

**MICROTHELPHUSA SUCREENSIS, A NEW SPECIES OF  
PSEUDOTHELPHUSIDAE (DECAPODA), WITH NOTES ON  
ABNORMALITIES IN THE SEXUAL APPENDAGES OF  
FRESH-WATER CRABS**

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**A B S T R A C T**

Malformations of the sexual appendages of Neotropical freshwater crabs are very rare. In two lots of specimens of a new species of the pseudothelphusid, *Microthelphusa sucrensis*, collected in 1930 and 1993, one male specimen from each lot has gonopodal malformations. In one case, the left first gonopod displays gross morphological deviations from the normal shape, and in the second case the right second gonopod has an additional rudimentary appendage resembling the first gonopod. In the Trichodactylidae, a specimen of *Sylviocarcinus pyriformis* (Pretzmann, 1968) was observed to possess a bifid first left male gonopod. An intersexual specimen of *Valdivia serrata* White, 1847, had normal first and second male gonopods and three pairs of additional pleopods all similar to the second gonopod. The left appendage on the fifth pair was clearly a female pleopod.

In 1930, Netting collected a species of freshwater crabs in Eastern Venezuela at an altitude of 1,730 m and deposited it in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. Although the species is clearly distinct from other pseudothelphusids, and is geographically isolated from its congeners, it has been left unnamed, possibly due to the presence of a malformation of the right gonopod in the largest male specimen available. Recent collections of fresh-water crabs in Eastern Venezuela now make it possible to describe this species. It is noteworthy that a male specimen in the newly collected material also displays abnormality of the sexual appendages.

Abbreviations used are cl. for carapace length and cb. for carapace breadth. The materials recorded are deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM), the Museo de Biología, Universidad del Zulia, Maracaibo, Venezuela (MBLUZ), Museo de Historia Natural, Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá (ICN-MM), and the Instituto Nacional de Pesquisas do Amazonas, Manaus, Brazil (INPA).

**SYSTEMATICS**

Family Pseudothelphusidae Rathbun, 1893  
*Microthelphusa* Pretzmann, 1968a  
*Microthelphusa sucrensis*, new species  
Fig. 1 A-K

*Material*.—Venezuela, Sucre State, Elvecia, 1,730 m above sea level, 15–25 January 1930, collected by Netting, 1 male HOLOTYPE, cl. 17.3 mm, cb. 28.3 mm, 3 male PARATYPES, cl. 15.4, 15.0, and 12.9 mm, cb. 25.2, 24.3, and 20.7 mm, USNM 230091.—Venezuela, Sucre State, Rio Negro, near the village of Las Cabeceras, 1,980 m above sea level, 18 November 1993, collected by A. L. Vilorio and J. Carrillo, 2 males, cl. 12.2 and 11.3 mm, cb. 19.6 and 18.7 mm, 1 mature female, cl. 17.8 mm, cb. 30.9 mm, 1 immature female, cl. 13.5 mm, cb. 22.2 mm, MBLUZ 3526.

*Diagnosis*.—First gonopods short, stocky; marginal process simple, triangular; apical plate with strongly bilobed margin on mesial half and tiny spines directed cephalad on lateral half, mesial process triangular, spiniform, strongly bent inwards; distal margins of field of spines not fused; strong globular subapical process on mesial side proximal to mesial process.

*Male Holotype Description*.—Cervical grooves on carapace well marked, wide and deep proximally. Anterolateral border with slight depression behind orbit, followed by approxi-

