NEW SPECIES AND NEW RECORDS OF PSEUDOTHELPHUSID CRABS (CRUSTACEA: BRACHYURA) FROM COLOMBIA

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ABSTRACT

The collections of freshwater crabs from Colombia deposited at the Tulane Natural History Museum contain representatives of 14 species. Three of them, *Hypolobocera noanamensis, Lindacatalina sinuensis* and *Moritschus altaquerensis*, are new species. Several taxa present noteworthy disjunctions. *Lindacatalina orientalis* (Pretzmann, 1968) and *L. sumacensis* Rodríguez and von Sternberg, 1998, display a trans-Andean distribution, with areas widely separated in Ecuador and Colombia. *Hypolobocera beieri* Pretzmann, 1968, and *H. lloroensis* Campos, 1989, are found in the Pacific and Atlantic slopes of the Andes. The new species *Lindacatalina sinuensis* comes from the Sinú River, which drains into the Atlantic, while other members of the genus are located more than 800 km away, in basins draining to the Amazon.

INTRODUCTION

The areas of distribution of most species of pseudothelphusid crabs usually cover continuous tracts along the watercourses. In the case of many Andean species, these areas are small, usually covering less than 100 km^2. Long-range specific distributions, particularly involving trans-basin disjunctions, are very rare. Among the few examples that could be found in the literature are *Hypolobocera bouvieri angulata* (Rathbun, 1915), from the Sierra Nevada de Santa Marta, Colombia, and the Sierra de Perijá, Venezuela (Rodríguez, 1982a), and two species from Ecuador, *Hypolobocera aequatorialis* (Ortmann, 1897) and *Lindacatalina orientalis* (Pretzmann, 1968), both with trans-Andean areas of dis-

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tribution in the Pacific and Amazonian basins (Rodríguez and von Sternberg, 1998).

For more than 25 years, Dr. Alfred C. Smalley, from Tulane University, gathered an important collection of freshwater crabs from the Neotropics (Rodríguez and Fitzpatrick, 1996). Among the 14 species and subspecies from Colombia represented in this collection, three new species were discovered, one of them displaying a conspicuous generic disjunction between the Atlantic slopes of northern Colombia, the Pacific slopes of southern Colombia, and the Amazon basin of Ecuador. One species, previously known in the literature from localities in the Pacific slopes of the Andes, were found in the Atrato River that drains into the Atlantic, and two other display a trans-Andean distribution, with areas widely separated in Ecuador and southern Colombia.

In the present contribution we describe the three new species discovered and discuss the size of the areas of distribution of the Andean Pseudothelphusidae, in the light of the new data provided by the Smalley collection.

All the materials recorded are deposited in the Museum of Natural History of Tulane University, New Orleans (TU), the Museo de Historia Natural, Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá, Colombia (ICN-MHN-CR) and the Museo de Biologia Marina, Universidad del Valle, Cali, Colombia, (MBMUV). Other abbreviations used are cl. for carapace length and cb. for carapace breadth.

Systematic Account

Family Pseudothelphusidae Rathbun, 1893
Subfamily Pseudothelphusinae Ortmann, 1893
Tribu Strengerianini Rodríguez, 1982a

Genus *Chaceus* Pretzmann, 1965
Chaceus pearsei (Rathbun, 1915)

Material Examined: 1 male, cl. 16.7 mm, cb. 25.9 mm, 1 soft-shelled female, 9 August 1965, road above Minca, 1,020 m alt., Cesar Department, Colombia, A. E. Smalley, TU 5388.

Genus *Phallangothelphusa* Pretzmann, 1965
Phallangothelphusa dispar (Zimmer, 1912)

Material Examined: 1 female, cl. 20.0 mm, cb. 34.0 mm, 1 August 1981, El Triunfo (4°33'N, 74°29'W), Cundinamarca Department, Colombia, TU 6304.

Genus *Strengeriana* Pretzmann, 1971
Strengeriana taironae Rodríguez and Campos, 1989

MATERIAL EXAMINED: 1 male, cl. 12.3 mm, cb. 21.6 mm, 1 juvenile female, cl. 6.0 mm, cb. 11.8 mm, 26 February 1964, San Lorenzo near Santa Marta, 2,700 m alt., Magdalena Department, Colombia, C.A. Velásquez and F. Medem, TU 4917.

Tribu HYPOLOBOCERINI Pretzmann, 1971

Genus *Hypolobocera* Ortmann, 1897
Hypolobocera beieri Pretzmann, 1968
Figs. 1J-K

MATERIAL EXAMINED: 2 males, cl. 16.0, 15.3 mm, cb. 25.0, 24.2 mm, 1 female, cl. 11.0, cb. 16.5 mm, 24 June 1965, Cauca River tributary of Meléndez River, 3 km upstream from Carmelo near Cali, Valle del Cauca Department, Colombia, A. E. Smalley and Zapata, TU 5381; 1 male juvenile with broken carapace, 2 October 1982, Alto Anchicaya, Valle del Cauca Department, Colombia, von Prahl, TU 6383; 1 female, cl. 18.5 mm, cb. 31.5 mm, 1 juvenile, cl. 10.5 mm, cb. 15.8 mm, 1 June 1965, Meléndez River, Valle del Cauca Department, Colombia, Moberly, TU 5459; 1 male, cl. 18.2 mm, cb. 28.4 mm, 6 August 1965, El Salto de Jorge, Anchicaya river, tributary of Dagua River, highway to Buenaventura, Valle del Cauca Department, Colombia, A. E. Smalley and Zapata, TU 5383; 1 male juvenile, cl. 11.2 mm, cb. 17.0 mm, 1 female, cl. 9.4 mm, cb. 14.6 mm, 30 June 1965, tributary of Meléndez River, 3.5 km upstream from Carmelo, about 14.5 km SE Cali, Valle del Cauca Department, Colombia, A. E. Smalley and Zapata, TU 5377; 7 males, cl. range 11.5 - 7.9 mm, cb. range 17.8 - 12.5 mm, 4 females, cl. range 8.6 - 9.8 mm, cb. range 12.6 - 14.5 mm, 3 juveniles, cl. 7.0, 6.5, 6.2 mm, cb. 10.5, 9.5, 8.0 mm, 14 July 1965, Quebrada de Nidios, forestry station near Pico de Loro and 1.5 km S Ponce, Valle del Cauca Department, Colombia, A. E. Smalley, Zapata and Adler, TU 5379; 3 males, cl. 13.5, 12.4, 9.2 mm, cb. 20.7, 19.1, 13.9 mm, 2 female, cl. 14.9, 11.4 mm, cb. 22.3, 16.9 mm, 1 June 1965, tributary of Anchicaya River, 9 km west of El Salado, Valle del Cauca Department, Colombia, A. E. Smalley and Zapata, TU 5376; 1 male juvenile, cl. 12.7 mm, cb. 20.4 mm, 3 ovigerous females, cl. 21.8, 19.1, 18.9 mm, cb. 38.8, 31.8, 30.2 mm, 3 females, cl. 18.1, 16.5, 16.2 mm, cb. 30.2, 26.5, 25.9 mm, 1 juvenile with broken carapace, 15 March 1980, left margin of Mazamorra River, tributary of Guachicono River, 1,400 m alt., Valle del Cauca Department, Colombia, Matidnell, TU Acc N° 94-100; 3 males, cl. 18.5, 18.4, 15.4 mm, cb. 29.9, 29.7, 24.5 mm, 3 females, cl. 21.4, 19.9. 10.4 mm, cb. 36.1, 31.5, 16.2 mm, 5 January 1967, mountain stream near Pichinde, Valle del Cauca Department, Colombia, Dale Little, TU 5588; 2 males, cl. 14.6, 11.8 mm, cb. 22.9, 17.8 mm,

