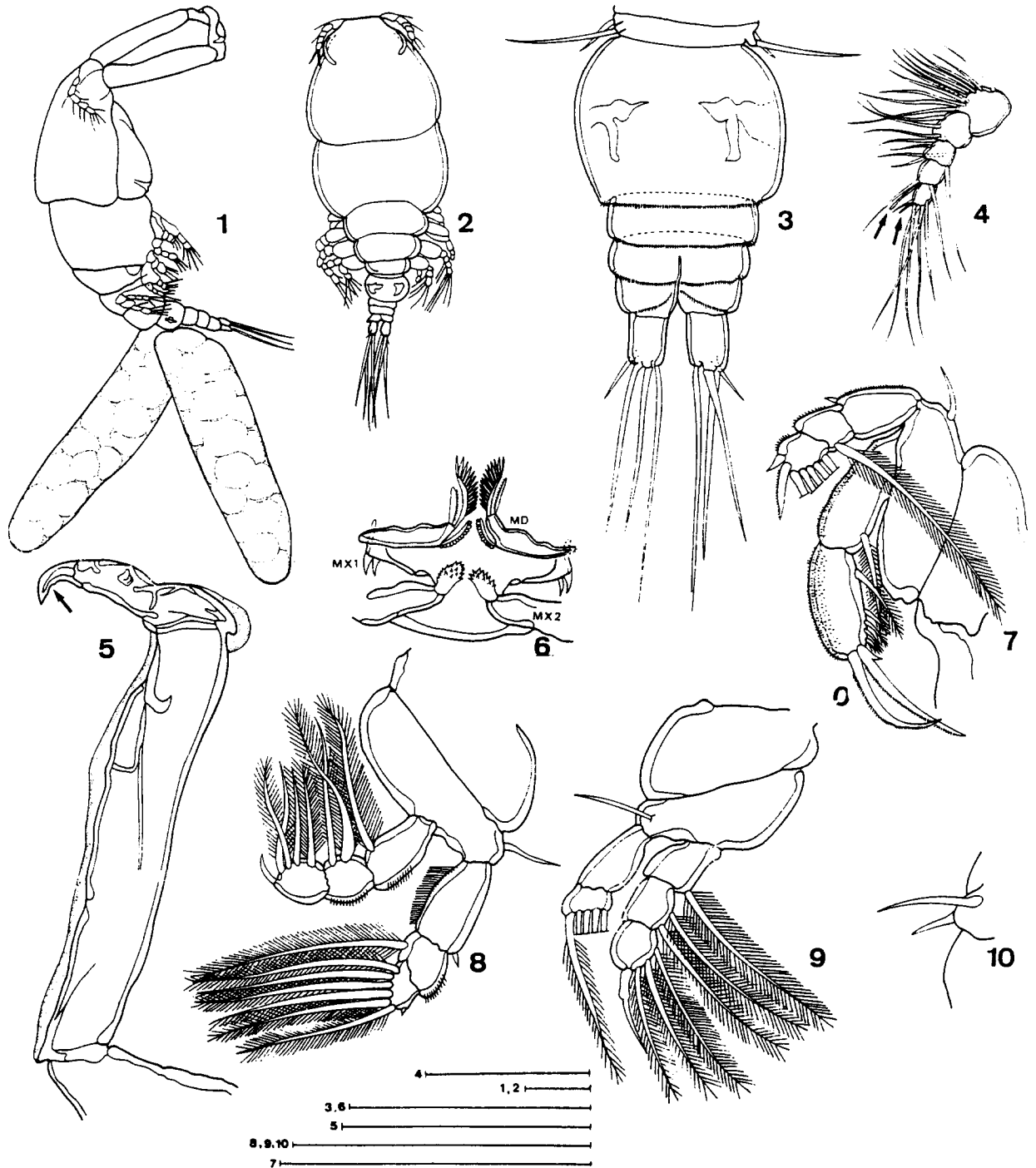
Leg 1 (Figure 7) with short outer seta on basis. Endopod 2-segmented, twice as long as exopod, with several rows of spinules on outer side. First endopodal segment with plumose seta. Second endopodal segment with 5 short inner setae, diminishing in length progressively toward apex of segment, with a gap between the proximal and the four remaining setae, and 2 spines little longer than segment, both with outer margins serrate; innermost spine with accessory spinule near base. Exopod 3-segmented, all segments spinulose on outer margin. First segment with spine at outer distal corner. Second segment with long plumose seta. Third segment with 5 inner long plumose setae and 2 spines; innermost spine longer than outer spine, and serrate on outer margin.

