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A new freshwater crab of the genus *Neostrengeria* Pretzmann, 1965, from Colombia (Crustacea: Decapoda: Brachyura: Pseudothelphusidae), with a key to the species of the genus

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Abstract.—A new species of freshwater crab of the pseudothelphusid genus *Neostrengeria* Pretzmann, 1965, *N. perijaensis*, is described and illustrated. This discovery means the genus now contains a total of 17 species and 2 subspecies, all endemic to the Eastern Andes of Colombia. The general characteristics of the genus are given, and a key for the identification of the species based primarily on the morphology of the male first gonopod, is presented.

The genus *Neostrengeria* Pretzmann, 1965, of the family Pseudothelphusidae, comprises a group of freshwater crabs that live in mountain springs and streams on the slopes and high plains of the Eastern Andes of Colombia (about 3° to 9°40′N, 73° to 74°50′W), at altitudes ranging from 400 to 3000 m above sea level. The systematics of this genus were clarified by Rodríguez (1982), and more recently were reviewed by Campos (1992, 1994). The geographical distribution of the genus was discussed by Campos & Rodríguez (1985) and Campos (1992, 1994). The new species described herein, *N. perijaensis*, was collected from humid habitats south of the Serranía of Perijá, at altitudes ranging between 1200 and 1800 m above sea level. With this discovery, the genus now contains 17 species and two subspecies.

The general carapace morphology of most species of *Neostrengeria* is very similar. They are distinguished primarily by the relative length of the exognath of the third maxilliped, which is 0.5 to 0.7 times as long as the ischium; the orifice of the efferent branchial channel, which is open; and by the male first gonopod which has a distinct lateral lobe usually divided in two halves, forming an accessory lobe. The shape of the apex of the first gonopod varies according to species, and is either oval, oblong, or expanded. A key to the species and subspecies of the genus is presented, based almost exclusively on the morphology of the first gonopod. The terminology used for the morphology of the first gonopod follows Smalley (1964) and Rodríguez (1982).

The material is deposited in Museo de Historia Natural, Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Santa Fé de Bogotá (ICN-MHN); National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM); and Instituto Venezolano de Investigaciones Científicas (IVIC). The abbreviations cb and cl indicate carapace breadth and length, respectively. Color nomenclature used follows Smithe (1975). Coordinates of collecting sites were taken using a Geographical Positioning System (GPS).

Family Pseudothelphusidae Rathbun, 1893
Tribe Strengerianini Rodríguez, 1982
Genus *Neostrengeria* Pretzmann, 1965
Neostrengeria perijaensis, new species
Figs. 1, 2

