

A NEW SPECIES OF *NEOSTRENGERIA*
(CRUSTACEA: DECAPODA: PSEUDOTHELPHUSIDAE)
WITH NOTES ON GEOGRAPHICAL DISTRIBUTION
OF THE GENUS

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Abstract.—*Neostrengeria charalensis*, new species, is described from Charalá, Departamento Santander, Colombia. It is most closely related to *N. macropa*, but the dactyli of the walking legs have only four to six spines in each of the five rows, instead of the 12 to 17 present in *N. macropa*, and the gonopod has different proportions. The geographical distribution of the species of *Neostrengeria* is more precisely defined with the help of several new records.

The genus *Neostrengeria* Pretzmann, 1965, comprises a group of small pseudothelphusid crabs from the Eastern Cordillera of Colombia. The group is homogeneous and well defined; the morphology of the male gonopod shows that these crabs derive directly from some of the most primitive members of the family (Rodríguez, in press). Although the systematics of *Neostrengeria* are well established (Rodríguez 1982), the geographical distribution of the species is rather confusing. With the aim of defining the ranges of the species more precisely, one of us (MRC) made extensive collections along the Eastern Cordillera. We also had access to the collections of freshwater crabs made in Colombian caves by Dr. B. Sket during the University of Ljubljana Colombia Expedition. Examination of these materials revealed the presence of a new species, as well as of all the species previously described from the area, except *N. libradensis* Rodríguez, 1980. The material is deposited in the Museo de Historia Natural, Instituto de Ciencias Naturales, Bogotá (ICN-MHN), the reference collection of the Instituto Venezolano de Investigaciones Científicas, Caracas (IVIC), and the Institute of Biology of the University of Ljubljana, Yugoslavia (UL). All the collections are by Martha R. Campos, except when the collector's name is indicated.

Neostrengeria botti Rodríguez and Türkay, 1978

Material.—Quebrada El Peñón, Vereda Aposento, Municipio Nuevo Colón, Cundinamarca, 1700 m; 6 Jun 1984; 3 males, 1 female (ICN-MHN No. 0588).—Municipio Tena, Vereda El Rosario, Departamento Cundinamarca, 1500 m; 6 Jun 1984; 3 males, 3 females (ICN-MHN No. CR 0591).

There has been some uncertainty about the distribution of this species because the type and only previously known specimen was simply labelled "Bogotá," which covers a large area. The present records are from an area 50 km west of Bogotá, on the eastern margin of the Bogotá River.

Neostrengeria boyacensis Rodríguez, 1980

Material.—Quebrada El Peñón, Vereda Aposento, Municipio Nuevo Colón, Departamento Boyacá, 2525 m; 2 Jun 1984; 7 males, 4 females (ICN-MHN No.

CR 0577).—Quebrada Caliente, Municipio Ventaquemada, Departamento Boyacá, 2625 m; 2 Jun 1984; 8 males, 6 females (ICN-MHN No. CR 0575).—Vereda Pavas, Municipio Umbita, Departamento Boyacá, 2550 m; 2 Jun 1984; 9 males, 24 females (ICN-MHN No. CR 0578).

The present localities are 150 km away from the type-locality, La Uvita, and on a different drainage basin. La Uvita is on the basin of the Sogamoso-Magdalena rivers, whereas the present localities are on the Upía-Meta-Orinoco river basin (Fig. 3). However, there are no obvious morphological differences among specimens from the two basins.

Neostrengeria charalensis, new species

Fig. 1a, g

Material.—Municipio Charalá, Corregimiento Virolín, Departamento Santander, 1700 m; 29 Apr 1984; G. Galvis: 1 male holotype, cb. 29.9, cl. 17.8 mm, 2 females, cb. 31.5 and 30.3 mm, cl. 18.4 and 17.1 mm (ICN-MHN No. CR 0481).—Quebrada de Hormas, 7 km S of Moniquirá, 40 km NW of Tunja, Departamento Boyacá; 15 Jun 1977; H. Díaz: 1 male, cb. 29.2, cl. 16.4 mm (IVIC).—Cueva de los Indios, La Paz, Departamento Santander, 1995 m; Jun 1984; B. Sket: 1 male, cb. 23.5, cl. 13.7 mm (UL).