Leg 2 (Figure 8) and leg 3 similar. Basis with short outer seta. Endopod and exopod 3-segmented and of similar length. First endopodal segment with plumose seta; second segment with 2 plumose setae; third segment with 4 plumose setae shorter than setae of preceding segments, and curved smooth terminal spine; The first two segments with spinulation on outer margin. First exopodal segment with a fringe of setules on inner margin and with outer spine; second segment with long plumose inner seta and spinulation on outer margin; third segment with 6 plumose setae, and tiny outer spine.

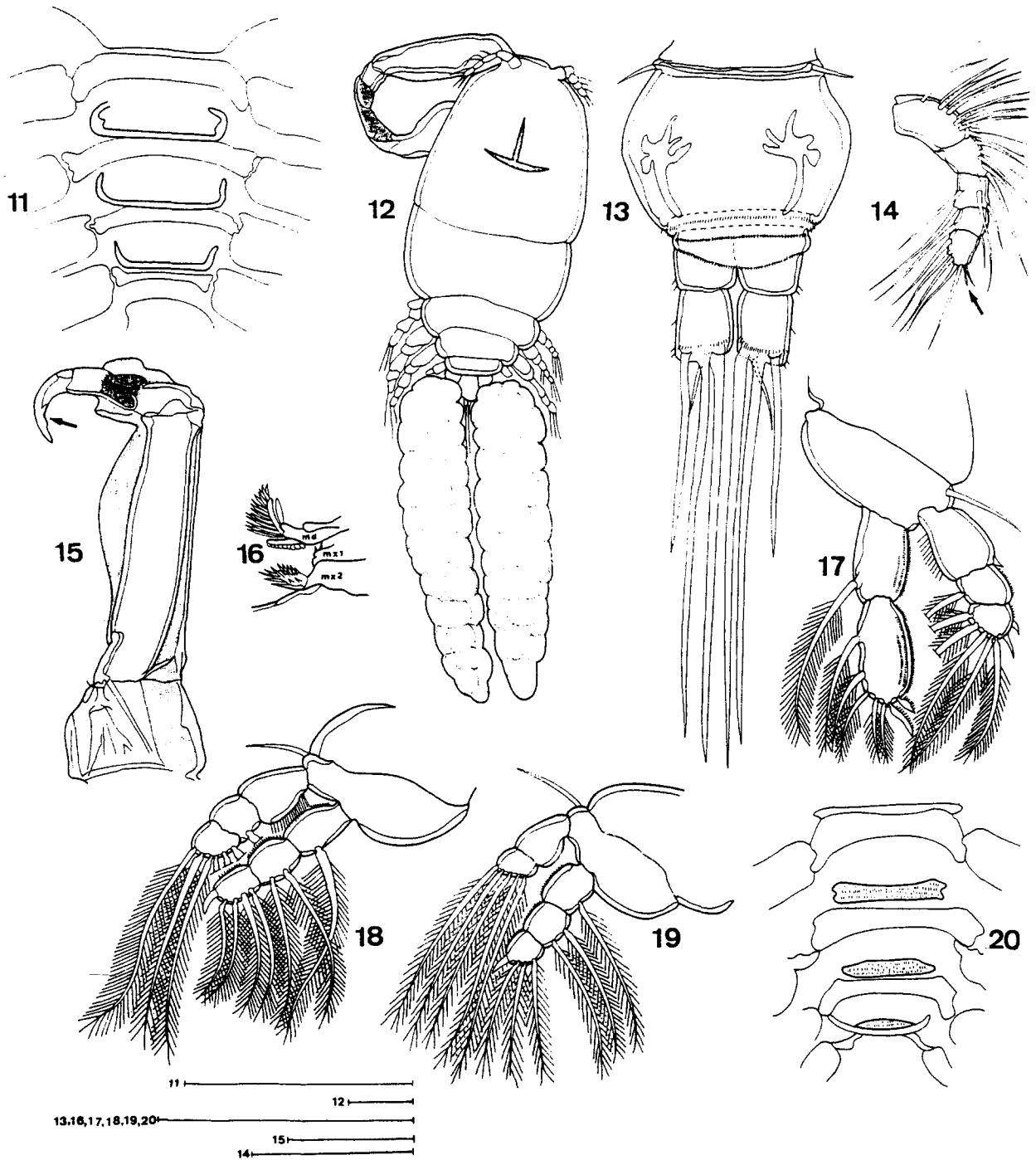
Leg 4 (Figure 9) with short outer seta on basis. Endopod little longer than exopod and 3-segmented. First endopodal segment with plumose long seta; second segment with 2 plumose setae; third segment with 3 setae, and spine widened proximally, with a typical shape as shown in Figure 9. Exopod 2-segmented; first segment unarmed; terminal segment with 5 setae.

Leg 5 (Figure 10) reduced to 2 smooth setae; both implanted on small lateral protrusion of pediger 5.

Thoracic sternites (Figure 11) of pedigers 2 to 4 smooth and decreasing in size from anterior to posterior part of thorax.