Holotype.—Quebrada El Zumbador, Vereda El Zumbador, Corregimiento La Vic-

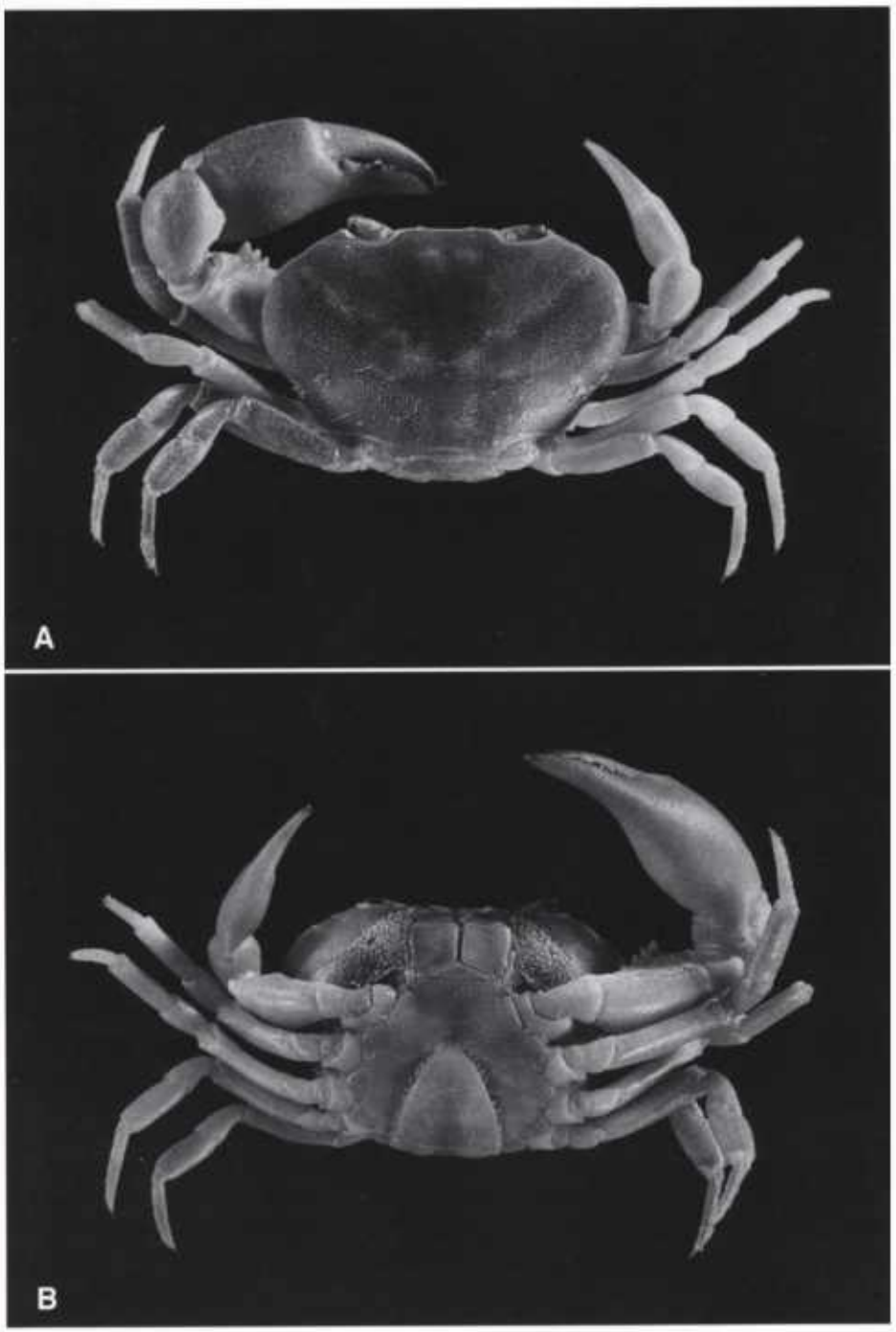

Fig. 1. *Neostrengeria perijaensis*, new species, male paratype, cb 17.5 mm, cl 11.0 mm (USNM 276145). A, dorsal view; B, ventral view.

