

***Sphaerolana karenae*, a new species of hypogean isopod
crustacean from Nuevo Leon, Mexico**

Gabino A. Rodríguez-Almaraz and Thomas E. Bowman

(GAR-A) Facultad de Ciencias Biológicas, Universidad Autónoma
de Nuevo León, Ap. postal 105-F, Ciudad Universitaria,
San Nicolás de los Garza, Nuevo León, México;
(TEB) Department of Invertebrate Zoology, NHB-163,
Smithsonian Institution, Washington, D.C. 20560, U.S.A.

Abstract.—*Sphaerolana karenae* is described from two localities in Nuevo León, Mexico. It is the third known species of *Sphaerolana* Cole & Minckley, 1970 and differs from the two previously known species in having three rather than two pleonites visible dorsally, in having the telson pointed rather than rounded, and in having only one rather than two retinacula on the endite of the maxilliped.

Resumen.—*Sphaerolana karenae* es descrita de dos localidades de Nuevo León, México. Esta especie es la tercera conocida para *Sphaerolana* Cole & Minckley, 1970 y difiere de las dos especies previamente conocidas en poseer tres pleonitos dorsalmente visibles en vez de dos, el telson termina en punta más que redondeada, y además, de tener solamente un retinaculum y no dos sobre el endito del maxilipedio.

In 1970 Cole & Minckley described the very distinctive troglobitic isopod genus *Sphaerolana*, from the Cuatro Ciénegas basin of central Coahuila state, Mexico. The two species included, *C. interstitialis* (type species) and *C. affinis*, were characterized by their ability to roll into a ball, pleons with only 2 free pleonites, and uropods with tiny rami inserted in a lateral notch of the protopod. We describe herein a third species from the neighboring state to the south-east, Nuevo León.