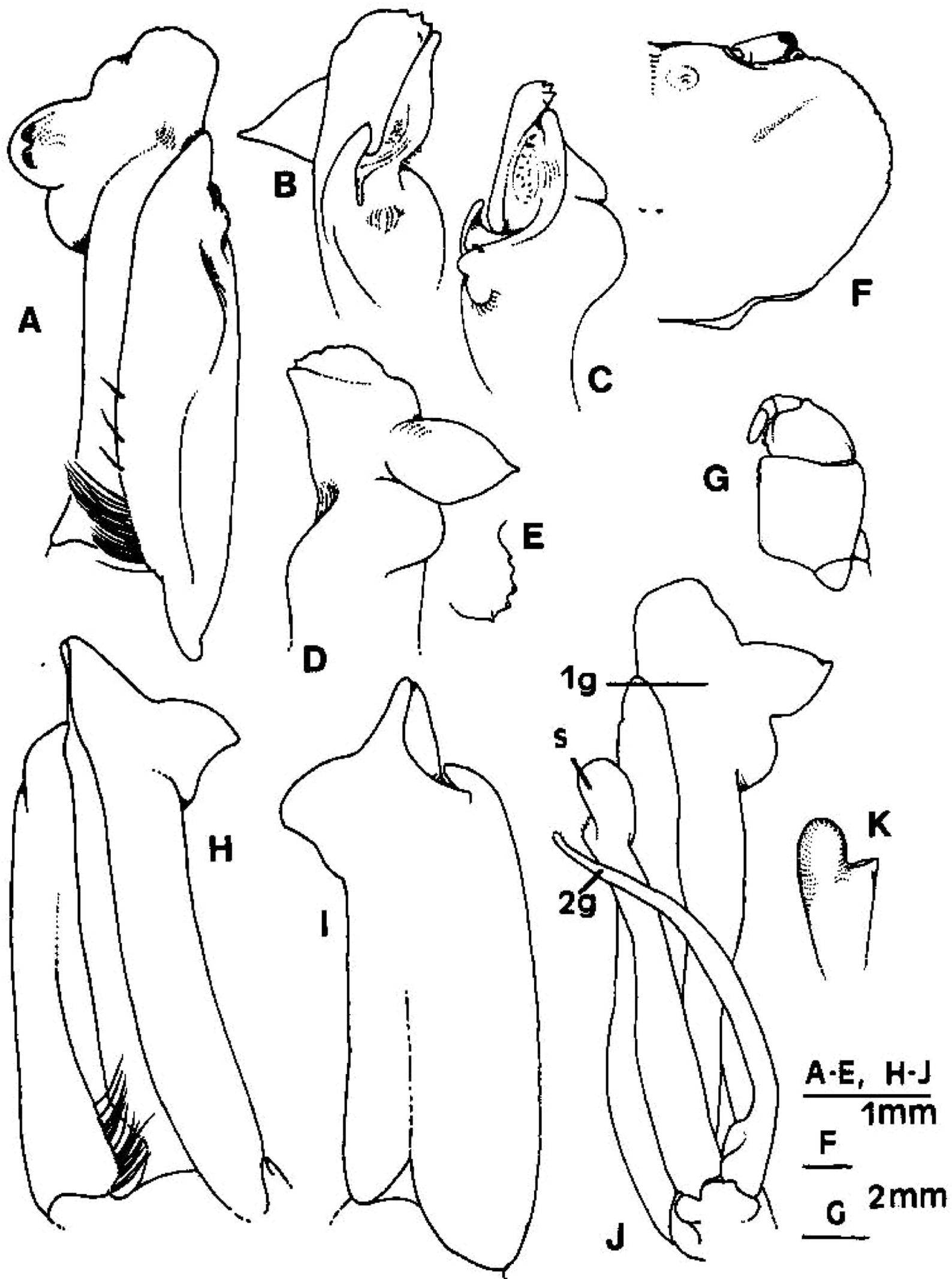


Fig. 1. *Microthelphusa sucrensis*, new species, A-I, male holotype from La Helvecia, Venezuela, USNM. A, first left gonopod, caudal view; B, apex, lateral; C, apex, cephalic; D, apex, mesial; E, spinulation of distal plate; F, carapace, left side; G, third maxilliped, left; H, first right gonopod, caudal view; I, same, mesial. *Microthelphusa sucrensis*, J, male from Las Cabeceras, Venezuela (MBLUZ), first and second right gonopods, and supplementary appendage; K, supplementary appendage, apex, mesial. 1g, first gonopod; 2g, second gonopod; s, supplementary appendage.