Figures 1–10. *Acusicola brasiliensis* n. sp. Female. 1. habitus, lateral; 2. habitus, dorsal; 3. urosome, ventral; 4. antennule (arrow indicating aesthete); 5. antenna (arrow indicating fossa); 6. mouth parts (md = mandible, mx1 = maxillule, mx2 = distal tip of maxilla); 7. leg 1; 8. leg 2; 9. leg 4; 10. leg 5. Scale bars = 100 μ m.



Figures 11–20. *Acusicola brasiliensis* n. sp. Female. 11. thoracic sternites. *Acusicola paracunula* n. sp. Female. 12. habitus, dorsal; 13. urosome, ventral; 14. antennule (arrow indicating aesthete); 15. antenna (arrow indicating tiny fossa); 16. mouth parts (md = mandible, mx1 = maxillule, mx2 = distal tip of maxilla); 17. leg 1; 18. leg 2; 19. leg 4; 20. thoracic sternites. Scale bars = 100 μ m.

Male. Unknown.

Etymology. The specific name refers to the wide range of the species along the Brazilian coast.

Differential diagnosis. *Acusicola brasiliensis* n. sp. differs from all its congeners in possessing (1) the two spines on the second segment of leg 1 longer than the segment, the innermost spine bearing an accessory spinule at the base, and (2) a long spine widened proximally on the terminal endopodal segment of leg 4.

It shares with *A. rogeri* n. sp., *A. cunula*, *A. tucunarensis*, *A. pellowidisi* and *A. paracunula* n. sp. the first pediger subequal to the cephalosome. However, besides the afore-mentioned characters, *A. brasiliensis* can be separated from the others because of the spine formula 1.0.1 on the exopod of the legs 2 and 3. This character seems to be very useful in distinguishing the species of this group since the formula for *A. rogeri* is 1.0.0, and 0.0.1 for *A. cunula*; 0.0.0 is shared by both *A. tucunarensis* and *A. paracunula*. The formula for *A. pellowidisi* is 1.0.1 for leg 2 and 1.0.0 for the leg 3. In addition, *A. brasiliensis* is the only species in the group with a deep notch dividing the anal somite into two parts, this reaching to the middle of the pre-anal somite.

Acusicola paracunula n. sp. (Figures 12–20)

Type material: female holotype MZUSP 11496; female paratypes MZUSP 11497.

Type locality: paran de Urucará, State of Amazonas, Brazil.

Material examined. Brazil: *State of Amazonas:* 14 females in *Pellona flavipinis* de Goeldi, paran de Urucará, team of the Expedio Permanente da Amaznia (EPA) col., 1967; 32 females in *Pseudotylurus microps* (Gunter) (Belonidae), team of the Alpha Helix ship col., 1977; 11 females in *P. microps*, team of the EPA col., 1967. *State of Par:* 11 females in *P. microps*, Tapajs River, Santarm, R. M. C. Castro col., 1967.

Female. Total length without caudal setae 627 μm ; prosome length 500 μm ; urosome length 127 μm ; genital double somite length 65 μm ; caudal ramus length 26 μm .

Cephalosome (Figure 12) elongated, rounded anteriorly and bearing dorsal cuticular thickening in shape of inverted T. Pedigers 1 to 4 free. Genital double

somite (Figure 13) 1.6 times wider than long equipped with a row of spines on ventral margin. Pre-anal somite expanded backward partly covering anal somite ventrally. Anal somite notched medially and with posterior border smooth. Caudal rami (Figure 13) 1.25 times longer than wide, with row of spinules near apex on ventral surface, and bearing 4 setae. Two innermost setae similar in length, about 2 times longer than outer seta. Egg sacs (Figure 12) elongated, multiserial.

Antennule (Figure 14) of 5 segments. Armed as follows: 11, 6, 4, 2, 6. First segment as long as lengths of second and third segments combined. Last segment with aesthete.

Antenna (Figure 15) composed of 3 segments and terminal claw. Coxobasis unarmed. First endopodal segment twice longer than second endopodal segment. Hyaline process extending from coxobasis till more than half of third segment. Claw curved and presenting tiny fossa on inner margin. Claw and distal part of second endopodal segment involved by dark membrane in all examined specimens.

Mandible, maxillule and maxilla as in Figure 16.

Leg 1 (Figure 17) with outer short seta on basis. Endopod 2-segmented, longer than exopod, and bearing rows of spinules on outer side. Proximal segment having inner seta. Terminal segment with 2 apical spines and 5 setae diminishing gradually in length from proximalmost to distalmost. Apical spines reduced in length; inner spine lightly curved, and twice longer than outer spine, both with outer margin serrate. Exopod 3-segmented; first segment with a fringe of setules on medial margin and a outer spine; second segment with inner seta and row of spinules on outer margin; third segment with 2 smooth spines and 5 plumose setae.