17 June 1965, small tributary of Paila River, 4.3 km E Cornito, Cauca River, Valle del Cauca Department, Colombia, A. E. Smalley, TU 5380.

Hypolobocera noanamensis, new species
Figs. 1A-H

HOLOTYPE: Adult male, cl. 50.9 mm, cb. 80.3 mm, 8 August 1969, Noanamá, San Juan River (4°42'N, 26°56'W), Chocó Department, Colombia, Dale Little, TU 6191.

PARATYPE: 1 mature female, cl. 53.9 mm, cb. 80.3 mm, collected with holotype, TU 5337.

DIAGNOSIS: First male gonopods with caudal ridge strong, fusiform, thickened at middle, ending in narrow ridge beyond lateral lobe, crossed by thin transverse lines; lateral lobe small, subtriangular, with distal angle rounded, projected, proximal border traverse or slightly convex, placed transversely in relation to axis of appendage; cephalic surface with tuberculated crest. Apex funnel-form, distal angle not projected, outline of apex oval in distal view, with meso-cephalic border rounded, expanded, prominent papilla near cephalic border, spermatic channel with spiny ridge on meso-caudal side and flat, wide papilla on caudo-lateral side.

DESCRIPTION OF HOLOTYPE: Carapace 1.58 times as wide as long, surface smooth, regions strongly marked by deep depressions; cervical grooves deep and straight becoming indistinct toward margins of carapace. Anterolateral margins with deep V-shaped notch behind outer orbital angle, devoid of papillae; margin posterior to cervical groove with approximately six wide obsolescent lobes, rest of margin with eight wide subtriangular teeth. Postfrontal lobes rounded, forming two prominent swellings; median groove very wide between postfrontal lobes, indistinct in front of postfrontal lobes, making deep V-shaped incision on upper margin of front. Surface of carapace in front of postfrontal lobes inclined anteriorly and towards middle. Upper margin of front bilobed in dorsal view, angulated, devoid of defined papillae; lower margin strongly sinuous in frontal view and conspicuously thickened; space between both margins very narrow.

Third maxilliped with lateral border of merus of endognath straight, ending distally in rounded lobe and deep depression; exognath 0.3 length of ischium of endognath. Orifice of efferent branchial channel open. Chelipeds moderately unequal, finger of larger one (right) with small gap when closed, palm slightly swollen; rows of small black points on external and upper surfaces of mobile finger and external surface of fixed finger, scattered small tubercles on internal lower surface of palm. Carpus with prominent spine on internal upper margin; internal upper margin of merus with row of teeth, row of smaller teeth on exter-