Sphaerolana karenae, new species

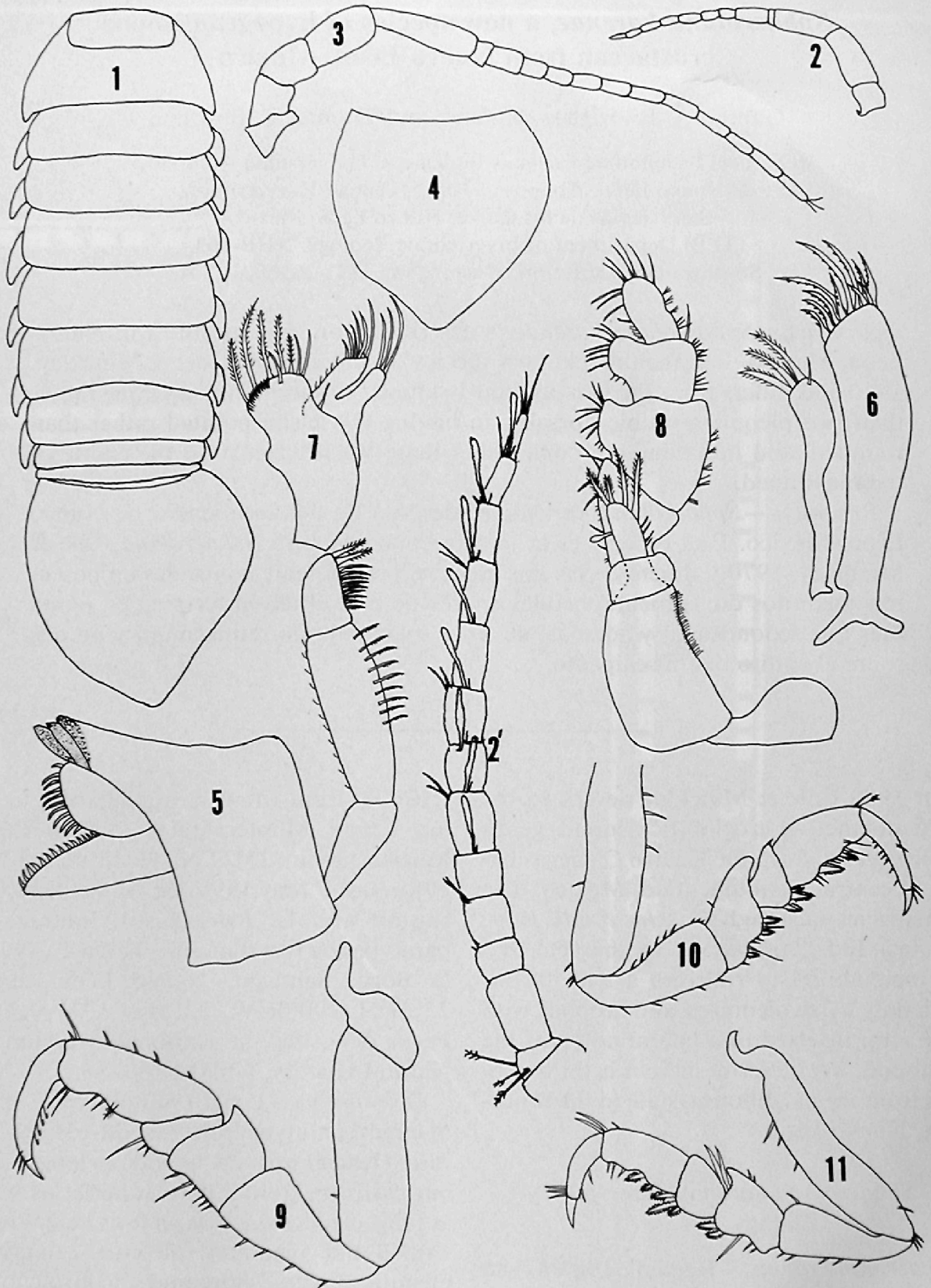
Figs. 1–23

Sphaerolana affinis.—Reddell, 1981:87–88
[Misidentification provided Reddell by
T. E. Bowman.]

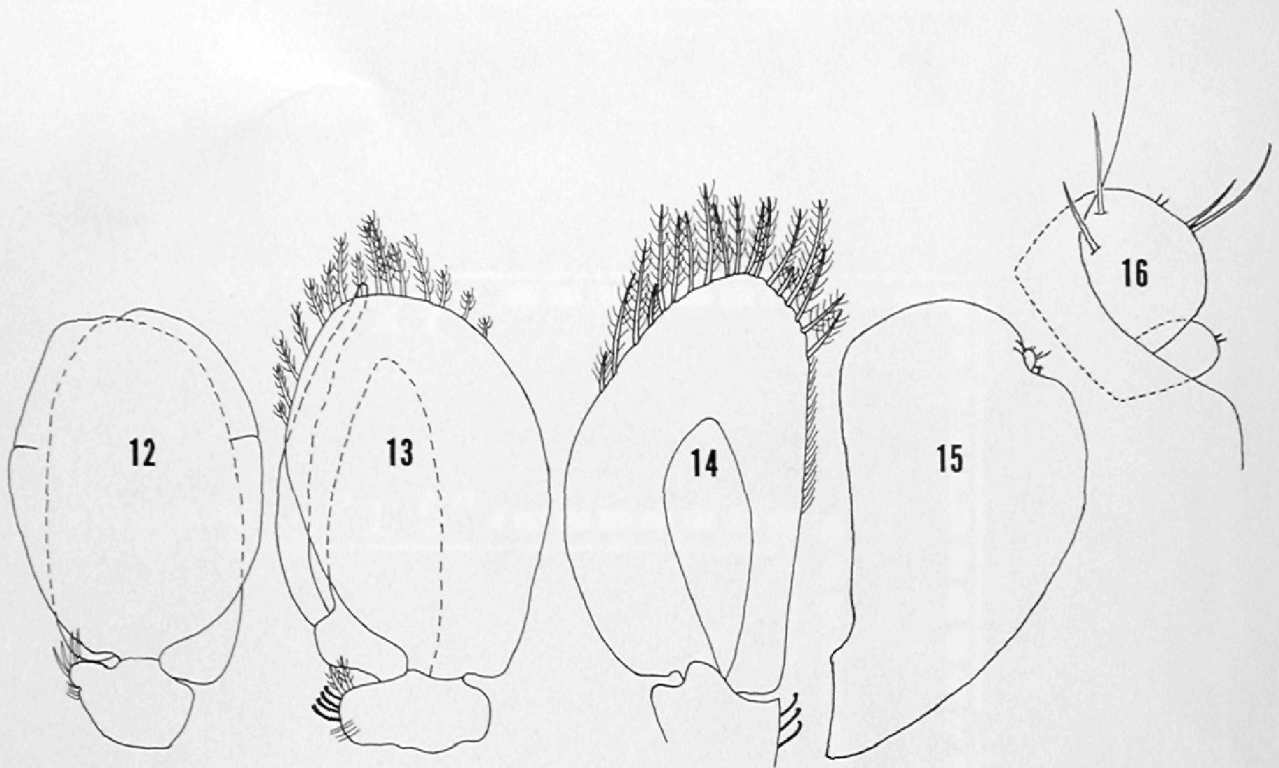
Material.—Holotype ♂, UANL (Universidad Autónoma de Nuevo León) CCRICI001, and 3 paratypes, UNALCC-

RIC002, from small spring adjacent to Pi-lón River, Montemorelos, Nuevo León, Mexico, about 25°27'N, 99°48'W, 20 Jun 1988 and 17 May 1990, leg. M. Valdéz-Marroquin and C. Rodríguez-Almaraz.—3 paratypes on wood in mine below Cueva de la Boca, Santiago, Nuevo León, about 25°27'N, 100°06'W, 22 May 1971, leg. S. Peck, deposited in National Museum of Natural History, USNM 139138.