Description.—The cervical groove is almost obsolete, indicated only by a shallow depression near the proximal end. The anterolateral border is smooth, completely devoid of teeth. The frontal lobes are almost obsolete, their presence being indicated only by 2 small scars located behind the front. The median groove consists of a wide and shallow depression. The surface of the carapace behind the front is inclined anteriorly, but only slightly depressed towards the midline. The upper border of the front is strongly sinuous in dorsal view, devoid of tubercles. The lower margin is strongly sinuous in frontal view. The surface of the front between the upper and lower borders is very narrow, almost obsolete. The orbital border is smooth, devoid of papillae. The eyes are small in relation to the orbital cavity and do not fill it; the ocular peduncle tapers distally; the cornea is reduced and partly unpigmented, it does not widen distally. The surface of the carapace is smooth and polished, covered by small papillae and wrinkles not visible to the naked eye.

The chelae are elongate. The fingers are long (0.51 the length of larger chela, 0.57 of the smaller), slender and subcircular in section, with a large gape between them. The cutting surface of the dactylus of the larger chela is devoid of teeth for about the proximal $\frac{1}{3}$ of its length; then a continuous series of teeth begins with 2 low papillae, followed by a large tooth, a low papilla, and another tooth about half the size of the largest tooth; the distal third is occupied by 8 small teeth. In the smaller chela the cutting surface of the dactylus is devoid of teeth for about the proximal $\frac{1}{4}$ of its length; the series of teeth begins with a low papilla, followed by a small tooth and a row of 10 small papillae.

The walking legs have the usual 5 rows of spines on the dactylus; the spines are small and diminish in size proximally, becoming small horny papillae over the proximal $\frac{1}{3}$ of the article. The arrangement of these spines over the third left pereopod is as follows: anteroventral row 5 spines, anterolateral row 6 spines plus 3 proximal papillae, upper row 6 spines plus 2 pairs of papillae, posterolateral