mately 15 poorly defined teeth or papillae. Postfrontal lobes poorly defined, obsolescent; median groove represented by wide, shallow depression. Carapace between postfrontal

lobes and front strongly inclined forward, almost flat in frontal view. Upper margin of front slightly bilobed in dorsal view, marked by small, ill-defined papillae; lower margin

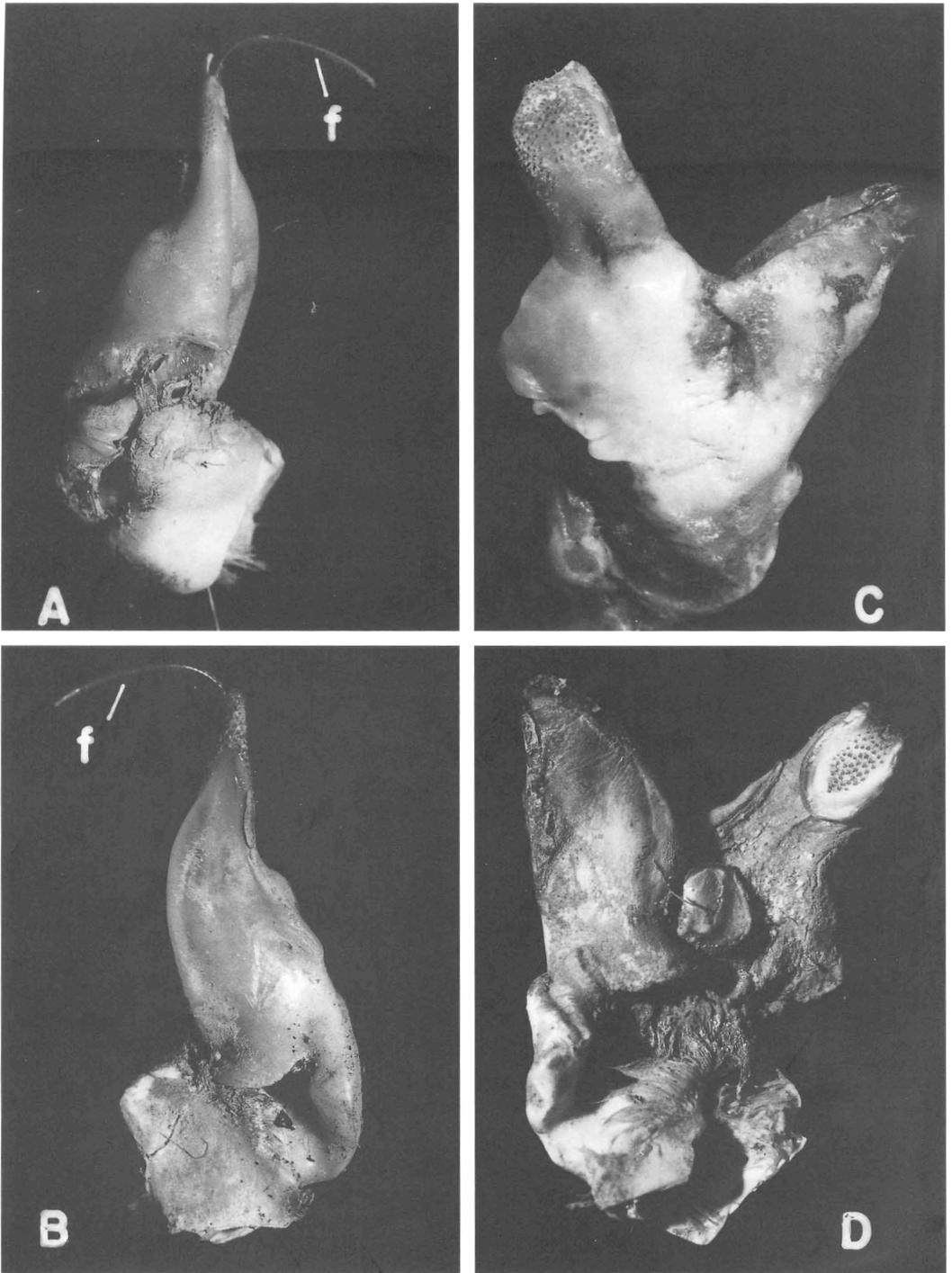


Fig. 2. *Sylviocarcinus pyriformis* (Pretzmann, 1968) male from Mariquita, Colombia (ICN-MHN-CR 0451). A, right gonopod, caudal; B, same, cephalic; C, left gonopod, caudal; D, left gonopod, cephalic; f, flagellum of second gonopod.