Leg 2 (Figure 18) and leg 3 similar. Basis with short outer seta. Endopod and exopod 3-segmented. Endopod little longer than exopod. First endopodal segment with inner seta. Second endopodal segment with 2 inner setae. Third segment with 4 setae shorter than those of preceding endopodal segments, and bearing thick terminal spine. Exopod without spines; first exopodal segment with a fringe of setules no lateral margin; second exopodal segment with a inner seta; third exopodal segment with 6 terminal setae.

Leg 4 (Figure 19) with endopod 3-segmented and exopod 2-segmented. Endopod longer than exopod, with row of spinules on outer margin; first endopodal segment with inner long plumose seta. Second segment with 2 long plumose setae. Third segment with 3 plumose setae and thick short spine. Exopod with

first segment unarmed; second segment with 5 long plumose setae.

Leg 5 (Figure 13) reduced to simple seta implanted on small base.

Thoracic sternites (Figure 20) of pedigers 2 to 4 spinulose and diminishing in size from anterior to posterior region of thorax.

Male. Unknown.

Etymology. The specific name refers to the similarity of the species with *A. cunula* Cressey, 1970; 'para' is Greek for 'near, next to'.

Differential diagnosis. As with the previous species, *A. paracunula* n. sp. is included together with *A. cunula*, *A. tucunarensis*, *A. pellowidii* and *A. rogeri* n. sp. in the group of species possessing the first pediger subequal to the cephalosome.

The new species resembles *A. cunula* in the shape of the genital double somite, number of spines and setae on the leg 1, and structure of leg 5. They are easily distinguished from each other because the hyaline membrane of the antenna is restricted to the third segment of the appendage in *A. cunula*, but extends from the basal segment to halfway up the third segment in *A. paracunula*. Also, the terminal endopodal segment of legs 2 and 3 of the former species is armed with 5 setae instead of 4 setae and one apical spine in the latter. The spine present on the third exopodal segment of these same legs in *A. cunula* is missing in *A. paracunula*.

A. paracunula shares with *A. tucunarensis* a similar structure as to legs 2 and 3, as well as a widened terminal endopodal segment in leg 1. But in *A. tucunarensis* there are only 3 setae on the caudal ramus, the number of inner setae on the terminal endopodal segment of leg 1 is reduced to 4, and, as in *A. cunula*, the hyaline membrane on the antenna is restricted to the third segment.

In spite of the existence of a hyaline membrane on the first three segments, the antenna of *A. pellowidii* differs from that of *A. paracunula* in being more slender, mainly regarding the first and third segments. In addition, these two species present different formulae of spines on the exopod of legs 2 and 3, and the maxilla of *A. pellowidii* is armed with setules and remarkably strong spines in *A. pellowidii* but only with spinules in *A. paracunula*.

A. paracunula is the first species in the genus possessing a dark membrane surrounding the median portion of the third antennal segment.

Acusicola spinulosa n. sp. (Figures 21–29)

Type material: female holotype MZUSP 11494; female paratypes MZUSP 11495.

Type locality: José Açú Lake, Parentins, State of Amazonas. Material examined. Brazil: State of Amazonas: 23 females in *Lycengraulis batesi* Cuvier, Parentins, José Açú Lake, team of the EPA col., 1967; 21 females in *L. batesi*, Madeira River, Nova Olinda, team of the EPA col., 1964.

Female. Total length without caudal setae 609 μm ; prosome length 475 μm ; urosome length 134 μm ; genital double somite length 50 μm ; caudal ramus length 35 μm .

Cephalosome (Figure 21) inflated, approximately square on posterior half and narrowing anteriorly. Dorsal surface of cephalosome presenting cuticular thickening in shape of inverted T little behind eye. Metasomal somites abruptly narrowed from cephalothorax. Genital double somite swollen, with posterior ventral border spinulose and with 3 transversal rows of spines ventrally. Abdominal somites (Figure 22) with serrate ventral borders. Pre-anal somite with posterior border expanded backward. Anal somite twice as long as two preceding somites combined, with medial notch, and posterior row of spinules. Caudal ramus (Figure 22) two times longer than wide, with ventral spinulose border and with 3 setae each. Innermost seta spinulose and about 2 times longer than other 2 setae. Egg sacs long, multiseriate.

Antennule (Figure 23) 5-segmented. Armed as follows: 8, 4, 4, 2, 5. First segment as long as lengths of 2 subsequent segments combined. Last segment with two aesthetes.

Antenna (Figure 24) consisting of 3 segments and claw. Coxobasis unarmed. First endopodal segment about 2.3 times longer than second endopodal segment, and bearing inner reduced seta crossing hyaline process. Second endopodal segment with spinulose area on inner side. Hyaline process extending on both endopodal segments. Claw short and pointed, with pit at halfway of concave margin.