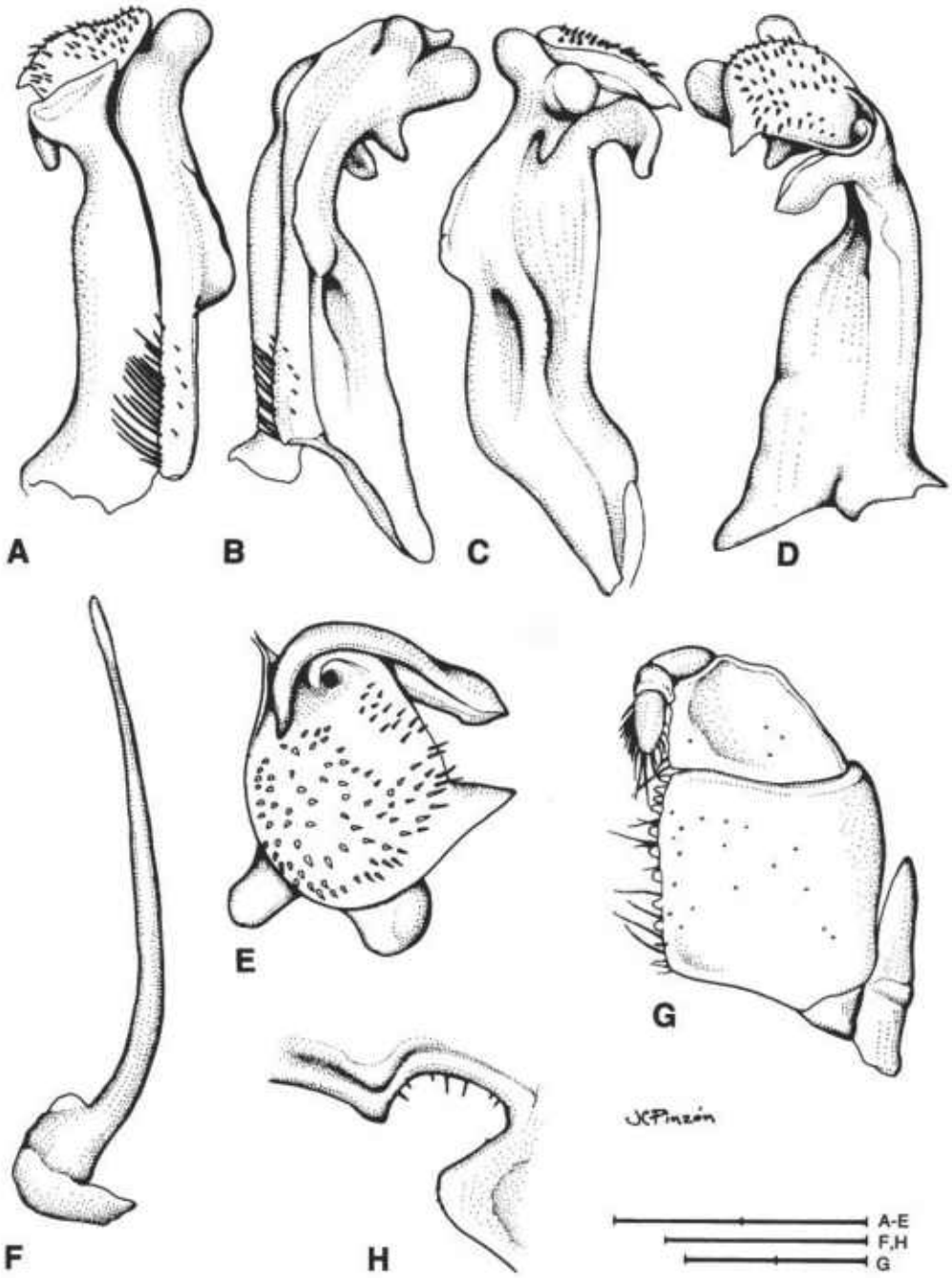

Fig. 2. *Neostrengeria perijaensis*, new species, male holotype, cb 22.0 mm, cl 13.5 mm (ICN-MHN-CR 1561). A, left first gonopod, caudal view; B, same, lateral view; C, same, cephalic view; D, same, mesial view; E, same, apex, distal view; F, left second gonopod, caudal view; G, left third maxilliped, external view; H, opening of left efferent branchial channel, external view. Scales equal 2 mm (A–E, G), and 1 mm (F, H).

toria de San Isidro, Municipio La Jagua de Ibirico, Serranía de Perijá, Cesar Department, Colombia, 9°33′10.8″N, 73°9′10.7″W, 1300 m alt., 13 Mar 1996, leg. M. R. Campos: 1 ♂, cb 22.0 mm, cl 13.5 mm, (ICN-MHN-CR 1561).

Paratypes.—Same locality data as holotype: 1 ♂, cb 17.5 mm, cl 11.0 mm, (USNM 276145), 1 ♂, cb 15.0 mm, cl 9.3 mm, 4 ♀, cb range 20.7–11.6 mm, cl range 12.9–10.0 mm (ICN-MHN-CR 1562).

Non-paratypes.—Quebrada El Zumbador, Vereda El Zumbador, Corregimiento La Victoria de San Isidro, Municipio La Jagua de Ibirico, Serranía de Perijá, Cesar Department, Colombia, 9°33′14.2″N, 73°9′17.8″W, 1270 m alt., 15 Mar 1996, leg. M. R. Campos: 2 ♂, cb 16.5, 11.5 mm, cl 10.4, 7.2 mm, 5 ♀, cb range 19.5–14.4 mm, cl range 12.0–8.8 mm (ICN-MHN-CR 1565).—Alto de Cantarrana, Vereda El Zumbador, Corregimiento La Victoria de San Isidro, Municipio La Jagua de Ibirico, Serranía de Perijá, Cesar Department, Colombia, 9°32′49.8″N, 73°8′46.9″W, 1800 m alt., 18 Mar 1996, leg. M. R. Campos: 1 ♂, cb 17.1 mm, cl 10.6 mm (IVIC), 11 ♂, cb range 18.4–11.1 mm, cl range 11.2–7.4 mm, 10 ♀, cb range 23.2–13.0 mm, cl range 13.8–8.5 mm (ICN-MHN-CR 1568).—Finca Peralonso, Vereda El Zumbador, Corregimiento La Victoria de San Isidro, Municipio La Jagua de Ibirico, Serranía de Perijá, Cesar Department, Colombia, 9°32′37.8″N, 73°9′42.5″W, 1320 m alt., 19 Mar 1996, leg. M. R. Campos: 6 ♂, cb range 20.1–12.8 mm, cl range 12.2–8.1 mm, 11 ♀, cb range 21.2–13.7 mm, cl range 13.3–8.4 mm (ICN-MHN-CR 1569).