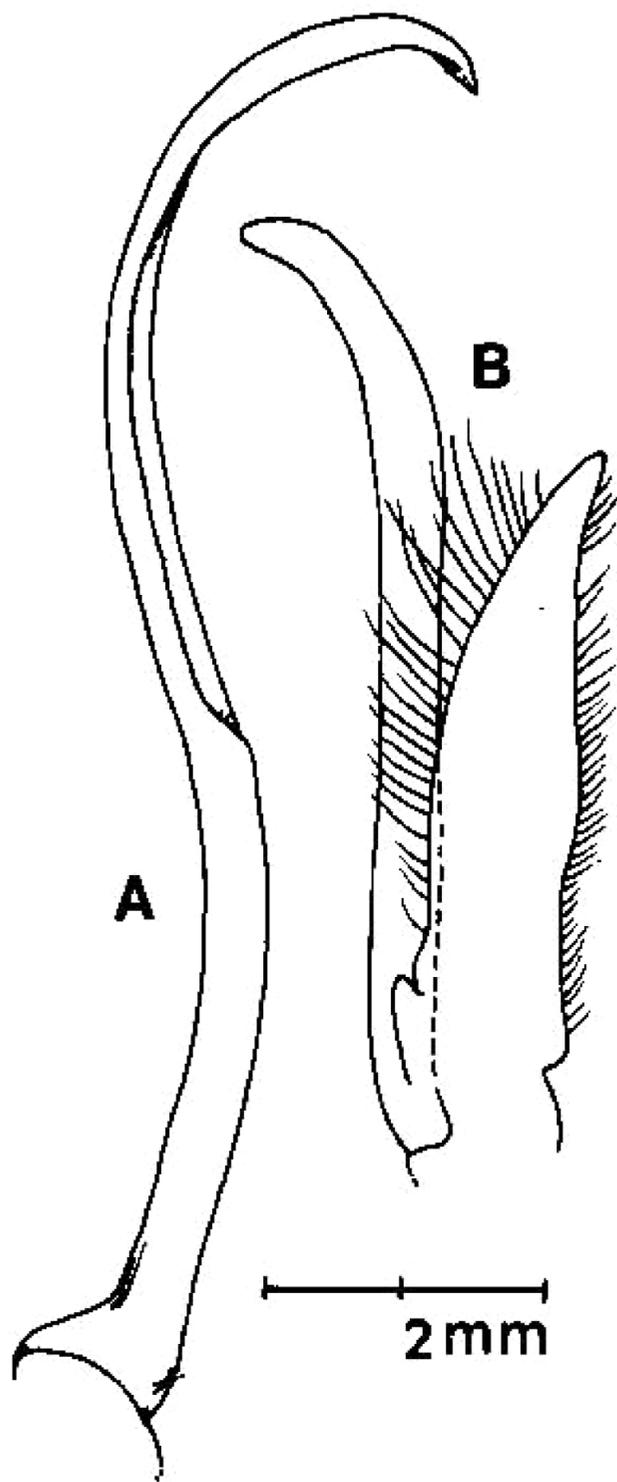


Fig. 3. *Valdivia serrata* White, 1847, male from Paranã do Castanho, Brazil (INPA). A, second right gonopod; B, supplementary fifth pleopod.

almost straight. Front low, of equal height throughout, advanced.