Mandible, maxillule and maxilla as in Figure 25. Basal segment of maxilla with spinulose area.

Leg 1 (Figure 26) with basis bearing outer seta. Endopod 2-segmented and twice longer than exopod. First segment of endopod unarmed, presenting 2 serrate crests on inner side; second segment smooth on inner side, with 3 short terminal spines. Exopod 3-

segmented; first segment with external spine; second segment with inner seta and serrate outer border; terminal segment armed with 5 long plumose setae and 2 spines.

Leg 2 (Figure 27) similar to leg 3. Endopod about 1.5 times longer than exopod. First endopodal segment with inner seta; second segment with 2 inner setae; third segment with 4 inner setae and blunt terminal spine. Exopod with outer spine on first segment; second segment with plumose seta; terminal segment bearing 6 plumose setae.

Leg 4 (Figure 28) having 3-segmented endopod two times longer than exopod. First endopod segment as long as entire exopod, with internal long plumose seta; second segment with 2 inner long setae; third segment with 4 small setae and blunt terminal spine. Exopod 2-segmented; first segment unarmed; second segment bearing 4 setae.

Leg 5 (Figure 22) reduced to simple seta.

Thoracic sternites (Figure 29) of pedigers 2 and 3 spinulose; those of pedigers 4 and 5 smooth.

Male. Unknown.

Etymology. The species was named 'spinulosa' from Latin 'spinus' by the presence of spinulose areas in several parts of the body.

Differential diagnosis. *A. spinulosa* n. sp. differs from the other species of the genus by the presence of spinulose areas on the third segment of the antenna and the ventral surface of the basal segment of the maxilla. It is also the only species within the genus in which the second endopodal segment of leg 1 possesses 3 short spines at the tip and no inner setae. In addition, the spine on the third endopodal segment of legs 2 to 4 is truncate. Legs 1 to 4 with endopods significantly longer than exopods is another noteworthy character of the new species.

Acusicola rotunda sp. n. (Figures 30–39)

Type material: female holotype MZUSP 11498; female paratypes MZUSP 11499.

Type locality: Solimões River, State of Amazonas, Brazil. Material examined. Expedição Permanente da Amazônia (EPA) collection: *State of Amazonas:* 8 females in *Lycengraulis batesi* Cuvier, Solimões River, 1973; 17 females in *L. batesi*, Solimões River, Santo Antonio do Içá, 1968; 3 females in *L. batesi*, Jutai River, Xibecó, 1968; 12 females in *L. amazonensis*

Ribeiro, Baruri Lake near Tapajós River, 1967. *State of Pará:* 23 females in *L. batesi*, Tapajós River, 1970; 4 females in *L. batesi*, Trombetas River, Oruximiná, 1967. M. Goulding collection: *State of Amazonas:* 47 females in *L. batesi*, Tombetas River, Cuminá, 1983; 27 females in *L. batesi*, Madeira River at mouth of Machado River, 1980.

Female. Total length without caudal setae 957 μm , cephalosome length 671 μm , prosome length 769 μm , urosome length 179 μm , genital double somite length 71 μm , caudal ramus length 45 μm .

Cephalosome (Figure 30) inflated, with rounded corners; antennal area projected forward. Pedigers 1 to 4 very reduced in relation to cephalosome. Genital double somite (Figure 31) about 1.5 times wider than long, with ventral spinulose area on anterior half, and ventral posterior border serrate. Pre-anal somite with posterior border expanded backward ventrally. Anal somite deeply notched medially and as long as two preceding somites combined. Caudal ramus (Figure 31) 1.5 times longer than wide, armed with 4 setae. Two innermost setae similar in length and spinulose. Egg sac (Figure 30) elongate, with more than 120 eggs disposed in several series.