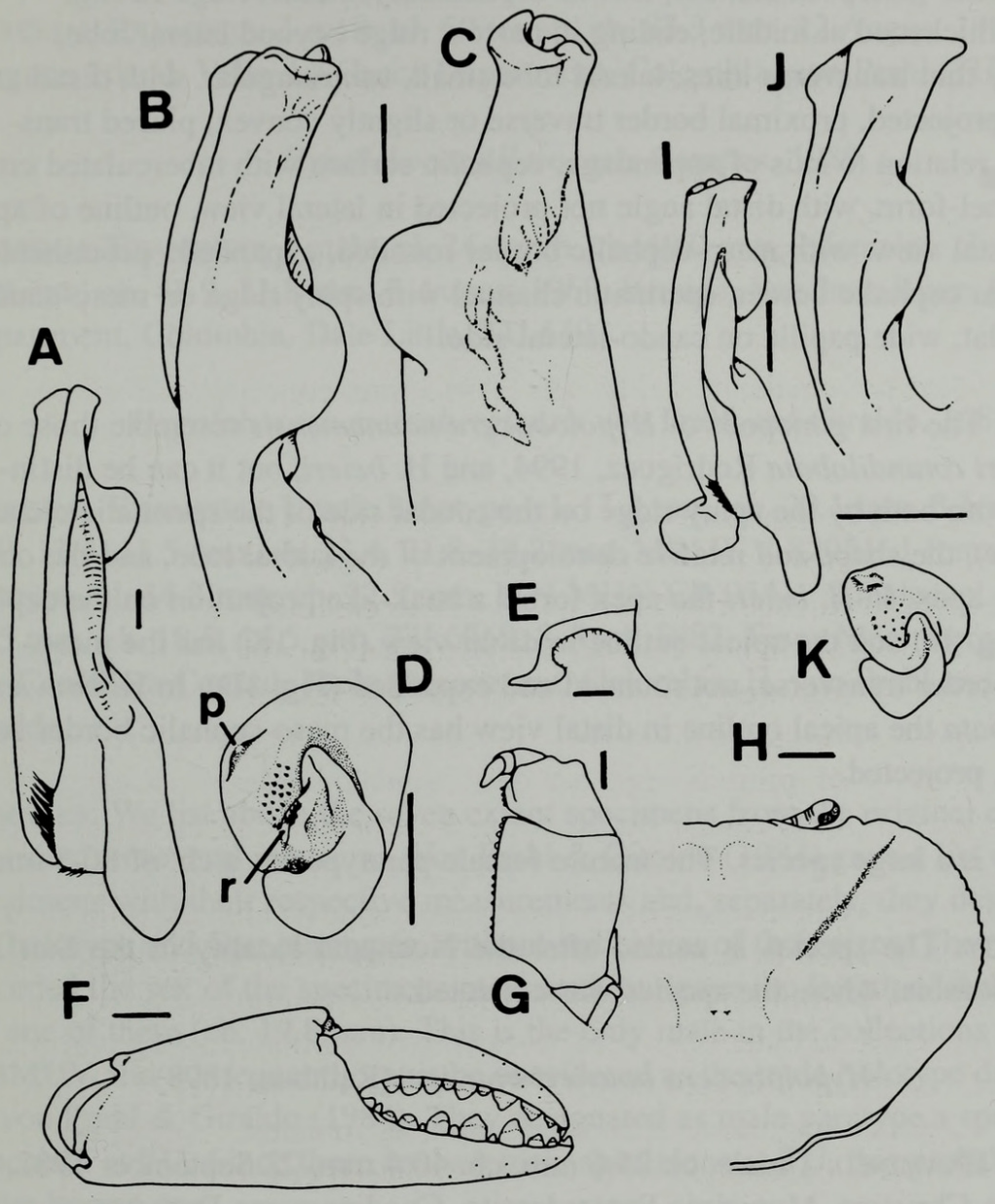

Figure 1. *Hypolobocera noanamensis,* new species, male holotype from Noanamá, San Juan River, Chocó Department, Colombia (TU 6191), A-D, first left gonopod: A, caudal view; B, lateral view; C, cephalic view; D, apex, distal view; E, aperture of efferent channel; F, larger chela, right; G, left third maxilliped; H, dorsal view of right side of carapace; *Hypolobocera beieri* Pretzmann, 1968, male cb. 24.2 mm, from Cauca River, near Cali, Colombia (TU 5381), first left gonopod: I, caudal view; J, lateral view; K, apex, distal view; r, spiny ridge; p, papilla. Scales A-D = 1 mm, E, G = 3 mm, F,H = 1 cm, I, J, K = 1 mm.

nal margin and prominent tubercles on lower margin.

First male gonopods slender, arched cephalically; caudal ridge strong, fusiform, thickened at middle, ending in narrow ridge beyond lateral lobe, crossed by thin transverse lines; lateral lobe small, subtriangular, with distal angle rounded, projected, proximal border traverse or slightly convex, placed transversely in relation to axis of appendage; cephalic surface with tuberculated crest. Apex funnel-form, with distal angle not projected in lateral view, outline of apex oval in distal view, with meso-cephalic border rounded, expanded, prominent papilla near cephalic border, spermatic channel with spiny ridge on meso-caudal side and flat, wide papilla on caudo-lateral side.

REMARKS: The first gonopods of *Hypolobocera noanamensis* resemble those of *H. bouvieri rotundilobata* Rodríguez, 1994, and H. *beieri*, but it can be distinguished from both by the spiny ridge on the caudal side of the spermatic channel (Fig. 1D, r), the shape and relative development of the lateral lobe, and the outline of the apex. In *H. beieri* the apex forms a beak-like projection on the cephalic side (Fig. 1J) and the apical outline in distal view (Fig. 1K) has the meso-cephalic border transverse, not rounded and expanded (Fig. 1D). In H. *bouvieri rotundilobata* the apical outline in distal view has the meso-cephalic border subtriangular, projected.

SIZE: This is a large species. The mature female paratype has a cb. of 80.3 mm

ETYMOLOGY: The species is named after the Noanamá locality in the San Juan River, Colombia, where the species was collected.

Hypolobocera bouvieri bouvieri (Rathbun, 1898)

MATERIAL EXAMINED: 1 male, cl. 25.6 mm, cb. 40.4 mm, 22 September 1982, Finca Villa Christina, Municipio Santardercito, Cundinamarca Department, Colombia, von Prahl, TU 6382; 1 male, cl. 35.0 mm, cb. 57.5 mm, 7 November 1981, La Mesa, 1,500 m alt., Cundinamarca Department, Colombia, TU 6355; 2 males, cl. 21.8, 16.4 mm, cb. 32.1, 24.4 mm, 21 April 1982, Sasaima, 1,500 m alt. (4°58'N, 74°26'W), Cundinamarca Department, Colombia, von Prahl, TU 6376; 1 male, cl. 52.4 mm, cb. 89.6 mm, 28 November 1981, Doima River, Municipio Doima, Tolima Department, Magdalena basin, Colombia, TU Acc N° 94-100.

Hypolobocera bouvieri angulata (Rathbun, 1915)

MATERIAL EXAMINED: 1 immature male, cl. 20.0 mm, cb. 30.2 mm, 9 August 1965, highway from Santa Marta to Riohacha, 10 km from Bonda, Magdalena Department, Colombia, A. E. Smalley, TU 5382.

Hypolobocera gorgonensis von Prahl, 1983

MATERIAL EXAMINED: 1 male, cl. 50.6 mm, cb. 83.3 mm, 22 August 1980, Gorgona Island, Valle del Cauca Department, Colombia, von Prahl, TU 6303.

Hypolobocera lloroensis Campos, 1989

MATERIAL EXAMINED: 1 male, cl. 24.4 mm, cb. 40.0 mm, 2 females, cl. 26.3, 13.8 mm, cb. 43.9, 21.8 mm, 8 August 1969, Istmina, San Juan River, Chocó Department, Colombia, Dale Little, TU 6193.

Hypolobocera merenbergiensis von Prahl and Giraldo, 1985

MATERIAL EXAMINED: 1 male holotype, cl. 13.1 mm, cb. 20.1 mm, 3 females, cl. 14.0, 13.4, 11.5 mm, cb. 23.4, 21.8, 18.2 mm, MBMUV-82051, 1 female paratype, cl. 14.2 mm, cb. 22.5 mm, ICN-MHN-CR 0541, 2 males, cl. 12.3, 10.5 mm, cb. 18.8, 16.5 mm, TU 6369, 8 April 1982, Finca Merenberg, 2,300 m alt., Cordillera Central, Huila Department, Colombia, H. von Prahl and J. Giraldo.

