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A NEW SPECIES OF AQUATIC ISOPOD CRUSTACEAN (GENUS *ASELLUS*) FROM THE PUEBLA PLATEAU, CENTRAL MÉXICO

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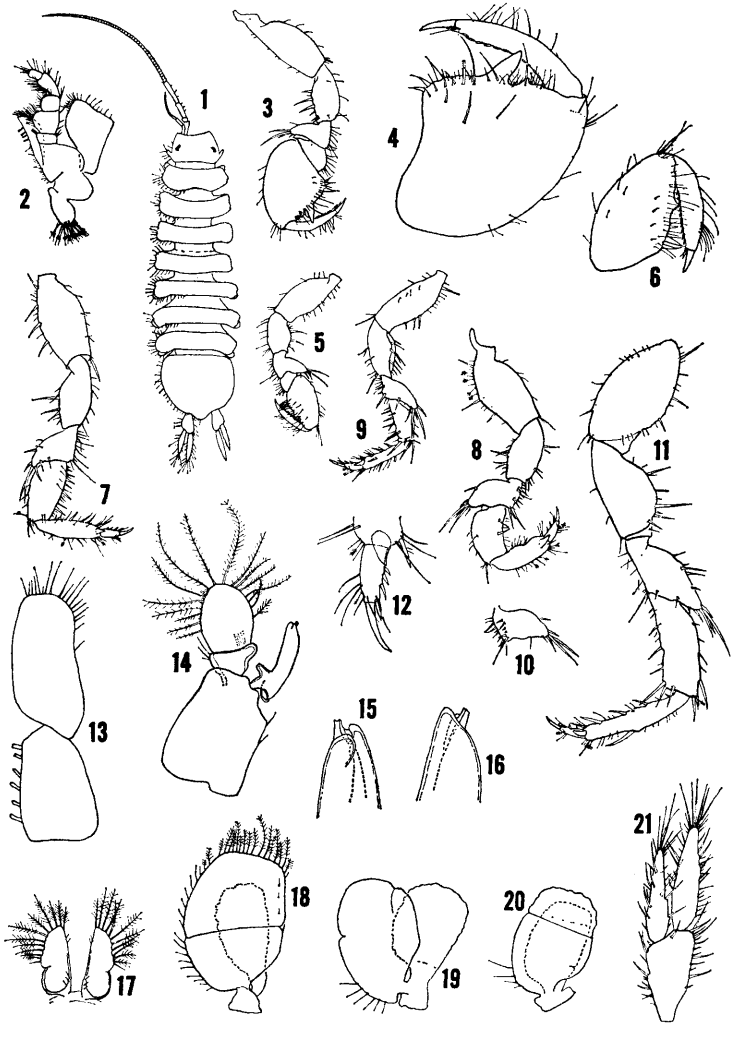
On 18 December 1966, Robert R. Miller and Minckley briefly visited the Río Cosala at the edge of the village of San Martín Texmelucán, Puebla, México. A small collection of invertebrates included the new asellid isopod described below, and extends the known world distribution of the genus *Asellus*, formerly given as no farther south than 30° latitude (Birstein, 1964), to just below 20° latitude.

The Río Cosala drains from the eastern slopes of the volcano Iztaccíhuatl and enters the Río Atoyac just downstream from San Martín Texmelucán. The larger stream then passes through the portion of the Puebla Plateau lying between Iztaccíhuatl and Popocatépetl on the west and Volcán La Malinche on the east, then bends south and west to flow into the Río Balsas, and thence to the Pacific Ocean. At 2,300 meters above mean sea level, where the collection was made, the Río Cosala was clear and cool and was flowing about 0.33 cubic meters per second. The banks were gently sloping and grassy, and the stream was lined by a narrow rim of emergent aquatic vegetation (*Nasturtium, Ludwigia,* and sedges). Bottoms were of sand and mud in pools and gravel on riffles, with substantial deposits of detritus (twigs, leaves, *etc.*) present in all areas. The isopods were sieved most abundantly from the aquatic plants, but also were present in debris on, and lateral to, swifter water. Other abundant animals were insects (Hemiptera, Ephemeroptera, and Trichoptera) and a talitrid amphipod, genus *Hyalella.* The area was locally