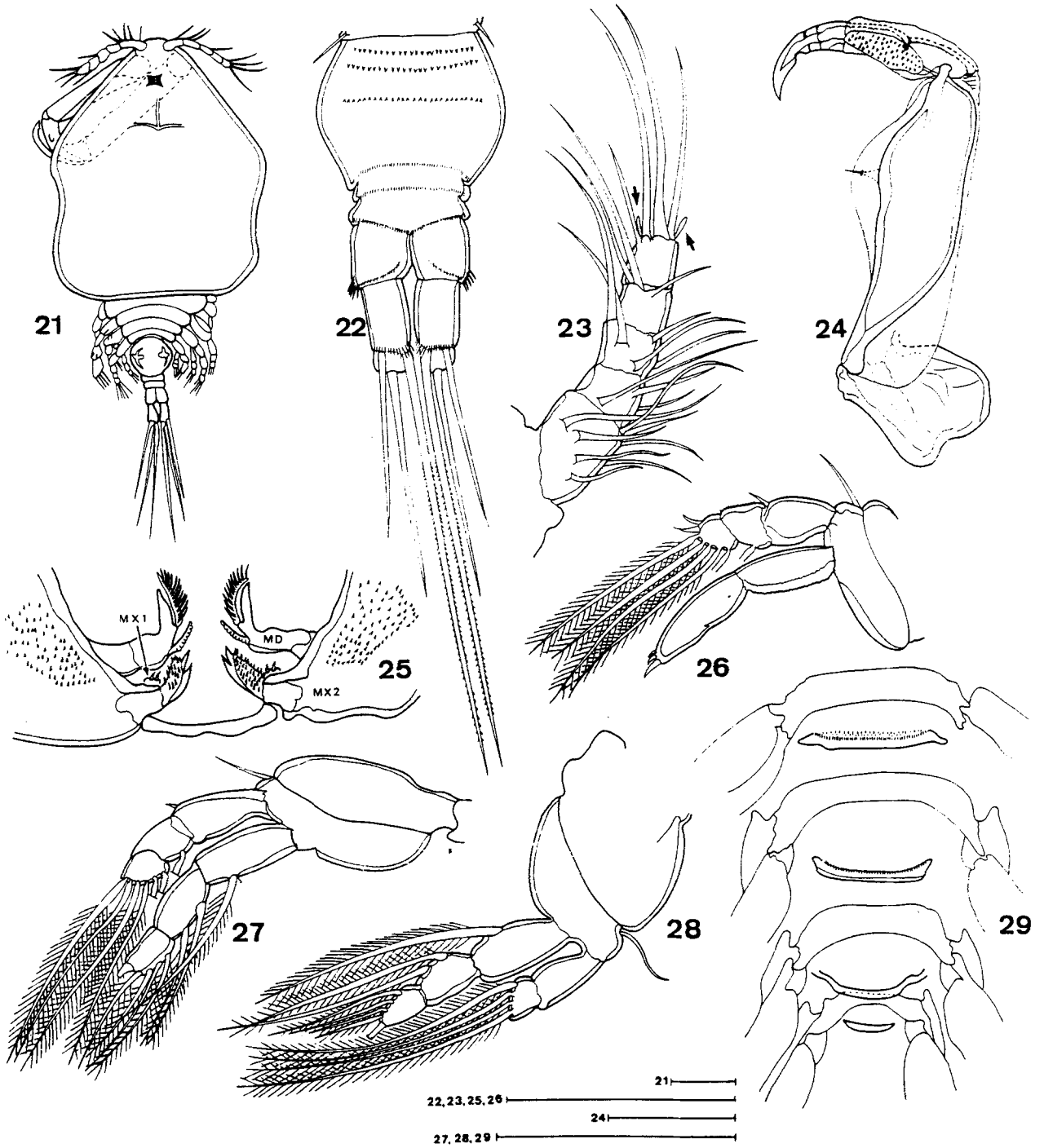
Antennule (Figure 32) of 5 segments. Armed as follows: 11, 4, 4, 2, 6. Basal segment twice longer than second segment; remaining segments decreasing in length and width gradually toward tip; last segment with a aesthete implanted on base of outmost seta.

Antenna (Figure 33) consisting of 3 segments and terminal claw. Coxobasis unarmed. First endopodal segment about 1.4 times longer than second segment, with reduced seta placed little beyond half of segment and crossing hyaline process. Claw with groove on inner surface. Hyaline process extending from coxobasis till half length of second endopodal segment.