Type locality.—Quebrada El Zumbador, Vereda El Zumbador, Corregimiento La Victoria de San Isidro, Municipio La Jagua de Ibirico, Serranía de Perijá, Cesar Department, Colombia, 9°33′10.8″N, 73°9′10.7″W, 1300 m alt.

Diagnosis.—First male gonopod straight, wide in caudal view; apex expanded cephalically into acuminate projection forming strong, wide-based spine; mesial lobe developed into distinct elongate projection.

Description of holotype.—Carapace (Fig. 1A) with cervical groove straight, shallow, ending some distance from lateral margin. Anterolateral margin with shallow depression behind external orbital angle, followed by series of papillae on anterior half; posterior half smooth. Postfrontal lobes small, rounded, delimited anteriorly by 2 depressions; median groove shallow. Surface of carapace in front of postfrontal lobes inclined anteriorly, depressed towards midline. Front rounded, lacking distinct upper border in frontal view, slightly bilobed in dorsal view; lower margin strongly sinuous in frontal view. Orbital margins each with row of small tubercles. Dorsal surface of carapace smooth, covered by small papillae; regions distinctly marked. Third maxilliped with merus having sharp angle on distal half of external margin; exognath approximately 0.58 times length of ischium (Fig. 2G). Orifice of efferent branchial channel irregularly ovate (Fig. 2H).

First pereiopods heterochelous; left cheliped larger than the right. Merus with 3 longitudinal crests as follows: upper one with rows of tubercles, internal lower one with rows of teeth, and external lower one with few tubercles. Carpus with 5 tubercles on internal crest and prominent blunt spine distally. Palms of both chelipeds smooth, swollen. Fingers of chelae not gaping when closed, tips crossing; outer and inner surfaces with rows of small tubercles.

Walking legs (pereiopods 2–5) slender (Fig. 1A). Dactyli elongated, each about 1.6 times as long as propodi, with papillae and 5 longitudinal rows of large spines diminishing in size proximally. Spines and papillae on each dactylus arranged as follows: 1 anterolateral row and 1 anteroventral row each with 5 spines and 2 intercalated papillae; 1 external row with 4 spines, 3 intercalated papillae and 1 pair of proximal papillae; and 1 posteroventral row and 1 posterolateral row each with 4 spines.

First gonopod (Fig. 2A–E) straight, wide;

mesial border straight on subdistal portion; with wide, deep notch in caudal view. Accessory lobe rounded distally, slightly shorter than lateral lobe and directed caudally; lateral lobe wide, distal end rounded, directed cephalically, with prominent spine-like process on external margin (Fig. 2A–C). Apex in distal view (Fig. 2E) expanded cephalically into acuminate projection forming strong, wide-based spine; surface covered by dark colored spines; mesial lobe developed into distinct elongated projection, surface rough; mesocaudal projection of spermatic channel terminating acutely, perpendicular to apical expansion (Fig. 2D, E). Second gonopod (Fig. 2F) with spinules distally; tip cup-shaped.

Color.—The alcohol preserved holotype is dark brown (near 223, Raw Umber), with pale brown (Verona Brown, 223 B) specks on the dorsal side of the carapace. The walking legs are brown (Mars Brown, 223 A) dorsally, and buffy-brown (Sayal Brown, 223C) ventrally. The large chela is pale brown (Verona Brown, 223C) dorsally, and buffy-brown (Sayal Brown, 223C) ventrally. The small chela is reddish-brown (Tawny, 38). The ventral surface of the carapace is buffy-brown (Sayal Brown, 223C).

Habitat.—The specimens were collected in shaded, moist banks of springs and small streams. They were found in soft mud, under rocks, or in burrows. The largest populations were found in one location at Alto de Cantarrana, Vereda El Zumbador, Corregimiento La Victoria de San Isidro, Municipio La Jagua de Ibirico, Cesar Department.

Etymology.—The specific name refers to the Serranía de Perijá, where all the specimens were collected.