Description.—Length of holotype 7 mm, of largest paratype from USNM 139138 9.7 mm. Head almost 2× as wide as long, without rostrum; frontal lamina about as wide as long; clypeus 4.2× as wide as long. Pleon with 3 free pleonites; pleonite 1 longest; pleonite 3 very short and inconspicuous. Pleotelson about as wide as long, expanded laterally anteriorly, ending in rounded point. Antenna-1 peduncle 3-segmented; flagellum 9–13-segmented; single esthete on 5th through subapical segments. Antenna-2 pe-



Figs. 1-11. *Sphaerolana karenae*, ♂ from Montemorelos (except 2'): 1, Habitus, dorsal; 2, Antenna 1; 2', Antenna 1, ♂ from Santiago; 3, Antenna 2; 4, Telson; 5, Right Mandible; 6, Maxilla 1; 7, Maxilla 2; 8, Maxilleped; 9, Pereopod 1; 10, Pereopod 2; 11, Pereopod 3.



Figs. 12–16. 12–14, *Sphaerolana karenae* from Montemorelos: 12 pleopod 3, ♂; 13, Pleopod 2, ♂; 14, Pleopod 1, ♂. 15–16, *Sphaerolana karenae* from Santiago: 15, Left uropod, dorsal; 16, Rami of left uropod, dorsal.

duncle 5-segmented, segment 5 longest; flagellum 12–15-segmented, reaching pereonite 4 when reflexed. Right mandible spinerow process with 11 spines; molar with 15 curved spines; palp segment 2 with 9 pectinate lateral setae and setules along entire medial margin; segment 3 with 11 pectinate setae on lateral margin, distal 2 stouter than others. Maxilla-1 proximal endite with 3 long plumose setae and 2 shorter naked setae; distal endite with 11 stout dentate spines. Maxilla-2 proximal endite medially pubescent, with 5 long plumose setae and 4 shorter setae; distal endite bilobed, inner lobe with 6 setae, outer lobe with 3 setae. Maxilliped endite with single retinaculum, 4 stout plumose setae, and 4 setules; palp segments 3 and 4 produced medially into weak lobes, outer margin of segment 4 with a stout seta, segment 5 with 9 long setae and numerous setules.

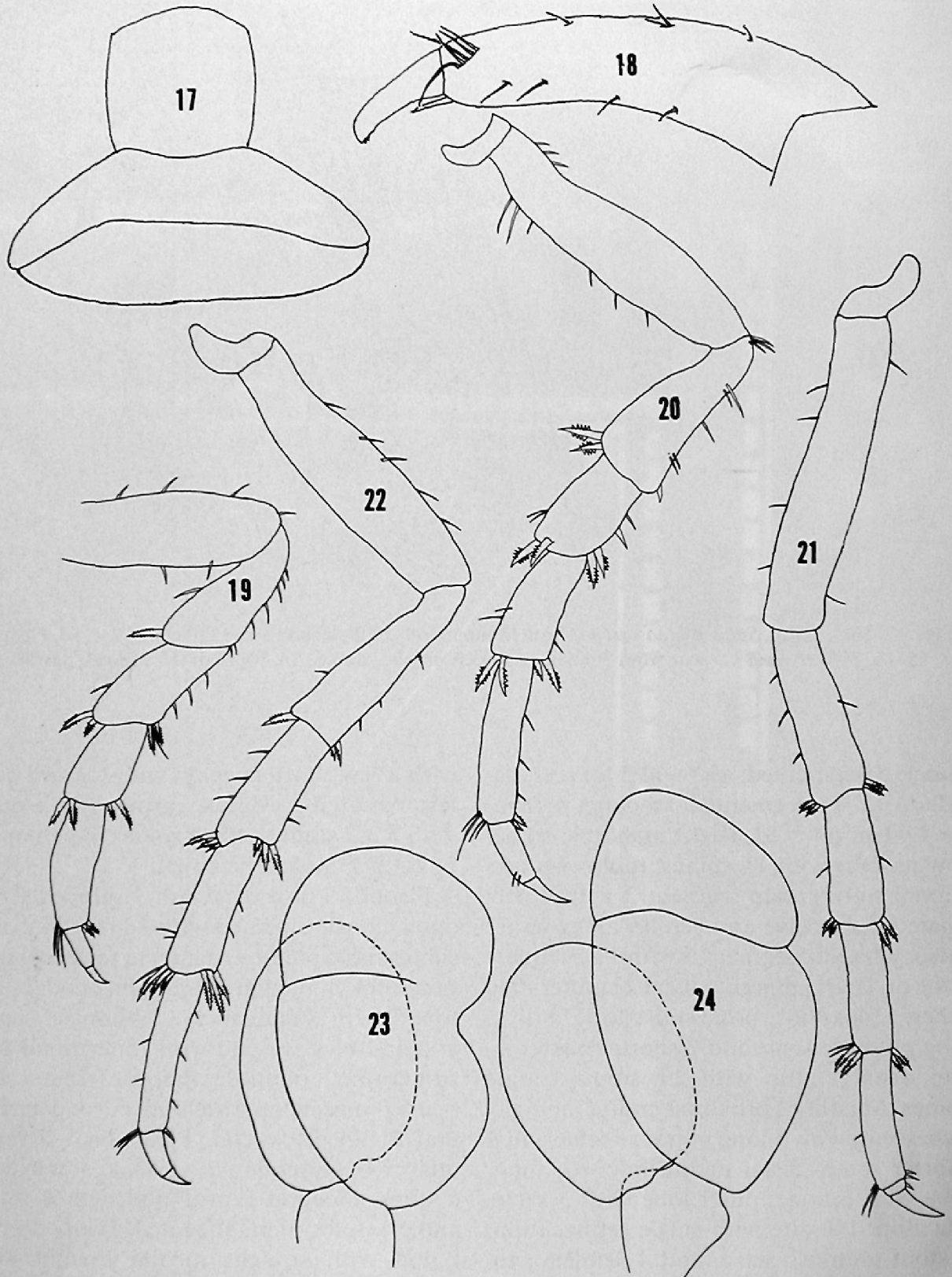
Pereopods 1–3 with longer dactyls than those of pereopods 4–7. Pereopod 1 dactyl