REMARKS: We list above the seven extant specimens from the original collection deposited in several museums. Von Prahl & Giraldo (1984) gave a list of six specimens with their respective measurements and, separately, they designated the holotype and four paratypes, without indication of their sizes. They did not recorded the sex of the specimens measured, but gave the length of the gonopod for one of them (cb. 19.8 mm). This is the only male in the collections of the MBMUV and consequently must be considered as the male holotype designated by von Prahl & Giraldo (1984). They designated as male paratype a specimen deposited at TU. Since there are two male specimens at TU, this probably refers to the largest one.

Von Prahl & Giraldo (1984) recorded three female paratypes, one of them deposited at the ICN-MHN-CR, and two at the MBMUV. They stated that these last were marked as numbers 48 and 49, but we could not find the respective labels, and furthermore, there are three females at the MBMUV instead of the two implied in the designation of the paratypes. Consequently, we cannot determine to which of the females in the MBMUV corresponds the status of paratypes. Our measurements of the cb. show slight discrepancies with the measurements given by Von Prahl & Giraldo (1985). The discrepancies are even larger for cl. measurements.

Lindacatalina Pretzmann, 1977

Lindacatalina sinuensis, new species

Figs. 2A-H

HOLOTYPE: Adult male, cl. 10.0 mm, cb. 15.6 mm, 3 August 1965, 80 km up Sinú River, from Tierra Alta, small waterfall tributary of Sinú River, Córdoba Department, Colombia, Kraig Adler, TU 5337.

PARATYPE: 1 ovigerous female, cl. 14.9 mm, cb. 23.8 mm, collected with holotype, TU 5337.

DIAGNOSIS: First male gonopods with lateral margin divided longitudinally into two distinct halves, one caudal, small, rounded, another lateral, larger, circular in outline, covered by stout spines. Apex in distal view elongated in mesolateral axis, oval, with flat papilla over field of spines.

DESCRIPTION OF HOLOTYPE: Carapace 1.56 times as wide as long, surface covered with small papillae not visible to naked eye, regions of carapace clearly defined; cervical grooves shallow and straight, becoming indistinct toward margins of carapace. Anterolateral margins with wide shallow notch behind outer orbital angle, notch with papillae on margin; not meeting anteroexternal orbital angle, continuing above orbital margin; posterior to cervical groove with approximately 15 small teeth. Postfrontal lobes small, forming two slight swellings placed transversely in relation to middle axis of carapace; median groove shallow, ill defined. Surface of carapace in front of postfrontal lobes inclined anteriorly. Upper margin of front bilobed in dorsal view and bearing row of ill defined papillae; lower margin strongly sinuous in frontal view and conspicuously thickened; space between both margins moderately high.

Third maxilliped with lateral border of merus of endognath forming regular curve, with deep depression on distal part of external margin. Exognath of third maxilliped 0.3 length of ischium of endognath. Orifice of efferent branchial channel open. Chelipeds unequal, finger of larger one with small gap when closed, palm slightly swollen. Carpus with prominent spine on internal upper margin; internal upper margin of merus with rows of teeth.

First male gonopods arched cephalically, caudal ridge prominent, with few transverse wrinkles at middle section. Lateral margin divided longitudinally into two distinct halves, one caudal, small, rounded, formed by distal expansion of caudal ridge, and another lateral, larger, circular in outline, covered by stout spines. Apex in distal view elongated in mesolateral axis, oval, with flat papilla over field of spines.

REMARKS: We are tentatively placing this species in the genus *Lindacatalina* due to the presence of two parallel lateral lobes, one of them densely covered with