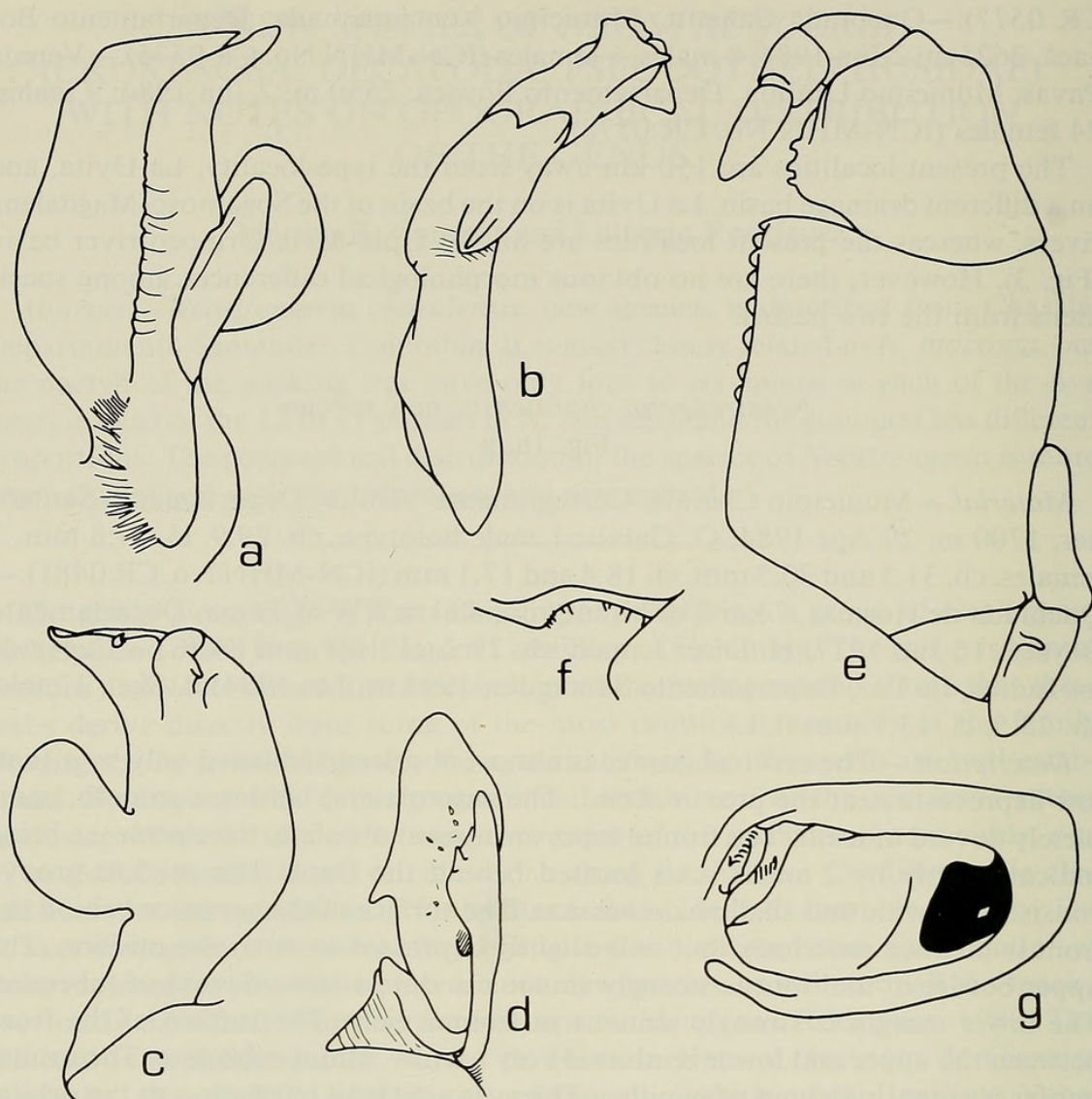


Fig. 1. *Neostrengeria charalensis*, holotype, ICN-0481: a, Left gonopod, caudal view; b, Lateral view; c, Mesial view; d, Apex in distal view; e, Third maxilliped; f, Left opening of branchial channel; g, Left eye.

row 5 spines plus 2 papillae, posteroventral row 5 spines. The merus of the third maxilliped has a low angle on the distal half of its external margin; the exognath is 0.4 the length of the ischium.

The lateral lobe of the male gonopod forms a semicircle and is inserted at an acute angle to the main axis of the appendage. The apex in distal view is oval-elongate with a cephalic spine near the middle of the lateral border directed mesially; the smaller papilla of the spermatic opening is well developed.

The additional specimens that we examined show several differences from the holotype. The male specimen from Moniquirá is closer to the holotype, but the anterolateral border has a series of small, undifferentiated lobes behind the cervical groove which become dentiform posteriorly; the upper border of the front in dorsal view is less strongly sinuous; the orbital border is obscurely crenulate. The chelipeds are similar to those of the holotype, with the fingers elongate (0.48 the length of the larger chela, 0.51 of the smaller), the empty space in both fingers is

shorter, the teeth are larger and more defined, the larger teeth of the smaller chela are separated by 2–4 smaller teeth. The arrangement of spines on the dactylus of the third left pereopod is as follows: 5 spines plus 2 papillae, 9 spines, 7 spines plus 2 pairs of papillae, 8 spines plus 1 papilla. The lateral projection in the apex of the gonopod is very wide, not acuminate as in the holotype; the cephalic spine of the apex is smaller.