FIGURES 1–21. **Asellus puebla**, new species. 1. Holotype, 6.9 mm. 2. Maxilliped, allotype, 6.5 mm. 3. First pereopod, male, 8.6 mm. 4. First pereopod, propodus and dactylus, male, 8.6 mm. 5. First pereopod, allotype. 6. First pereopod, propodus and dactylus, allotype. 7. Second pereopod, male, 8.6 mm. 8. Fourth pereopod, lateral aspect, male, 8.6 mm. 9. Fourth pereopod, allotype. 10. Fourth pereopod, merus, median aspect, male, 8.6 mm. 11. Seventh pereopod, male, 8.6 mm. 12. Second pereopod, dactylus, male, 10.3 mm. 13. First pleopod,

disturbed by persons doing laundry and children wading, but was otherwise unmodified.

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Asellus puebla new species
Figs. 1–21

Material: All specimens were obtained 18 December 1966 from the Río Cosala, west edge of San Martín Texmelucán, Puebla, México, by R. R. Miller and W. L. Minckley. The holotype, a 6.9-mm male, an allotype, an ovigerous female 6.5 mm long, and one lot of paratypes are deposited at the U. S. National Museum. Other lots of paratypes are at the Nacional Colección de México, Mexico, D. F., and at the National Museum of Canada, Ottawa.

Description: A small species of *Asellus*, largest male 10.3 mm long, largest ovigerous female 6.5 mm long (allotype). Body (Fig. 1) from 2.6 to 2.8 × width. Telson length subequal to width. Eye small, longer than broad.

Antenna 1: 10 to 11 flagellar segments, reaching to distal border of peduncle of antenna 2 when reflected.

Antenna 2: flagellum with about 72 segments, reaching to 7th pereonite when reflected.

Mandible: right incisor with 4 teeth, spine row with 5 to 6 dentate spines distally and 11 to 12 plumose spines proximally; left mandible with 4-toothed incisor and lacinia of 4 teeth, spine row of 12 to 14 stout, plumose setae. Palp segment 1, narrowest basally, with 6 inner, marginal setae, and one distal, facial seta; palp segment 2, setae on distal half of inner margin in 2 ranks, about 10 marginal and 10 submarginal setae, proximal 3 setae smooth, others with short plumosities; palp segment 3, inner margin with about 18 pectinate spines.

Maxilla 1: apex of outer plate with 11 spines, all denticulate except 2 outer and 1 innermost, and 2 smooth, subapical, facial setae; inner plate, apex with 2 robust, circumplumose setae, with denticulate apices, and 3 slender, plumose setae.

Maxilla 2 has no distinctive features.

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male, 8.8 mm. 14. Second pleopod, anterior aspect, male, 10.3 mm. 15. Second pleopod, endopod apex, anterior aspect, male, 8.8 mm. 16. Second pleopod, endopod apex, posterior aspect, male, 8.8 mm. 17. Second pleopod, allotype. 18. Third pleopod, male, 8.6 mm. 19. Fourth pleopod, male, 8.6 mm. 20. Fifth pleopod, male, 8.6 mm. 21. Uropod, male, 8.6 mm.

Maxilliped: inner plate apex densely setose, with 4 to 6 coupling spines in males; oostegite in ovigerous females with 18 apical setae, each distally plumose (Fig. 2). Palp, inner margins of segments 2 to 5 extremely setose; segment 1, with 2 to 4 outer setae and 1 inner seta; segment 2, with 3 outer setae and one at distal corner; segment 3, with 2 outer setae and one at distal corner.

Pereopod 1 (Figs. 3–6): palmar margins of male propodus with 2 to 3 proximal, robust spines, directed obliquely posteriad, one large, acute process near middle, and 1 short, blunt process just distad. Propodus of female with 2 sharp spines at proximal corner of palmar margin and only the short, blunt process at mid-palmar surface. Posterior margin of dactylus with 10 to 15 teeth.

Pereopods 2–7 (Figs. 7–12): dactyls bearing 3, rarely 4, spines. Anterior margin of propodus 5–7 armed with large spine inserted about midway. Pereopod 4, shortest, much stouter in male than in female, merus with row of posterior spines on inner surface in males.