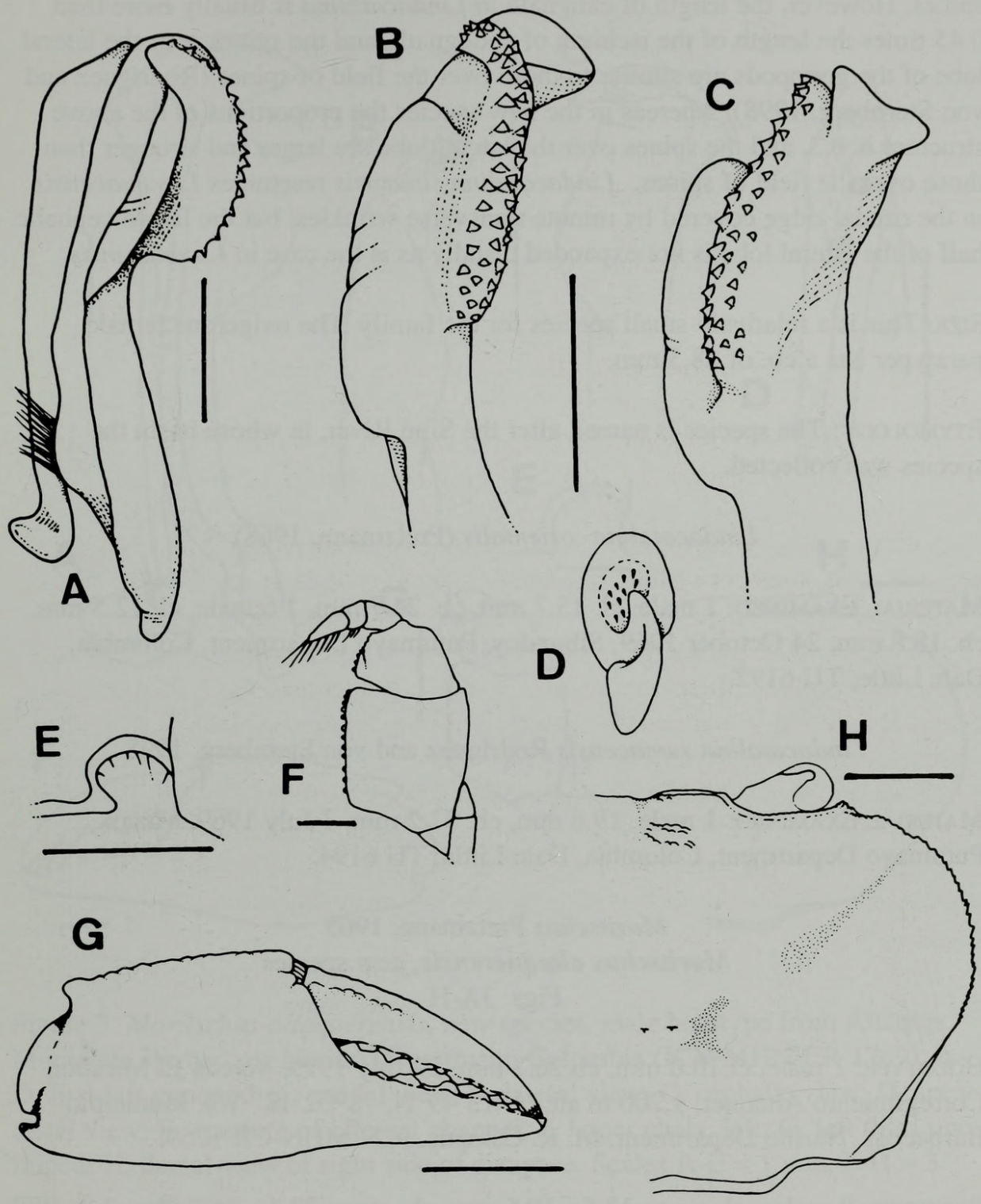

Figure 2. *Lindacatalina sinuensis*, new species, male holotype from Sinú River, Córdoba Department, Colombia (TU 5337), A-D, first left gonopod: A, caudal view; B, lateral view; C, latero-cephalic view; D, apex, distal view; E, aperture of efferent channel; F, left third maxilliped; G, larger chela, right; H, dorsal view of right side of carapace. Scales A-F = 1 mm, G-H = 3 mm.

spines. However, the length of exognath in *Lindacatalina* is usually more than 0.45 times the length of the ischium of endognath, and the spines over the lateral lobe of the gonopods are similar to those over the field of spines (Rodríguez and von Sternberg, 1998), whereas in the new species the proportions of the above structure is 0.3, and the spines over the lateral lobe are larger and stronger than those over the field of spines. *Lindacatalina sinuensis* resembles *L. sumacensis* in the caudal ridge covered by minute transverse wrinkles, but the latero-cephalic half of the lateral lobe is not expanded distally as is the case in *L.sumacensis*.

SIZE: This is a relatively small species for the family. The ovigerous female paratyper has a cb. of 28.3 mm.

ETYMOLOGY: The species is named after the Sinú River, in whose basin the species was collected.

Lindacatalina orientalis (Pretzmann, 1968)

MATERIAL EXAMINED: 1 male, cl. 15.7 mm, cb. 24.7 mm, 1 female, cl. 12.5 mm, cb. 18.8 mm, 24 October 1969, Sibundoy, Putumayo Department, Colombia, Dale Little, TU 6192.

Lindacatalina sumacensis Rodríguez and von Sternberg, 1998

MATERIAL EXAMINED: 1 male, 19.6 mm, cb. 31.2 mm, 7 July 1969, Mocoa, Putumayo Department, Colombia, Dale Little, TU 6194.

Moritschus Pretzmann, 1965
Moritschus altaquerensis, new species
Figs. 3A-H

HOLOTYPE: 1 male, cl.16.0 mm, cb.26.7 mm, 29 July 1999, Vereda El Mirador, Corregimiento Altaquer, 1,200 m alt. (1°13'49"N, 78°02'18" W), Municipio Barbacoas, Nariño Department, M. R. Campos, ICN-MHN-CR 1769.

PARATYPE: 9 males, cl. range 13.5 - 10.6 mm, cb. range 22.1 - 16.7 mm, 7 females, cl. range 15.0 - 10.8 mm, cb. range 24.0 - 17.1 mm, collected with holotype, ICN-MHN-CR 1770.

ADDITIONAL MATERIAL EXAMINED: 5 males, cl. range 12.5 - 10.0 mm, cb. range 20.2 - 16.0 mm, 6 females, cl. range 15.2 - 11.8 mm, cb. range 24.4 - 18.8 mm, 30 July 1999, Vereda Ospina, 1,300 m alt. (1°13'18"N, 78°02'10"W), Municipio Ricaurte, Nariño Department, Colombia, M. R. Campos, ICN-MHN-CR 1771; 6