The male specimen from La Paz differs more markedly from both the holotype and the specimen from Moniquirá. The anterior border of the cervical groove has a group of approximately 15 small papillae, irregularly placed; the rest of the anterolateral border is divided into approximately 20 small dentiform papillae. The upper border of the front is straighter in dorsal view, faintly bilobed; it has some ill defined tubercles toward the sides. The lower margin is less strongly sinuous and the surface of the front between both borders is higher; the orbital border is clearly crenulate. The eyes are large and fill the orbits; the ocular peduncle is cylindrical and does not taper distally; the cornea is well developed and pigmented. The chelipeds are different from those of the holotype, the fingers are long (0.54 the length of each chela) but do not gape, the space between the fingers being occupied by large teeth; there is almost no free space on the proximal end of the cutting edge of both fingers of the larger cheliped, each row of teeth consists of 1 small papilla, 2 very large teeth, 1 small papilla, 1 medium sized tooth, and 5 smaller distal teeth. The arrangement of spines on the dactylus of the third left pereopod is as follows: 4 spines, 5 spines plus 1 papilla, 5 spines plus 1 pair of papillae, 5 spines plus 1 papilla, and 4 spines. The largest lateral lobe of the gonopod is more rounded and detached from the appendage, more transversely set in relation to the longitudinal axis; in lateral view the gonopod appears more contorted; the cephalic spine of the apex is larger and wider, implanted closer to the lateral border; the lateral projection of the apex is wider and more advanced distally; the smaller papilla of the sperm opening is rudimentary.