Remarks.—This species is most similar to *Neostrengeria lobulata* Campos, 1992. The two can be differentiated by features of the first gonopod. The first gonopod (in caudal view) of *N. lobulata* is narrow and constricted near its midsection, while the first gonopod of *N. perijaensis* is wide and straight (cf. Campos 1992). The mesial lobe of the first gonopod of *N. perijaensis* is developed into a distinct elongate projection, while this lobe is rudimentary, represented by only a subterminal swelling in *N. lobulata.* The apex of the first gonopod of *N. lobulata* is formed by a wide, irregularly shaped expansion with curved borders that is projected cephalically into an acute lobe, while in *N. perijaensis* the apex consists of an acuminate projection ending in a strong, broad-based spine.

Key to the species of the genus *Neostrengeria* based primarily on the male first gonopod

1. Laterodistal expansion of first gonopod curved, forming wide lobe (Fig. 3A) . . . . . *N. botti* Rodríguez & Türkay, 1978
– Laterodistal expansion of first gonopod not curved, lacking lobe 2
2. Mesial lobe of first gonopod triangular 3
– Mesial lobe of first gonopod semicircular (Fig. 3B) . . . . . *N. guenteri* Pretzmann, 1965
3. First gonopod with lateral and accessory lobes distinctly separated 4
– First gonopod with lateral and accessory lobes not separated from gonopod 12
4. Apex of first gonopod with outer surface smooth 5
– Apex of first gonopod with outer surface spinulose 17
5. Accessory lobe of first gonopod subequal in length to lateral lobe 6
– Accessory lobe of first gonopod distinctly shorter than lateral lobe 7
6. Accessory lobe of first gonopod unarmed (Fig. 3C) *N. gilberti* Campos, 1992
– Accessory lobe of first gonopod armed with spines (Fig. 3D, E) . . . . . *N. aspera* Campos, 1992
7. Margins of accessory lobe of first gonopod smooth in caudal view 8
– Margins of accessory lobe of first gonopod festooned in caudal view (Fig. 3F) . . . . . *N. monterrodendoensis* Bott, 1967
8. Longitudinal rows of spines on dactyli of walking legs each with 3 to 5 spines 9
– Longitudinal rows of spines on dactyli of walking legs each with 6 to 10 spines 10