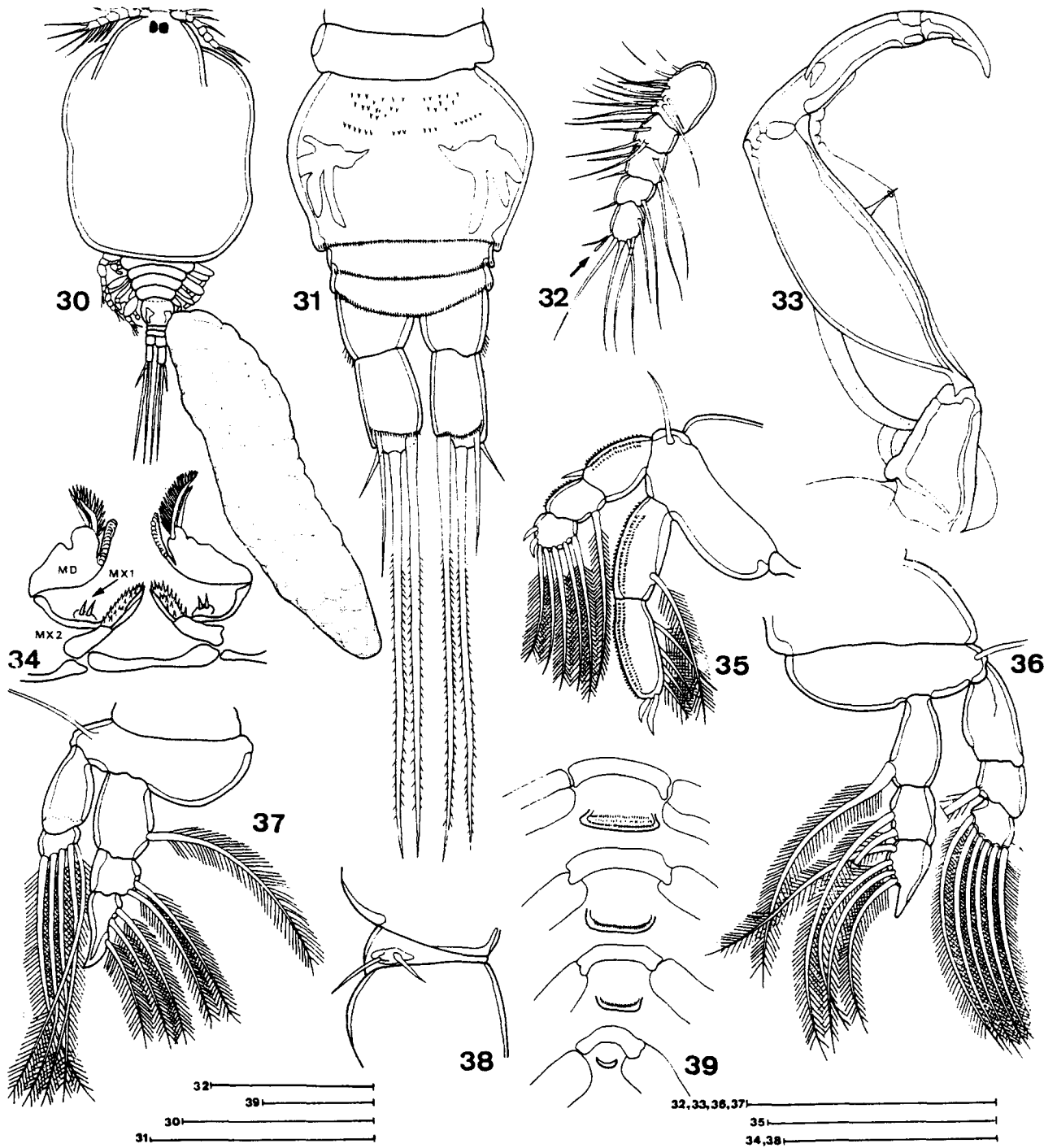
Mandible, maxillule and maxilla as in Figure 34.

Leg 1 (Figure 35) with short seta on basis. Endopod 2-segmented, longer than exopod. First endopodal segment with several rows of spinules on outer side, and inner plumose seta. Second endopodal segment also spinulose on outer side, with 4 short plumose setae, and 2 terminal spines. Inner spine twice as long as outer spine. Exopod 3-segmented; first segment with rows of spinules on outer surface, and spine at outer distal corner; second segment with inner seta; terminal segment bearing 5 plumose setae and 2 curved outer spines.

Leg 2 (Figure 36) similar to leg 3. Basis with outer seta. Endopod longer than exopod. First segment



Figures 21–29. *Acusicola spinulosa* n. sp. Female. 21 habitus, dorsal; 22. urosome, ventral; 23. antennule (arrow indicating aesthete); 24. antenna; 25. mouth parts (md = mandible, mx1 = maxillule, mx2 = distal tip of maxilla); 26. leg 1; 27. leg 2; 28. leg 4; 29. thoracic sternites. Scale bars = 100 μ m.



Figures 30–39. *Acusicola rotunda* n. sp. Female. 30. habitus, dorsal; 31. urosome, ventral; 32. antennule (arrow indicating aesthete); 33. antenna; 34. mouth parts (md = mandible, mx1 = maxillule, mx2 = distal tip of maxilla); 35. leg 1; 36. leg 2; 37. leg 4; 38. leg 5; 39. thoracic sternites. Scale bars = 100 μ m.

of endopod with seta; second segment with 2 setae similar in length; third segment ending in spiniform process, and with 4 setae, all shorter than setae of preceding two segments. First segment of exopod long and unarmed; second segment with inner plumose seta; terminal exopodal segment having 6 long setae and small outer spine.

Leg 4 (Figure 37) with outer seta on basis. Endopod twice as long as exopod and 3-segmented. First endopodal segment long and bearing long, plumose inner seta; second segment with 2 plumose setae: third segment falciform, with 3 plumose setae. Exopod 2-segmented. First exopodal segment 3 times longer than second, unarmed; second segment with 5 long and plumose setae.

Leg 5 (Figure 38) represented by 2 simple setae; dorsal seta implanted on protuberance.

Thoracic sternites (Figure 39) of pedigers 1 to 3 setulose. Sternite posterior to leg 4 reduced and smooth.