Remarks. — This species resembles *Neostrengeria macropa* (H. Milne Edwards, 1853) in the shape of the male gonopod, but the apex is narrower, its lateral spine stronger, and the lateral lobe larger and more regularly rounded. The dactylus of the present species has four to six spines in each of the five rows as is usual in other Pseudothelphusidae, with the exception of *N. macropa* which has 12 to 17 in each row.

The range of the species, as deduced from the type-locality and that for the two additional specimens, is the basin of the Río Suárez, and overlaps with the range of *N. niceforoi* (Schmitt, 1969). The character of the eyes in the holotype and in the specimen from Moniquirá, suggests a hypogean habit, but paradoxically, the specimen from La Paz, with normal eyes, comes from a cave.

Neostrengeria guenterii (Pretzmann, 1965)

Material. — Municipio Acacías, Vereda Portachuelo, Departamento Meta, 1500 m; 23 Mar 1984: 11 males (ICN-MHN No. CR 0554). — Municipio Restrepo, Vereda Caney Alto, Río Caney Alto, Departamento Meta, 700 m; 24 Mar 1984: 3 males (ICN-MHN No. CR 0555). — Villavicencio, Vereda Quebrada Colorada, Departamento Meta, 1000 m; 26 Mar 1984: 12 males (ICN-MHN No. CR 0558). — Villavicencio, Vereda Buena Vista, Caño Blanco, Departamento Meta, 1300 m;

26 Mar 1984: 5 males, 3 females (ICN-MHN 0559).—Municipio Cumaral, Vereda Marayal, Departamento Meta, 825 m; 29 Mar 1984: 16 males, 8 females (ICN-MHN No. CR 0565).—Municipio Guayabetal, Quebrada San Miguel, Departamento Cundinamarca, 1500 m; 3 Mar 1984: 1 male (ICN-MHN No. CR 0542).

Pretzmann (1965) originally described this species from a male specimen ("locus typicus: Columbien, 160/623, Nikiforov coll."). Schmitt (1969) reviewed this material and published the first illustration of the male gonopod. Schmitt said of the male holotype: "This specimen (Niceforo No. 8) is from Bogotá" and added, "besides the holotype, Brother Niceforo collected two other specimens (No. 9, 26.6×44.3 mm and 28.4×49.9 mm) at Pennsylvania, Caldas." Later, Pretzmann (1972) mentioned the number USNM 120140 for this male holotype, and added 2 female paratypes "von Gleichem Fundort, Mus. Washington, Nr. 160/623."

Rodríguez (1982) assigned to this species one male from a locality near Villavicencio, and since the present material also comes from a locality 20 km NW of Villavicencio, it is very possible that the species is restricted to localities around this town in the Río Negro Valley. Hence, the assigning of the two females from Pennsylvania to *N. guenterii* is very doubtful, since that locality is in the Central Cordillera of Colombia, and lacks connections with the Río Negro Valley.

The material deposited at the U.S. National Museum (Manning, pers. comm.) consists of a male holotype USNM 120140, one female (Brother Niceforo No. 9) USNM 119876, and another female USNM 119875. All three jars bear Pretzmann's label: "*Potamocarcinus guenterii* n. sp.," and at least two bear labels by Schmitt: "*Pseudothelphusa bouvieri* Rathbun." The female in USNM 119875 also has a label in Schmitt's handwriting: "The crab in this bottle I believe was part of the No. 9 crab in 119867. Thus both would have same data Pennsylvania, Caldas, Colombia, Niceforo coll." Hence due to doubts concerning the origin of the two females and to the known difficulties in specific identification of female Pseudothelphusidae, these two specimens should be excluded from the type-material, as Pretzmann originally did (1965), and the range of the species restricted to the localities around Villavicencio. The locality "Bogotá" for the type-specimen rests only on Schmitt's (1969) statement.