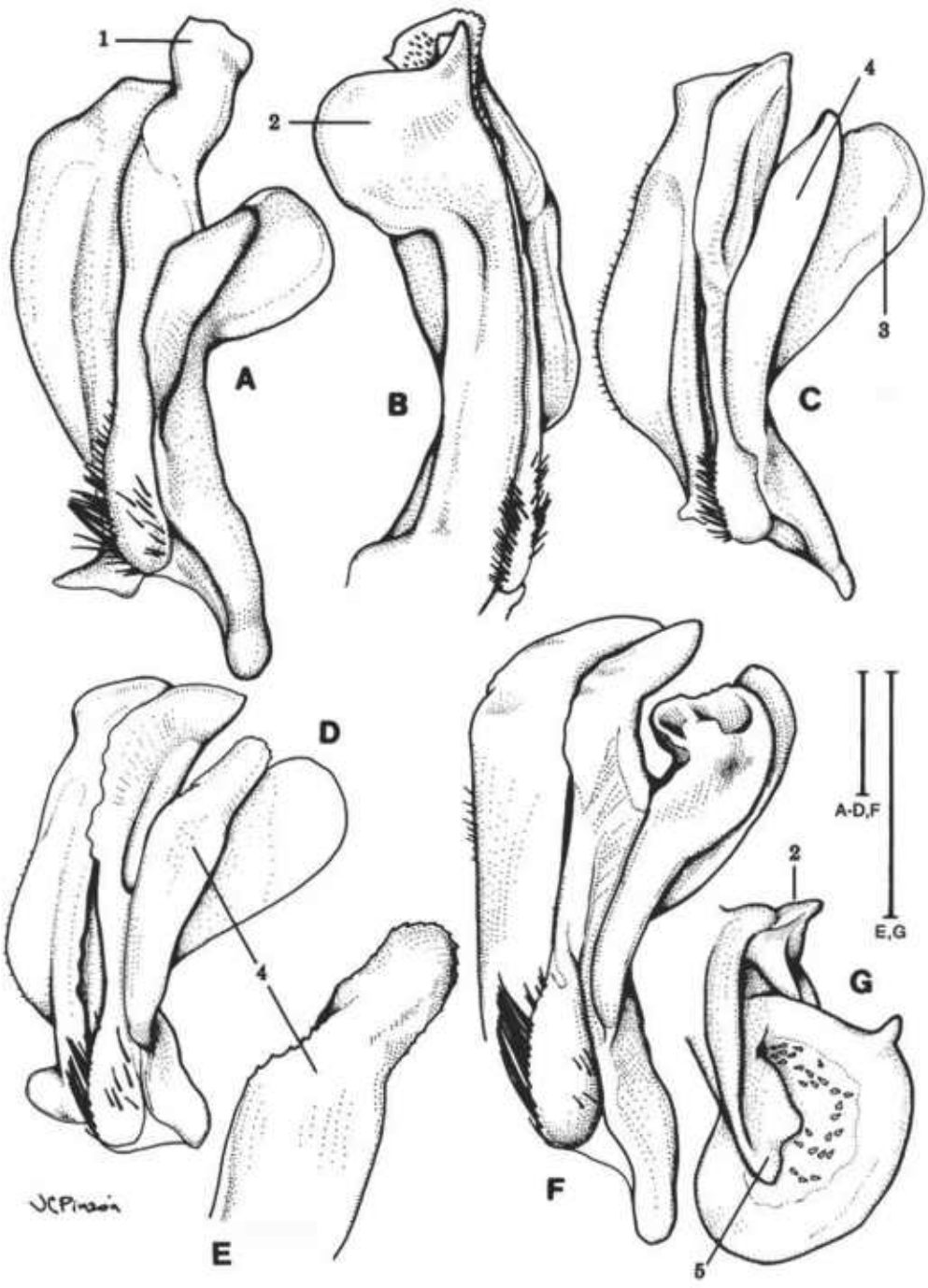

Fig. 3. Left first gonopod of species of *Neostrengeria* Pretzmann, 1965: A–E, caudal view; G, apex, distal view. A, *N. botti* Rodríguez & Türkay, 1978; B, *N. guenteri* Pretzmann, 1965; C, *N. gilberti* Campos, 1992; D, *N. aspera* Campos, 1992; E, accessory lobe of same; F, *N. monterrodendoensis* Bott, 1967; G, *N. lindigiana* (Rathbun, 1897). 1, laterocaudal expansion; 2, mesial lobe; 3, lateral lobe; 4, accessory lobe; 5, mesocaudal projection of spermatic channel. Scales equal 1 mm.