Male. Unknown.

Etymology. The specific name (from Latin 'rotunda' meaning rounded) refers to the shape of the cephalosome.

Differential diagnosis. Because of the inflation of the body, *A. rotunda* n. sp. apparently resembles *A. lycengraulidis*. However, in the latter species the first pediger is incorporated to the inflated region while in *A. rotunda* this somite is separated from the cephalosome and is just a little wider than the subsequent somite. Also, the new species possesses a well developed antennal area projected forward.

The third endopodal segment of the leg 4 is falciform in both species. But in *A. rotunda* the apex of the terminal endopodal segment of legs 2 and 3 also tapers into a spiniform process instead of a stout spine as stated by Thatcher & Boeger (1983) for *A. lycengraulidis*.

These two species can still be separated as regards other details in the armature of the legs. The third exopodal segment of the leg 1 bears 5 inner setae in *A. rotunda*, while in *A. lycengraulidis* there are only 4. The terminal endopodal segment of this same leg is armed with 4 inner setae in the former and 3 in the latter species. The first exopodal segment of legs 2 and 3 of *A. lycengraulidis* possesses a small spine on the outer distal corner which is absent in *A. rotunda*; on the other hand, on the terminal segment of the exopod

of these legs there is a spine in *A. rotunda* which is lacking in *A. lycengraulidis*.

Finally, the new species differs from *A. lycengraulidis* in that the two innermost setae of the caudal ramus are setulose and similar in length. These two setae are smooth in *A. lycengraulidis*, the innermost being approximately twice as long as the outermost.

Acusicola rogeri n. sp.

Cressey & Collette (1970) ascribed numerous females removed from the gill filaments of *Strongylura marina* (Walbaun, 1792) caught at Río de la Pasión and El Quiche, Guatemala, to *A. tenax*, described by Roberts (1965) from Garza-Little Elm Lake, a reservoir in north-central Texas as *Ergasilus tenax*. However, the specimens from Guatemala differ from the original description in the following respects of the swimming legs armament: (1) terminal endopodal segment of leg 1 bearing a strong clawlike spine on the tip and 4 inner setae; (2) first exopodal segment of leg 1 armed with a spine and a fringe of setules on medial margin; (3) third exopodal segment of leg 2 with 6 setae and no spine; (4) spine of the third exopodal segment of legs 2 and 3 absent; (5) terminal exopodal segment of leg 4 possessing 4 setae, the apicalmost thicker and much longer than the inner ones; and (6) first endopodal segment of P4 unarmed. Such a combination of characters is unique within the genus *Acusicola* and warrants the separation of the specimens from Guatemala into a new species: *Acusicola rogeri*. The specific name honours Dr Roger Cressey, who greatly contributed for the knowledge of the parasitic copepods.

Identification key for the species of Acusicola

As there are now 10 known *Acusicola* species, it is reasonable to present a key to aid in their identification. The key is based on the morphology of the females, exclusively.

- 1a Terminal endopodal segment of leg 1 with 1 curved spine and 4 inner setae *A. rogeri* comb. n.
- 1b Terminal endopodal segment of leg 1 with 3 short spines and none setae *A. spinulosa* sp. n.
- 1c Terminal endopodal segment of leg 1 with 2 spines and 3 to 4 inner setae 2

- 2a Terminal endopodal segment of leg 1 with 5 inner setae 3
- 2b Terminal endopodal segment of leg 1 with less than 5 inner setae 7
- 3a First exopodal segment of leg 1 with outer spine 4
- 3b First exopodal segment of leg 1 without spine *A. tenax* (Roberts, 1965)
- 4a First exopodal segment of leg 2 with outer spine 5
- 4b First exopodal segment of leg 2 without spine 6
- 5a Spines of terminal endopodal segment of leg 1 short, the innermost measuring about 1/3 of the length of segment *A. pellenidis* Thatcher & Boeger, 1983
- 5b Spines of terminal endopodal segment of leg 1 long, the innermost about 1.4 times longer than segment and with basal accessory spine *A. brasiliensis* sp. n.
- 6a Terminal endopodal segment of leg 2 armed with 5 setae *A. cunula* Cressey, 1970
- 6b Terminal endopodal segment of leg 2 armed with 4 setae and a spine *A. paracunula* sp. n.
- 7a Terminal endopodal segment of leg 1 with 3 inner setae *A. lycengraulidis* Thatcher & Boeger, 1983
- 7b Terminal endopodal segment of leg 1 with 4 inner setae 8
- 8a First exopodal segment of leg 1 with outer spine; terminal endopodal segment of leg 4 ending in a falciform process *A. rotunda* sp. n.

- 8b First exopodal segment of leg 1 without spine; terminal endopodal segment of leg 4 with articulated spine and no falciform process at tip *A. tucunarensis* Thatcher & Boeger, 1984

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