Neostrengeria lasallei Rodríguez, 1980

Material.—Finca Los Durazos, Municipio Sutatenza, Vereda Boquerón, Departamento Boyacá, 1930 m; 22 Jul 1984: 8 males, 2 females (ICN-MHN No. CR 0593).

The present locality is 30 km SW of the type-locality, and within the same Guavio river basin.

Neostrengeria lindigiana (Rathbun, 1897)

Material.—Municipio Bojacá, Vereda Chantilly, Departamento Cundinamarca; 6 Jun 1984: 8 males, 6 females (ICN-MHN No. CR 05787).

There are two other well established records of this species in the literature (Rodríguez 1982): Facatativa, like the present one from Bojacá, is in the Bogotá River basin, but the other, Choachí, is in the Negro-Guayuriba-Meta rivers basin.

Neostrengeria macropa (H. Milne Edwards, 1853)

Material. — Municipio Chocontá, Vereda Saucío, Departamento Cundinamarca, 2575 m; 3 Jun 1984: 2 males, 3 females (ICN-MHN No. CR 0580). — Municipio Chocontá, Vereda Chinatá, Departamento Cundinamarca, 2250 m; 3 Jun 1984: 2 males, 1 female (ICN-MHN No. CR 0581). — Municipio Suesca, Río Funza-Bogotá, Departamento Cundinamarca, 2500 m; 3 Jun 1984: 3 males, 3 females (ICN-MHN No. 0582). — Municipio Gachancipá, Vereda El Roble, Quebrada Gachiná, Departamento Cundinamarca, 2550 m; 3 Jun 1984: 5 females (ICN-MHN No. 0584). — Municipio Tausa, Embalse del Neusa, Departamento Cundinamarca, 2900 m; 3 Jun 1984: 3 males (ICN-MHN No. CR 0585). — Municipio Sopó, Departamento Cundinamarca, 2650 m; 3 Jun 1984: 2 males, 2 females (ICN-MHN No. CR 0586). — Embalse del Sisga, Departamento Cundinamarca, 2200 m; 7 Aug 1984: 3 males, 2 females (ICN-MHN No. CR 0595). — Municipio Tabio, Finca Tejas Verdes, Departamento Cundinamarca, 2570 m; Aug 1984: 1 male, 2 females (ICN-MHN CR No. 0596).

Neostrengeria monterrodoensis (Bott, 1967)

Material. — Corregimiento Monterredondo, Municipio Quetame, Departamento Cundinamarca, 1350 m; 21 Mar 1984: 6 males, cb. 17.4, 20.1, 20.2, 21.2, 21.5, 24.3 mm, cl. 10.7, 12.3, 12.4, 12.7, 13.0, 14.1 mm, respectively, 3 females, cb. 20.9, 21.6, 22.2 mm, cl. 12.7, 13.2, 13.7 mm respectively (ICN-MHN No. CR 0549). — Municipio Guayabetal, Vereda El Naranjal, Departamento Cundinamarca, 1350 m; 27 Mar 1984: 6 males, 5 females (ICN-MHN No. CR 0560).

The type-locality given by Bott (1967) is "Monterrodo," Colombia, which Rodríguez (1982) listed as an unidentifiable locality. The present records may help to fix the type-locality near Quetame, 30 km NW of Villavicencio, in the Río Negro Valley.

Neostrengeria niceforoi (Schmitt, 1969)

Fig. 2a-d

Material. — Cueva del Páramo, San Gil, Departamento Santander, 1450 m; Jun 1984; B. Sket: 1 male, cb. 32.8, cl. 19.3 mm (UL). — Quebrada La India, Simacota, Departamento Santander, 1050 m; 16 Jul 1969; P. Cala: 9 males, cb. 17.5–32.5, cl. 10.6–18.0 mm, 6 females, cb. 15.0–35.9, cl. 9.5–20.5 mm (ICN-MHN No. CR 025). — Simacota, Departamento Santander, 1000 m; 15 Mar 1973: 1 male, cb. 30.5 mm, cl. 16.9 mm (ICN-MHN No. CR 063). — Municipio Charalá, Corregimiento Virolín, Río Luisito, Departamento Santander, 1750 m; 2 May 1983; G. Galvis: 1 male, cb. 30.5, cl. 17.0 mm, 3 females, cb. 27.3, 28.7 and 30.5, cl. 16.3, 17.1 and 18.2 mm (ICN-MHN No. CR 0482).