Pleopod 1 (Fig. 13): basal segment with 6 to 8 coupling spines; distal segment slightly larger than basal, with concave outer surface and broadly rounded, truncate, distal margin; inner surface smooth; distal portion of outer surface and apex with 16 to 20 smooth, relatively short, setae.

Pleopod 2 (Figs. 14–17): protopod of male 1.3 × longer than wide, longer than exopod; endopod reaches slightly past midlength of exopod; protopod with 2 medio-distal, smooth setae. Endopod narrow, almost straight but curving gently laterad; lateral apophysis prominent, no medial apophysis except a postero-basal, cuplike expansion. Tip of endopod, median process curving laterad, overriding lateral process; cannula protruding distally and pointing slightly mesad, no caudal process. Exopod, proximal segment with 3 lateral setae; distal segment with 16 to 19 plumose setae. Pleopod 2 of female with lateral sinuosity in exopod, appearing somewhat bilobed with a straight inner margin; outer and apical margins with 12 plumose setae; inner margin with 2 short setae on distal third.

Pleopod 3 (Fig. 18): exopod with about 16 terminal, plumose setae, outer margin with about 16 smooth setae and 2 or 3 distal, plumose setae.

Pleopods 4–5 (Figs. 19–20): with a few smooth setae on basal, outer margins; endopods unarmed in pleopods 3–5.

Uropod (Fig. 21): protopod and endopod subequal; exopod 0.75 × length of endopod in larger specimens, rami more nearly subequal in small specimens. Protopod narrowest basally; rami tapered.

Color in life gray, mottled, with lighter underparts. Eye black, reflecting violet in sunlight.

Etymology: The name "*puebla*" is for the intermontane plateau from which the new species is known.

Discussion

The relationships of *Asellus puebla* to other described species of epigean *Asellus* are not apparent. Subgenera of this group have recently been criticized (Chappuis, 1953, 1955; Bowman, 1967), and may be, for the most part, invalid. However, if they are utilized, the new species is related to the Eastern American group of species (subgenus *Conasellus* Stammer). Only one other epigean form is described from the Pacific drainage of North America, *A. tomalensis* Harford, and it may belong to the subgenus *Mesoasellus* Birstein of Western America and Eastern Asia. The presence of *A. puebla* in the westward-draining Río Balsas obviously reflects dispersal from the east.

Four of the described epigean *Asellus* from Eastern North America resemble *A. puebla* in one or more respects. *Asellus brevicauda* (Forbes), *A. dentadactylus* Mackin and Hubricht, *A. kenki* Bowman, and *A. oculata* (Mackin and Hubricht) have at least slightly concave lateral margins of the distal segment of the first pleopod of the male. The first three species differ from *A. puebla* in having the distal margin of that segment armed with long, plumose setae rather than with relatively short, smooth setae. *Asellus oculata* differs markedly from *A. puebla* (and the others) in details of the male second pleopod and the dactylus of the first pereopod.

Asellus puebla appears elongate and relatively narrow in life, reminiscent of some troglobitic species of the genus. Bowman (1967) reviewed relative proportions and ratios of body length : width, and telson length : width, in many epigean and hypogean species of *Asellus*. *Asellus kenki*, a form living in the sources of springs, was intermediate between the surface and subterranean forms. *Asellus puebla* is obviously an epigean form based on these criteria. The eye of *A. puebla* is, however, only slightly larger than that of *A. kenki* (see Bowman, 1967, Fig. 1).

Literature Cited

Birstein, J. A. 1964. Freshwater isopods (Asellota). Fauna of U. S. S. R., Crustacea 7: 1–148 (Original published 1951, Zool. Inst. Acad. Sci. SSSR 47: 1–140; Israel Progr. Sci. Transl., 1964).

Bowman, T. E. 1967. *Asellus kenki*, a new isopod crustacean from springs in the eastern United States. Proc. Biol. Soc. Wash. 80: 131–140.

Chappuis, P. A. 1953. Sur la systematique du genre *Asellus*. Notes Biospéol., 8: 67–79.

————. 1955. Remarques générales sur le genre *Asellus* et description de quatre espèces nouvelles. *ibid.* 10: 163–182.