with a few short setae on anterior and posterior margins. Merus, carpus and propus with 3,3,2 stout toothed spines in pereopod 2; 2,3,2 spines in pereopod 3.

Pleopod 1 protopod with 3 retinacula; exopod elongate, armed with 18 terminal and subterminal plumose marginal setae and row of setules on medial margin. Pleopod 2 protopod with 4 retinacula, 2 plumose setae, and 4 setules; exopod with 15 terminal and subterminal plumose marginal setae; appendix masculina reaching beyond endopod to tip of exopod. Pleopods 3–5 rami unarmed; exopods with partial transverse sutures. Pleopod 3 protopod with 4 setae and 5 setules; rami subequal. Uropod protopod with straight medial margin and broadly rounded apex; rami inserted in notch near apex.

Etymology. — Named for the first author's daughter Ana Karen.

Comparisons. — Table 1 compares taxonomic characters of the three known species



Figs. 17-24. 17-18, *Sphaerolana karenae* from Santiago: 17, Buccal area; 18, Right pereopod 1, dactyl. 19-24, *Sphaerolana karenae* from Montemorelos: 19, Right pereopod 4; 20, Right pereopod 5; 21, Right pereopod 6; 22, Right pereopod 7; 23, Right pleopod 4; 24, Right pleopod 5.

Table 1.—Comparison of species of *Sphaerolana*.

	<i>interstitialis</i>	<i>affinis</i>	<i>karenae</i>
No. of pleonites demarcated dorsally	2	2	2
Telson apex	broadly rounded	broadly rounded	rounded point
Pleotelson L/W	0.90–0.95	1.1–1.2	0.96
Up protopod:			
length to notch			
length to apex	0.74	0.88	0.85
A-1 flagellar segs.	10–17	10	8–12
A-1 reaches	pereonite 3	pereonite 4	pereonite 4
A-2 flagellar segs.	15	16	12
Md lacinia teeth	9–16	?	11
Md molar teeth	10–14	?	15
Mxp retinacula	2	2	1
Body length (mm)	up to 17.1	up to 22.1	up to 9.7

of *Sphaerolana*. *Sphaerolana karenae* is easily distinguished from its two congeners by its three free pleonites, pointed pleotelson, and single retinaculum on the maxilliped endite.

Cole & Minckley's 1970 diagnosis of *Sphaerolana* must be emended by changing the third sentence to read, "Pleonites 1–2 or 1–3 present, visible dorsally; no evidence of either pleonites 3–5 or 4–5".

Acknowledgments

Part of this work was carried out in Washington by the first author during his tenure of a Short-term Visitor Award from the

Smithsonian Institution's Office of Fellowships and Grants. We give thanks to Professor Ernesto Campos for his general comments and a critical review of the manuscript.

Literature Cited

- Cole, G. A., & W. L. Minckley. 1970. *Sphaerolana*, a new genus of cirolanid isopod from northern México, with description of two new species.—*Southwestern Naturalist* 15(1):71–81.
- Reddell, J. R. 1981. A review of the cavernicole fauna of México, Guatemala and Belize.—*Bulletin of the Texas Memorial Museum* 27:1–327.