The species was previously known from a single male specimen from San Gil, 75 km south of Bucaramanga. Although in general the carapace, third maxilliped, and gonopod of our material correspond with the original description, the specimens available are not morphologically homogeneous. Schmitt (1969) omitted several characters in his description of the species. We give them below, together with the variability observed in well developed male specimens from different localities.

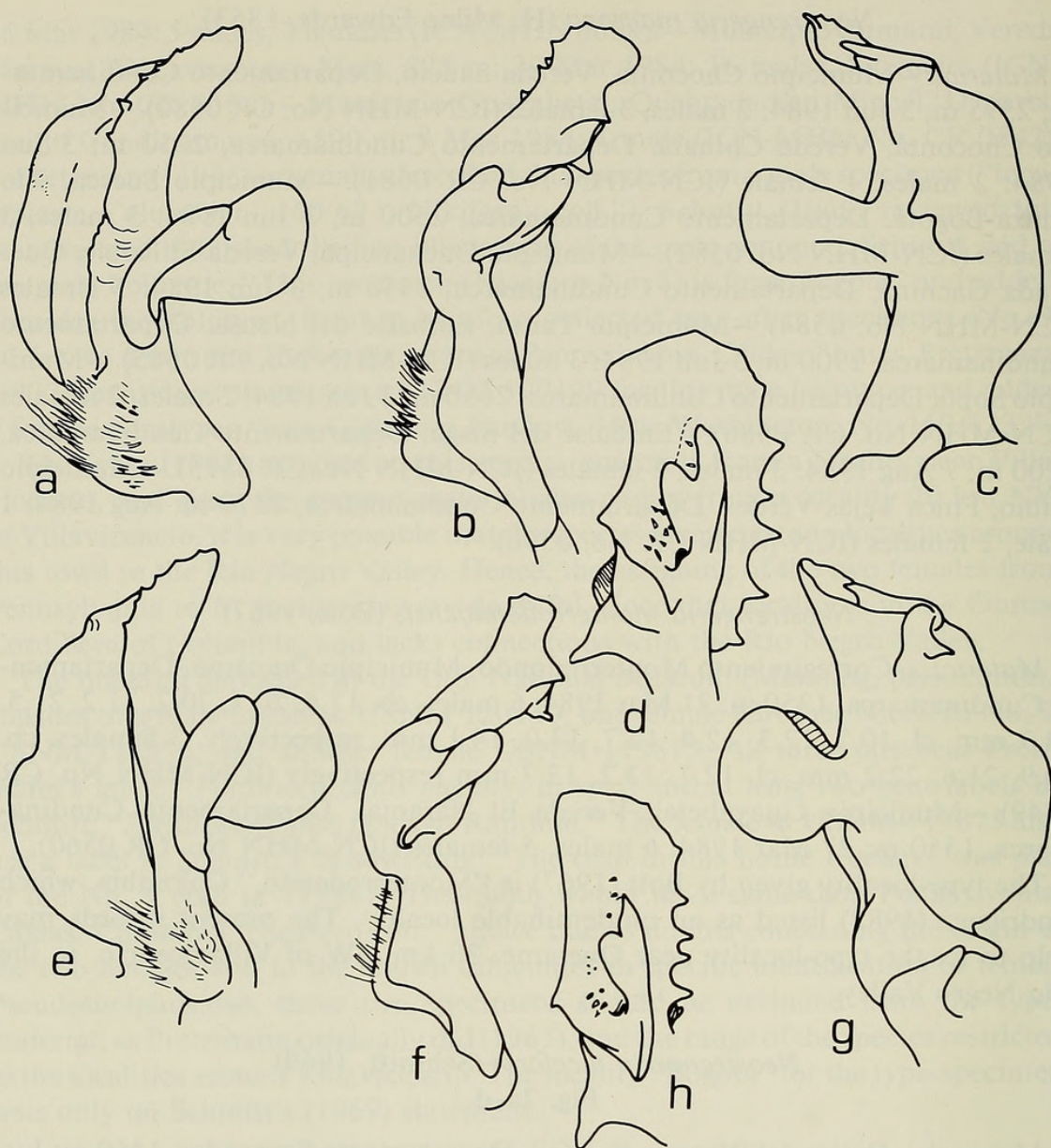


Fig. 2. *Neostrengeria niceforoi* (Schmitt, 1969), left gonopod, a, b, c, d, specimens from Simacota (ICN-063); e, f, g, h, specimens from Charalá (ICN-0482): a, e, Caudal view; b, f, Lateral view; c, g, Mesial view; d, h, Apex in distal view.

The cervical groove is wide, slightly bent backwards, shallow anteriorly and deeper proximally; it ends far from the lateral margin. The anterolateral border is smooth throughout (San Gil, 0492), crenulate (0025), or with small teeth towards the posterior border (0063). The postfrontal lobes are small, round, defined anteriorly by two transverse scars (San Gil). The median groove consists of a wide and shallow depression. The surface of the carapace behind the front is inclined anteriorly and towards the midline. The upper border of the front in dorsal view is convex (0025), or convex and more or less bilobed (San Gil, 0063, 0482); it is well marked, devoid of tubercles, or with inconspicuous tubercles (0025, 0063, 0482). The lower margin is strongly sinuous in frontal view; the margin of the front between the upper and lower borders is narrow, with the lower border more advanced than the upper.