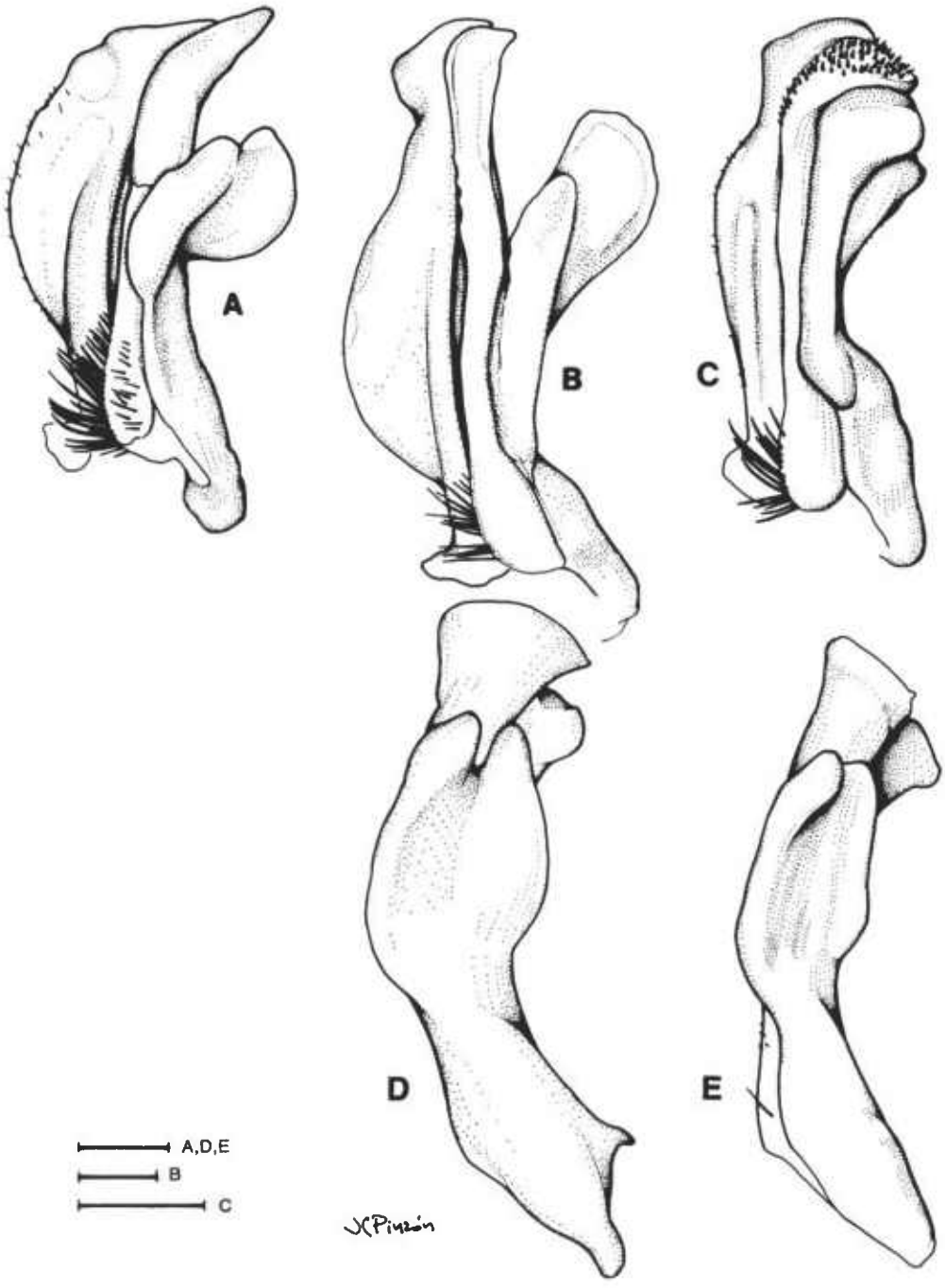

Fig. 4. Left first gonopod of species of *Neostrengeria* Pretzmann, 1965, caudal view. A, *N. charalensis* Campos & Rodríguez, 1985; B, *N. macarenae* Campos, 1992; C, *N. lobulata* Campos, 1992; D, *N. libradensis libradensis* Rodríguez, 1980; E, *N. l. appressa* Campos, 1992. Scales equal 1 mm.