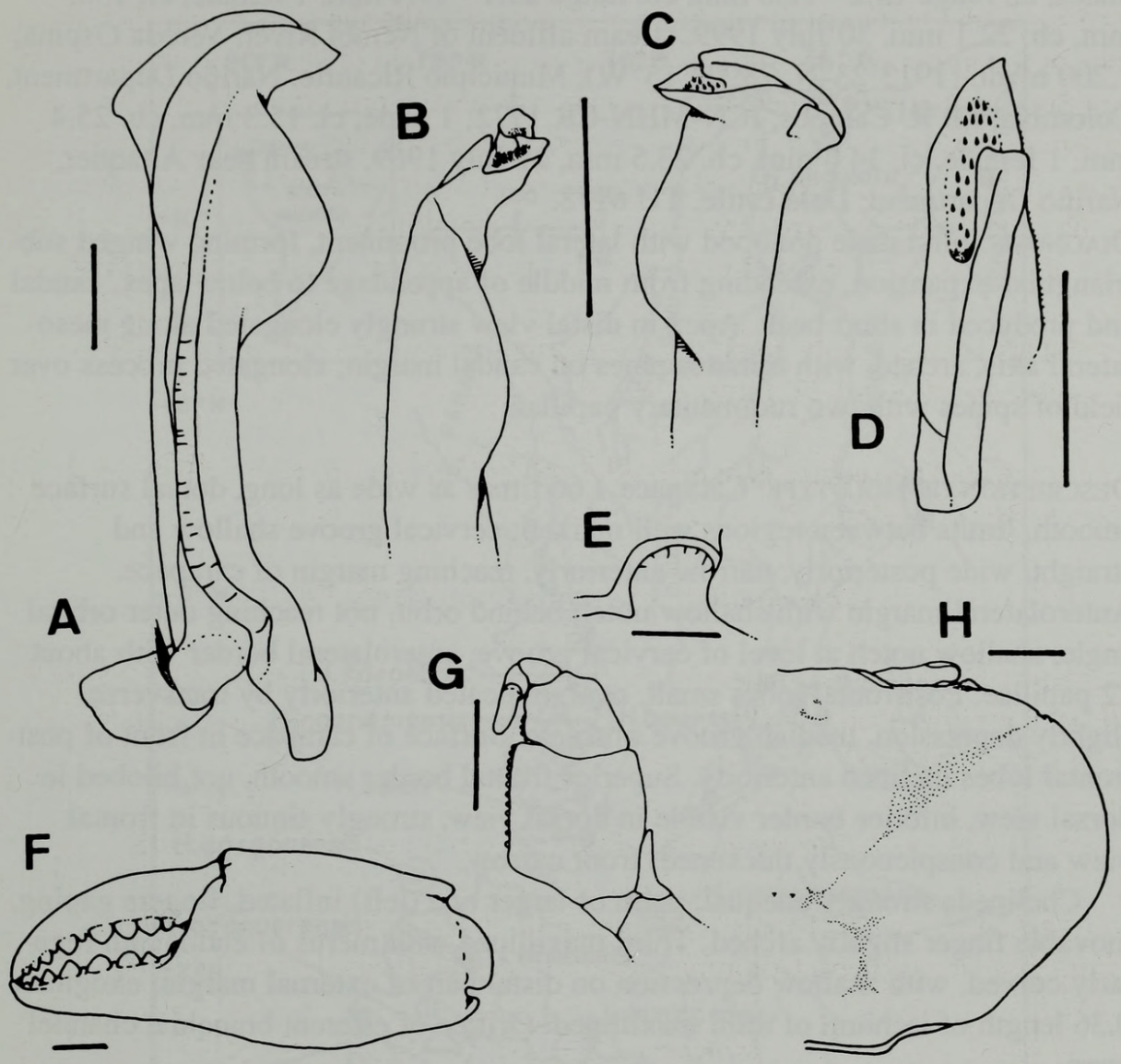

Figure 3. *Moritschus altaquerensis*, new species, male holotype from Altaquer, Municipio Barbacoas, Nariño Department, Colombia (ICN-MHN-CR 1769), A-D, first left gonopod: A, caudal view; B, lateral view; C, cephalic view; D, apex, distal view; E, aperture of efferent channel; F, larger chela, left; G, left third maxilliped; H, dorsal view of right side of carapace. Scales A-E = 1 mm, F-H = 3 mm.

males, cl. range 15.2 - 12.6 mm, cb. range 25.1 - 19.4 mm, 1 female, cl. 13.8 mm, cb. 22.1 mm, 30 July 1999, stream affluent of Nembí River, Vereda Ospina, 1,200 m alt. (1°13'23"N, 78°02'15"W), Municipio Ricaurte, Nariño Department, Colombia, M. R. Campos, ICN-MHN-CR 1772; 1 male, cl. 15.3 mm, cb. 25.4 mm, 1 female, cl. 14.6 mm, cb. 23.5 mm, 11 July 1969, stream near Altaquer, Nariño Department, Dale Little, TU 6178.

DIAGNOSIS: First male gonopod with lateral lobe prominent, forming winged subtriangular expansion, extending from middle of appendage to below apex, caudal end produced in short beak. Apex in distal view strongly elongated along mesolateral axis, arched, with minute spines on caudal margin; elongated process over field of spines with two rudimentary papillae.

DESCRIPTION OF HOLOTYPE: Carapace 1.66 times as wide as long, dorsal surface smooth, limits between regions well marked; cervical groove shallow and straight, wide posteriorly, narrow anteriorly, reaching margin of carapace. Anterolateral margin with shallow notch behind orbit, not reaching outer orbital angle, shallow notch at level of cervical groove, anterolateral border with about 12 papillae. Postfrontal lobes small, oval, indicated anteriorly by transverse slightly depression, median groove obsolete. Surface of carapace in front of postfrontal lobes inclined anteriorly. Superior frontal border smooth, not bilobed in dorsal view, inferior border visible in dorsal view, strongly sinuous in frontal view and conspicuously thickened, front narrow.

Chelipeds strongly unequal, palm of larger one (left) inflated, fingers gaping, movable finger slightly arched. Third maxilliped with merus of endognath regularly curved, with shallow depression on distal part of external margin; exognath 0.36 length of ischium of third maxilliped. Orifice of efferent branchial channel open.

First male gonopod slender, arched laterally; caudal ridge elongated longitudinally; lateral lobe prominent, forming winged subtriangular expansion, extending from middle of appendage to below apex, caudal end produced in short beak; apex in distal view strongly elongated along mesolateral axis, arched, with minute spines on caudal margin; elongated process over field of spines with two rudimentary papillae.

COLOR: The holotype is dark brown with paler brown specks on the dorsal side of the carapace. The walking legs are brown dorsally, and light brown ventrally. The chelae are brown dorsally, and buffy-brown ventrally. The ventral surface of the carapace is buffy-brown.

HABITAT: The specimens were collected in shady, moist banks of springs and small streams. They were found in soft mud, under rocks, or in borrows.