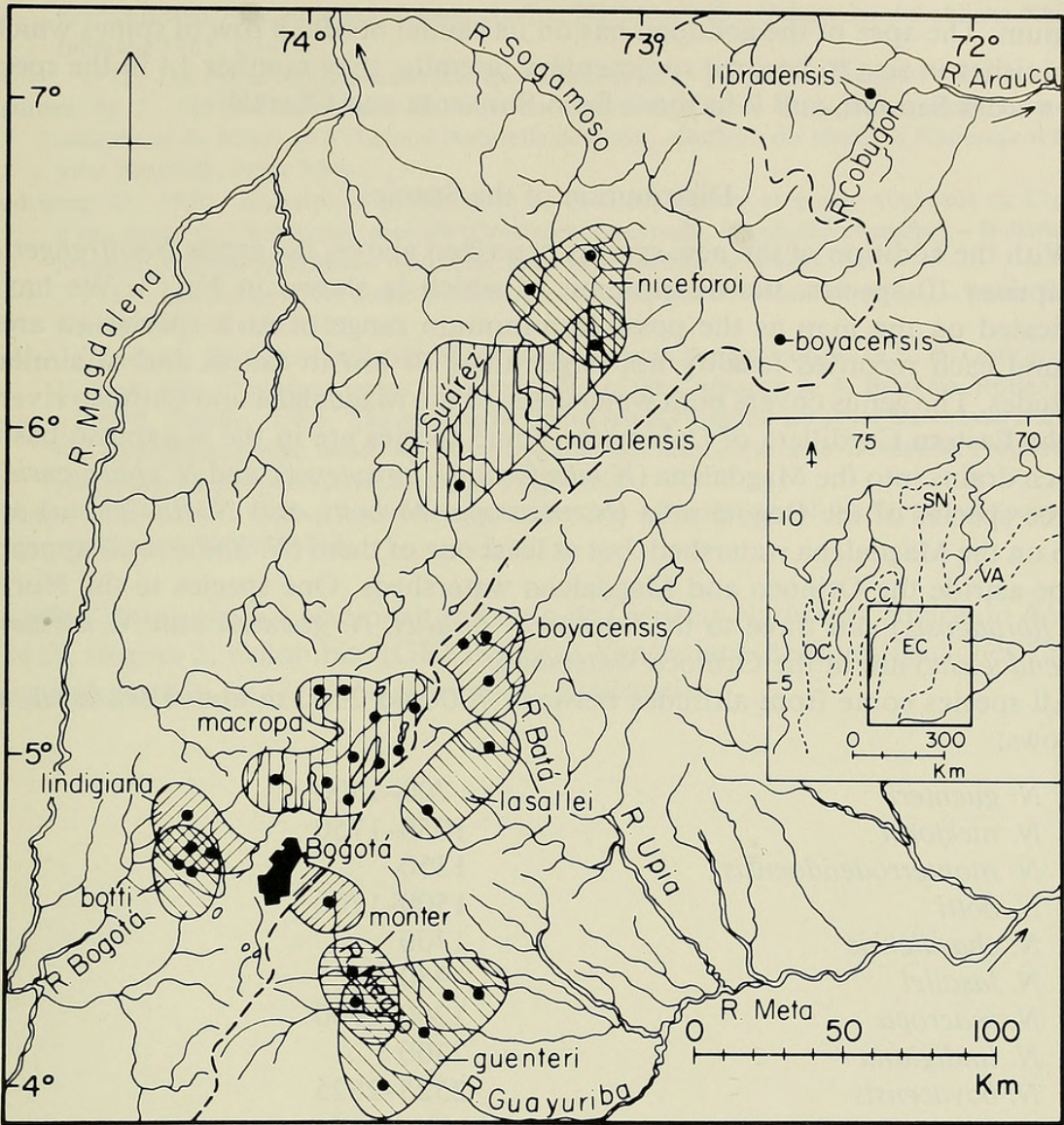


Fig. 3. Map of the Eastern Cordillera, Colombia, between Bogotá and the border with Venezuela, showing distribution of the species of *Neostrengeria*. The Orinoco and Magdalena are separated by a broken line. OC, Occidental Cordillera; CC, Central Cordillera; EC, Eastern Cordillera; VA, Venezuelan Andes; SN, Sierra de Santa Marta, monter, monterrodoensis.

The chelipeds show considerable variability. In the specimen from Simacota (0025, 0063) and San Gil the fingers are relatively short (0.44–0.46 the length of the larger chela) and stout; the dactylus of the larger chela has a group of three large teeth near the base, plus smaller teeth interspaced with even smaller ones in the distal half; the fixed finger has two larger teeth, separated by a smaller one, near the middle of the cutting surface, in addition to smaller teeth towards the base and towards the tip; when the fingers are closed there are gaps between them. In the specimen from Charalá (0482) the chelae are more elongated and the fingers longer (0.51 the length of the larger chela) and slender. The teeth are very small and leave considerable gaps between them when the fingers are closed, particularly at the base of the fingers. The merus of the third maxilliped has a low angle on the distal half of its external margin; the exognath is 0.41–0.48 the length the

ischium. The apex of the gonopod has on its caudal border a row of spines which diminishes in size to become rudimentary laterally; they number 14 in the specimen from San Gil, and 7 in those from Simacota and Charalá.

Distribution of the Species

With the addition of the new species described above, the genus *Neostrengeria* comprises 10 species, the distribution of which is shown in Fig. 3. We have indicated on the map as the possible minimum range of each species an area around each recorded locality not larger than 10 km in radius and at similar altitudes. The genus covers both watersheds of the Magdalena and Orinoco rivers in the Eastern Cordillera of Colombia. Three species are in the Sogamoso basin which drains into the Magdalena (*N. niceforoi*, *N. boyacensis*, and *N. charalensis*). Three species of the Bogotá area (*N. macropa*, *N. botti*, and *N. lindigiana*) are also on the Magdalena watershed, but at least one of them (*N. lindigiana*) appears to be astride the Orinoco and Magdalena watersheds. One species to the North (*N. libradensis*) and three to the South (*N. lasallei*, *N. guenteri* and *N. monterrodoensis*) are in the Orinoco watershed.

All species come from altitudes between 700 and 2900 m above sea level, as follows:

| | |
|---------------------------|-----------|
| <i>N. guenteri</i> | 700–1500 |
| <i>N. niceforoi</i> | 1050–1750 |
| <i>N. monterrodoensis</i> | 1350 |
| <i>N. botti</i> | 1500–1700 |
| <i>N. charalensis</i> | 1700 |
| <i>N. lasallei</i> | 1930 |
| <i>N. macropa</i> | 2200–2900 |
| <i>N. lindigiana</i> | 2300 |
| <i>N. boyacensis</i> | 2525–2625 |

The vertical range of *N. libradensis*, the only species not dealt with in the present contribution, is unknown.

Acknowledgments

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