Palm of major cheliped swollen in antero-posterior plane; fingers strongly gaping when closed. First male left gonopod short and stocky, particularly in caudal and cephalic views; marginal process simple, triangular, not cup-shaped; apical plate with margin strongly bilobed on mesial half, with 5 tiny spines on lateral half directed perpendicular to normal to main axis of appendage; mesial process triangular, spiniform, strongly bent inward; field of spines narrow, distal margins not fused; strong globular subapical process on mesial side proximal to mesial process. First right gonopod of holotype abnormal, exceptionally wide in basal portion; field of spines wide; toothed apical plate absent, and subapical process reduced.

*Size.*—This is a relatively small species for the family. A mature female (MBLUZ) has a cb. of 30.9 mm, whereas the smallest male available has a cb. of 18.7 mm, and the first gonopods are fully developed.

*Etymology.*—The specific name refers to the Sucre State, Venezuela, where the type locality is situated.

*Remarks.*—The species is clearly distinguished from all others in the genus by the spinulation of the distal margin of the apical plate of the first gonopod, present in all the male specimens examined. Both the type and the more recently collected material come from a small area that is difficult to access in the Sierra de Turumiquiri, near the headwaters of the Rio Manzanares, at altitudes between 1,730 and 1,980 m above sea level. The two collections are separated by more than 63 years. In the 1930 collection, only the holotype displays abnormalities of the first gonopod. In the material from the second collection, both first gonopods are normal in each of the male specimens available, but the right second gonopod of the largest specimen (cb. 19.6 mm) has an additional appendage resembling a rudimentary first gonopod. Aside from the abnormalities mentioned, the morphology of the first and second gonopods is constant in all male specimens examined.

As has frequently been noted (Smalley, 1964), the morphology of the male first gonopod of the adult is the main, and often the only, diagnostic character in fresh-water crab taxonomy. Neither intraspecific variation nor malformation usually affect the diagnostic value of this organ. The only abnormal gonopod reported in these families is the one found by Pretzmann (1968b) in a specimen of the Pseudothelphusidae, *Guinotia (Fredius) dunoensis colosii* Pretzmann, 1967 (= *Fredius reflexifrons* (Ortmann, 1897)). In the Paleotropical family Sundathelphusidae, Ng (1990) described an abnormal second gonopod in the cave species *Currothelphusa aserpes* Ng, 1990.

We have examined several hundred male specimens of Neotropical fresh-water crabs, and we detected gonopodal abnormalities only in specimens of *Microthelphusa sucrensis*, reported above, and in a specimen of the Trichodactylidae, *Sylviocarcinus pyriformis* (Pretzmann, 1968c). This crab, col-

lected at the Lumbi Creek, Mariquita, Tolima Department, Colombia, at 500-m altitude, 20 September 1983, cl. 50.8 mm, cb. 57.0 mm (ICN-MHN-CR 0451), was a very old male, with the fingers of the chelae very eroded. Approximately ten nematodes were present in its branchial chamber. The right first gonopod (Fig. 2A, B) displayed the normal morphology of the species (Rodríguez, 1992). The left first gonopod (Fig. 2C, D) consists of two shafts united at their bases. The lateral shaft is conical and vaguely resembles the shape of the normal right gonopod, whereas on the caudal surface of this shaft the margin has basal setae similar to those of the normal gonopod. The mesial shaft is cylindrical and is covered by strong spines on the distal half of the caudal and cephalic surfaces; these spines are similar to those located on the terminal portion of the margin in the normal gonopod. The left portion of the abdomen is swollen to accommodate the abnormal gonopod but leaves a recess of approximately 0.5 cm between the abdominal margin and the sternum.

An interesting case of bisexuality was observed in a specimen of the trichodactylid *Valdivia serrata* White, 1847, from Parana do Castanho, near Manaus, Brazil, collected by R. Best in October 1983, cb. 31.3, cl. 28.2 mm (INPA 2127). In this crab, the first and second male gonopods were normal, but the abdomen carried three additional appendages on each side. On the left side were third and fourth pleopods similar to the second male gonopod (Fig. 3A), and a fifth pleopod resembling a female pleopod (Fig. 3B). The three additional pleopods on the right side were similar to the second male gonopod and to pleopods 3 and 4 of the left side. No evidence of parasites or lesions was observed.

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