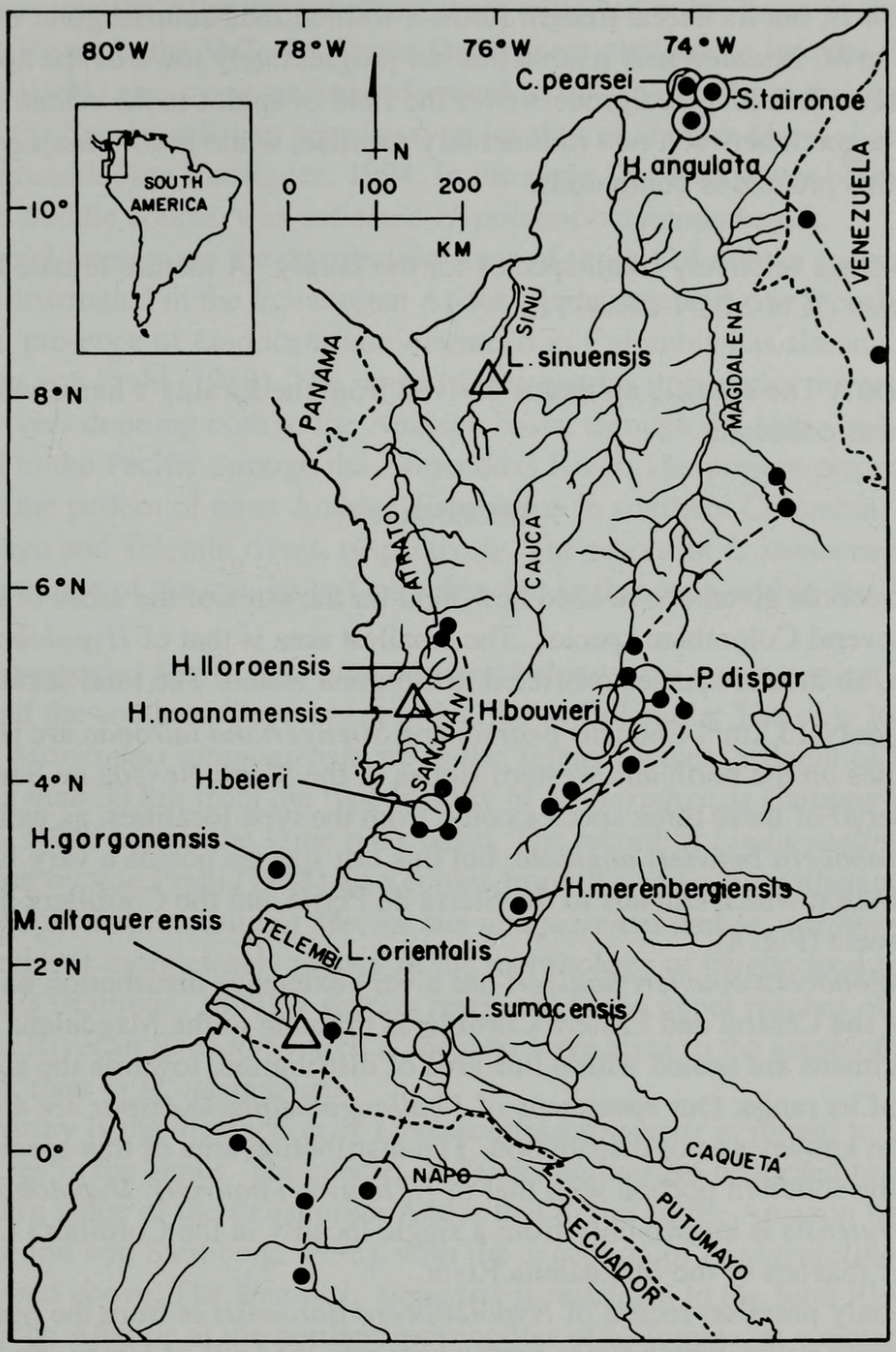

Figure 4. Geographic distribution of Colombian species of Pseudothelphusidae. Triangles, new species; open circles, new records; dots, previous records.

REMARKS: The first gonopods of the new species resemble those of *Moritschus ecuadorensis*, but its lateral margin forms a well defined subtriangular expansion, whereas in *M. ecuadorensis* it stretches out progressively towards the apex. Furthermore the elongated process over the field of spines in *M. ecuadorensis* presents a notch between two rudimentary papillae, while in *M. altaquerensis* the apex of this process is continuous.

SIZE: This is a relatively small species for the family. A mature female has a cb. of 24.4 mm (ICN-MHN-CR 1771.

ETYMOLOGY: The specific epithet is derived from the locality's name where the species was collected.

BIOGEOGRAPHY

The records given above shed new light on the sizes of the areas of distribution of several Colombian species. The smallest area is that of *Hypolobocera gorgonensis*, an insular species restricted to Gorgona Island. The total surface of this island is only 15 km^2. *Chaceus pearsei* and *Strengeriana taironae* are restricted to localities on the north and western slopes of the Sierra Nevada de Santa Marta. Our material of these three species come from the type localities, as well as that of *Hypolobocera bouvieri angulata*, but this last species posses a very large area of distribution which extends to the Sierra de Perijá and the Cordillera de Mérida in Venezuela (Fig. 4).

Hypolobocera bouvieri bouvieri has a very extensive distribution on the slopes of the Central and Eastern Cordilleras draining to the Magdalena River. Our specimens are nested within this area of distribution, towards the southern portion of its range. Our specimens of *Phallangothelphusa dispar* are also nested within the known area of distribution. The distribution area of this species overlaps, in the southern portion with that of *H. bouvieri bouvieri*. *Hypolobocera merenbergiensis* is known only from a single locality in the Cordillera Central, in the upper reaches of the Magdalena River.

The only previous record of *Hypolobocera lloroensis* is from the headwaters of the Atrato River, which flows northwards into the Gulf of Uraba, on the Atlantic coast. Our material comes from a region that, notwithstanding its proximity to the type locality, is situated on the basin on the San Juan River, which flows southwards to the Pacific coast of Colombia. This phenomenon is possibly due to intermittent communication of both basins during seasonal flooding in areas below 100 m of altitude. A similar phenomenon has been recorded for the Orinoco, Amazon, and the Atlantic rivers of the Guianas (Rodríguez, 1982b).

Hypolobocera beieri displays an interesting trans-Andean distribution. Numerous specimens of *H. beieri* present in the Tulane Collection come from the

main area of distribution of the species, in the upper reaches of the Cauca River, which drains into the Atlantic, but others were collected in the basin of the Anchicaya River, in the Valle del Cauca Department, that drains into the Pacific. Rodríguez (1994) also gives an isolated record of this species from the upper reaches of the San Juan River, near the type locality of another *Hypolobocera, H. bouvieri rotundilobata* Rodríguez, 1994. In the same San Juan River basin, towards its middle course, was collected *Hypolobocera noanamensis*.

Of special interest are the distribution areas of those Colombian species related to taxa distributed in the Ecuadorian Andes (Rodríguez and von Sternberg, 1998). The presence of *Lindacatalina orientalis* in Colombia has already been recorded by von Prahl (1988). The range of this species in Ecuador covers the basins of rivers draining both to the Amazon basin, through the Napo and Pastaza rivers, and to the Pacific through the Esmeraldas River. The present record follows the same pattern of trans-Andean distribution in southern Colombia, through the Putumayo and Telembi rivers, respectively. The record of *L. sumacensis* also extends the range of the species to Colombia, but in this case, within the Amazon basin.

The new species *Moritschus altaquerensis* belongs to a genus present in Ecuador and the southern Department of Nariño in Colombia. The only localities known for *Moritschus altaquerensis* are in the Telembi River (affluent of Patia River), less than 30 km from the type locality of *M. narinnensis* Campos and Rodriguez, 1988, and on the same river basin. The record of *Lindacatalina orientalis* given by von Prahl (1988) also comes from this river. Notwithstanding the close geographical proximity of *Moritschus altaquerensis* and *M. narinnensis*, the former species is more closely related in the morphology of its gonopod to *M. ecuadorensis* (Rathbun, 1897), a species restricted to the upper reaches of the Esmeraldas River in Ecuador, which is the next large river to the south of the Patia River, than to *M. narinnensis*.