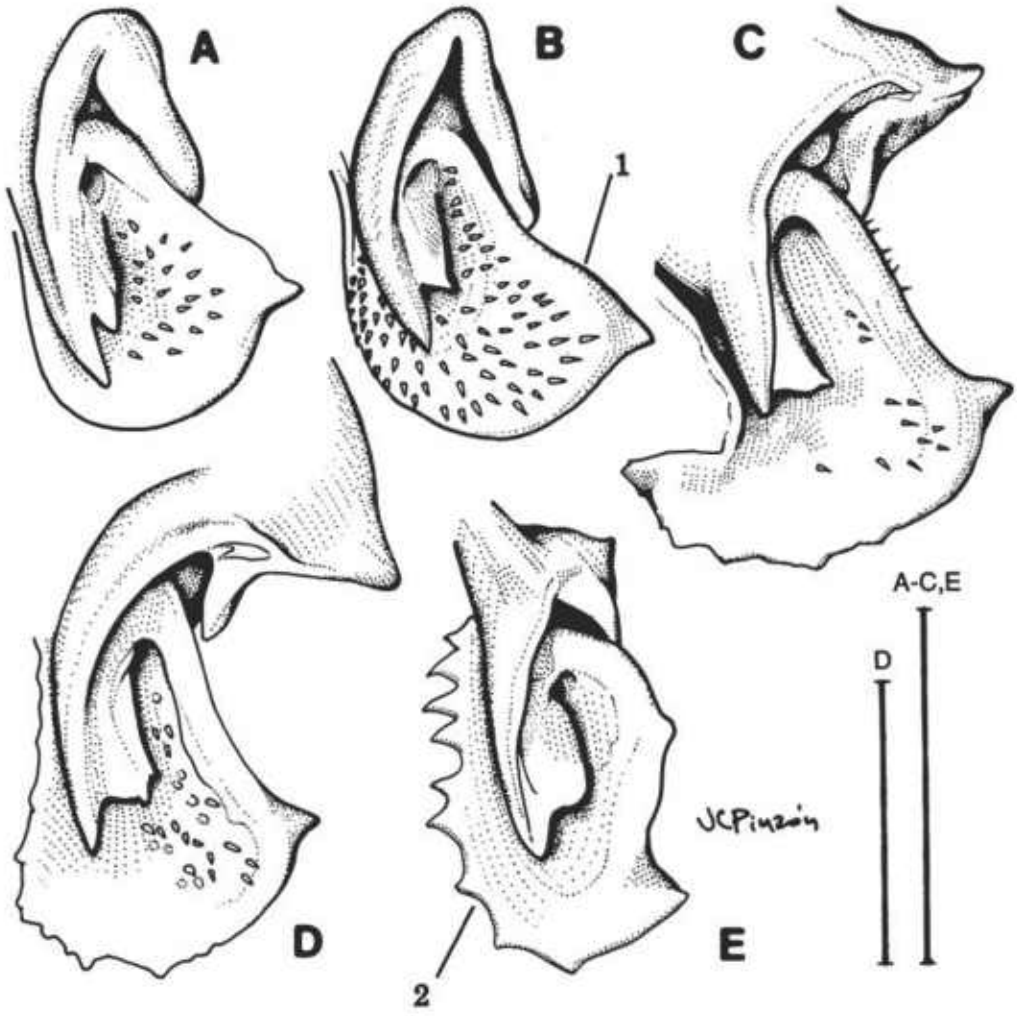

Fig. 5. Apices of left first gonopod of species of *Neostrengeria* Pretzmann, 1965, distal view. A, *N. tonensis* Campos, 1992; B, *N. tencalanensis* Campos, 1992; C, *N. boyacensis* Rodríguez, 1980; D, *N. lasallei* Rodríguez, 1980; E, *N. niceforoi* (Schmitt, 1969). 1, cephalic margin; 2, laterocaudal margin. Scales equal 1 mm.

9. Apex of first gonopod oval in distal view 11
– Apex of first gonopod semicircular in distal view, expanded cephalically (Fig. 3G) ..... *N. lindigiana* (Rathbun, 1897)
10. Walking legs unusually long, total length (measured from coxa to tip of dactyl) of each about 1.3 times carapace width .... *N. sketi* Rodríguez, 1985
– Walking legs normal in length, total length (measured from coxa to tip of dactyl) of each subequal to carapace width .... *N. macropa* (H. Milne Edwards 1853)
11. Lateral lobe of first gonopod short, distal margin semicircular in caudal view (Fig. 4A) ..... *N. charalensis* Campos & Rodríguez, 1985
– Lateral lobe of first gonopod long, distal margin broadly rounded (Fig. 4B) ..... *N. macarenae* Campos, 1992
12. Laterodistal margin of first gonopod widening distally, forming lobe (Fig. 4C) ..... *N. lobulata* Campos, 1992
– Laterodistal margin of first gonopod not widening distally, not forming lobe .. 13
13. Mesocaudal projection of spermatic

channel of first gonopod terminating in acute bifid projection 14
– Mesocaudal projection of spermatic channel of first gonopod terminating in acute simple projection (Fig. 2E) .... *N. perijaensis*, new species
14. Lateral lobe of first gonopod directed apically 15
– Lateral lobe of first gonopod curved cephalically 16
15. Distal portion of accessory and lateral lobes of first gonopod separated by deep notch in lateral view (Fig. 4D) .. *N. libradensis libradensis* Rodríguez, 1980
– Distal portion of accessory and lateral lobes of first gonopod not separated by deep notch, nearly continuous, in lateral view (Fig. 4E) .... *N. libradensis appressa* Campos, 1992
16. Cephalic margin of apex of first gonopod constricted subdistally, terminating in spine (Fig. 5A) .... *N. tonensis* Campos, 1992
– Cephalic margin of apex of first gonopod not constricted subdistally, terminating in acuminate projection (Fig. 5B) ..... *N. tencalanensis* Campos, 1992
17. Laterocaudal side of apex of first gonopod expanded (Fig. 5C) .... *N. boyacensis* Rodríguez, 1980
– Laterocaudal side of apex of first gonopod not expanded 18
18. Outer laterocaudal surface of apex of first gonopod with small blunt spines (Fig. 5D) ... *N. lasallei* Rodríguez, 1980
– Outer laterocaudal surface of apex of first gonopod with large, sharp spines (Fig. 5E) ... *N. niceforoi* (Schmitt, 1969)

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