Noteworthy is the disjunction of *Lindacatalina sinuensis* in regard to the rest of the species in the genus. The species of *Lindacatalina* are restricted to a sector of the eastern slope of the Ecuadorian Andes that drains to the Amazon basin (Rodríguez and von Sternberg, 1998), with the exception of *Lindacatalina orientalis* discussed above. The area of *L. sinuensis* is restricted to the Sinú River that drains into the Atlantic at the northernmost corner of Colombia, at a distance of more than 800 km from the main distribution area of the genus.

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Literature Cited

CAMPOS, M. 1989. Nuevas especies de cangrejos de agua dulce del género *Hypolobocera* (Crustacea: Decapoda: Pseudothelphusidae) para Colombia. Trianea 3: 143-147.

CAMPOS, M. and G. RODRÍGUEZ. 1988. Notes on the freshwater crabs of the genus *Moritschus* Pretzmann, 1965 (Crustacea: Decapoda: Pseudothelphusidae) with description of *M. narinnensis* from southern Colombia. Proceedings of the Biological Society of Washington 101(3): 640-643.

ORTMANN, A. 1893. Die Dekapoden-Krebse des Strassburger Museums, mit besonderer Berücksichtigung der von Herrn Dr. Döderlein bei Japan und bei den Liu-Kiu-Inseln gesammelten und zur Zeit in Strassburger Museum aufbewahrten Formen. VII. Theil. Abtheilung: Brachyura (Brachyura genuina Boas) II. Unterabtheilung: Cancroidea, 2 Section: Cancrinea, 1. Gruppe: Cyclometopa. Zoologische Jahrbücher, Abtheilung für Systematik, Geographie und Biologie der Thiere 7: 411-495.

ORTMANN, A. 1897. Carcinologische Studien. Zoologische Jahrbücher, Abtheilung für Systematik,Geographie und Biologie der Thiere 10:258-372.

PRAHL, H. VON. 1983. *Hypolobocera gorgonensis sp.* nov. (Crustacea: Brachyura: Pseudothelphusidae) un nuevo cangrejo de agua dulce de la isla de Gorgona, Colombia. Cespedesia 12(45-46): 105-110.

PRAHL, H. VON. 1988. Fresh-water crabs (Crustacea: Brachyura: Pseudothelphusidae) of the Pacific drainage of Colombia. Zoologische Jahrbücher, Abtheilung für Systematik, Geographie und Biologie der Thiere 115: 171-186.

PRAHL, H. VON, and J. GIRALDO. 1985. Un nuevo cangrejo de agua dulce de la Cordillera Central de Colombia. Lozania 49: 1-5.

PRETZMANN, G. 1965. Vorläufiger Bericht über die Familie Pseudothelphusidae. Anzeiger der Mathematisch Naturwissenschaftliche Klasse der Österreichischen Akademie der Wissenschaften (1) 1: 1-10.

PRETZMANN, G. 1968. Neue Südamerikanische Süsswasserkrabben der Gattung *Pseudothelphusa*. Entomologisches Nachrichtenblatt, Wien 15(1): 1-15.

PRETZMANN, G. 1971. Fortschritte in der Klassifizierung der Pseudothelphusidae. Sitzungsberichten der Österreichischen Akademie der Wissenschaften, Mathematisch Naturwissenschaftliche Klasse (1) 179 (1-4): 15-24.

PRETZMANN, G. 1977. Zur Taxonomie, Chorologie und Systematik der mittelandischen Hypolobocerini. Sitzungsberichten der Österreichischen Akademie der Wissenschaften, Mathematisch Naturwissenschaftliche Klasse (1) 186: 429-439.

RATHBUN, M. J. 1893. Descriptions of new species of American freshwater crabs. Proceedings of the United States National Museum 16 (959): 649-661.

RATHBUN, M. J. 1897. Descriptions de nouvelles espèces de Crabes d'eau douce appartenant aux collections du Muséum d'Histoire naturelle de Paris. Bulletin du Muséum nationale d'Histoire naturelle (Paris) 3 (2): 58-61.

RATHBUN, M. J. 1898. A contribution to a knowledge of the freshwater crabs of America. The Pseudothelphusinae. Proceedings of the United States National Museum 21(1158): 507-537.

RATHBUN, M. J. 1905. Les crabes d'eau douce (Potamonidae). Nouvelles Archives du Muséum d'Histoire Naturelle, Paris (4) 7: 159-321.

RATHBUN, M. J. 1915. New fresh-water crabs (*Pseudothelphusa*) from Colombia. Proceedings of the Biological Society of Washington 28: 95-100.

RODRÍGUEZ, G. 1982a. Les crabes d'eau douce d'Amerique. Famille des Pseudothelphusidae. Faune Tropicale 22: 1-223.

RODRÍGUEZ, G. 1982b. The freshwater shrimps (Crustacea, Decapoda, Natantia) of the Orinoco basin and the Venezuelan Guayana. Journal of Crustacean Biology 2: 378-391.

RODRÍGUEZ, G. 1994. A revision of the type material of some species of *Hypolobocera* and *Ptychophallus* (Crustacea: Decapoda: Pseudothelphusidae) in the National Museum of Natural History, Washington, D. C. with descriptions of a new species and a new subspecies. Proceedings of the Biological Society of Washington 107: 296-307.

RODRÍGUEZ, G., and M. CAMPOS. 1989. Cladistic relationships of freshwater crabs of the tribe Strengerianini (Decapoda: Pseudothelphusidae) from the northern Andes, with comments on their biogeography and descriptions of new species. Journal of Crustacean Biology 9: 141-156.

RODRÍGUEZ, G. and J.F. FITZPATRICK. 1996. Alfred Evans Smalley. Journal of Crustacean Biology 16: 214-215.

RODRÍGUEZ, G., and R. VON STERNBERG. 1998. A revision of the freshwater crabs of the family Pseudothelphusidae (Decapoda: Brachyura) from Ecuador. Proceedings of the Biological Society of Washington 111: 110-139.

ZIMMER, C., 1912. Beitrag zur Kentniss der Süsswasser dekapoden Kolumbiens. In: O. Fuhrmann and E. Mayor, eds., Voyage d'exploration scientifique en Colombie. Mémoires de la Societé néuchateloise des Sciences naturelles 5: 1-8.