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The Milliped Genus *Onychelus* Cook (Spirobolida: Atopetholidae: Onychelinae)

Rowland M. Shelley

ABSTRACT

The milliped genus *Onychelus* Cook comprises one species, *O. obustus* Cook; *Hiltonius thebanus*, *O. medolus*, and *O. jaegeri*, all authored by Chamberlin, are placed in synonymy under this name. *Onychelus obustus* is the most beautiful atopetholid, as it is diagnosed by the distinctive banded color pattern; the subtriangular sternum of the anterior gonopods and the falcate posterior gonopods are also diagnostic for the species. It occurs in the deserts of southern California and southern Arizona.

PRELUDE

The milliped family Atopetholidae is a dominant element in desert ecosystems in the southwestern United States and adjacent parts of Mexico. The animals are much smaller than the representatives of the Spirobolidae and with invaginated paraprocts can easily be distinguished from the latter. Most atopetholids are drab in appearance, being varying shades of brown or gray, but the representatives of *Onychelus* Cook are the exception. The most beautiful atopetholids, these specimens exhibit a banded color pattern with black mesozona and light pro- and metazona (yellowish to yellowish-orange in preservative) (Figs. 1-4). Four species have been assigned to *Onychelus*, the most recent being *Hiltonius thebanus* Chamberlin (Shelley & Bauer 1997), but examination of the types and non-typical specimens shows that the genus is monotypic. Hoffman & Orcutt (1960) stated that the genus only included one species but provided synonymies for three nominal forms; Hoffman (1980) reported three components for *Onychelus*. I present herein

a brief revisionary treatment of *Onychelus* to confirm its monotypic status. Acronyms of sources of preserved material are as follows:

CAS - California Academy of Sciences, San Francisco

FMNH - Field Museum of Natural History, Chicago.

LACMNH - Los Angeles County Museum of Natural History, Los Angeles, California.

NMNH - National Museum of Natural History, Smithsonian Institution, Washington, DC.

UCB - Essig Entomological Museum, University of California at Berkeley.

UCD - Bohart Entomological Museum, University of California at Davis.

Genus *Onychelus* Cook

Onychelus Cook, 1904:67. Chamberlin & Hoffman, 1958:157. Hoffman & Orcutt, 1960:142. Jeekel, 1971:201. Hoffman, 1980:78.
Gosichelus Chamberlin, 1949:168. Jeekel, 1971:198.

Type species. *Onychelus obustus* Cook, 1904, by original designation.

Diagnosis. A genus of moderate-size Onychelinae – 28-35 mm long, 3-4 mm wide, 42-46 segments in adults – characterized by banded color pattern with prozona light, though obscured *in-situ* by overlap of preceding metazona, mesozona black, mottled around ozopores, and metazona light yellowish to yellowish-orange; collum short, terminating above level of ventrolateral corners of succeeding pleurotergite; 1st and 2nd legs of males incrassate, prefemora swollen on caudal surfaces; pregonopodal coxae without projections; all legs with strong, lateral macrosetae, tarsal claws long, slightly curved apically; anterior gonopod sternum produced into median subtriangular, apically bifid projection, terminating below level of coxae, latter submembranous along distal margins, subequal in height to telopodites, distolateral corners of latter slightly produced, subuncinate; posterior gonopod with long apophysis, telopodite generally falcate, inner distal corner slightly extended, with subtriangular flange distal to midlength on caudal margin and narrow dorsal lamina at base of apical curve (Figs. 1-7).

Species. One.

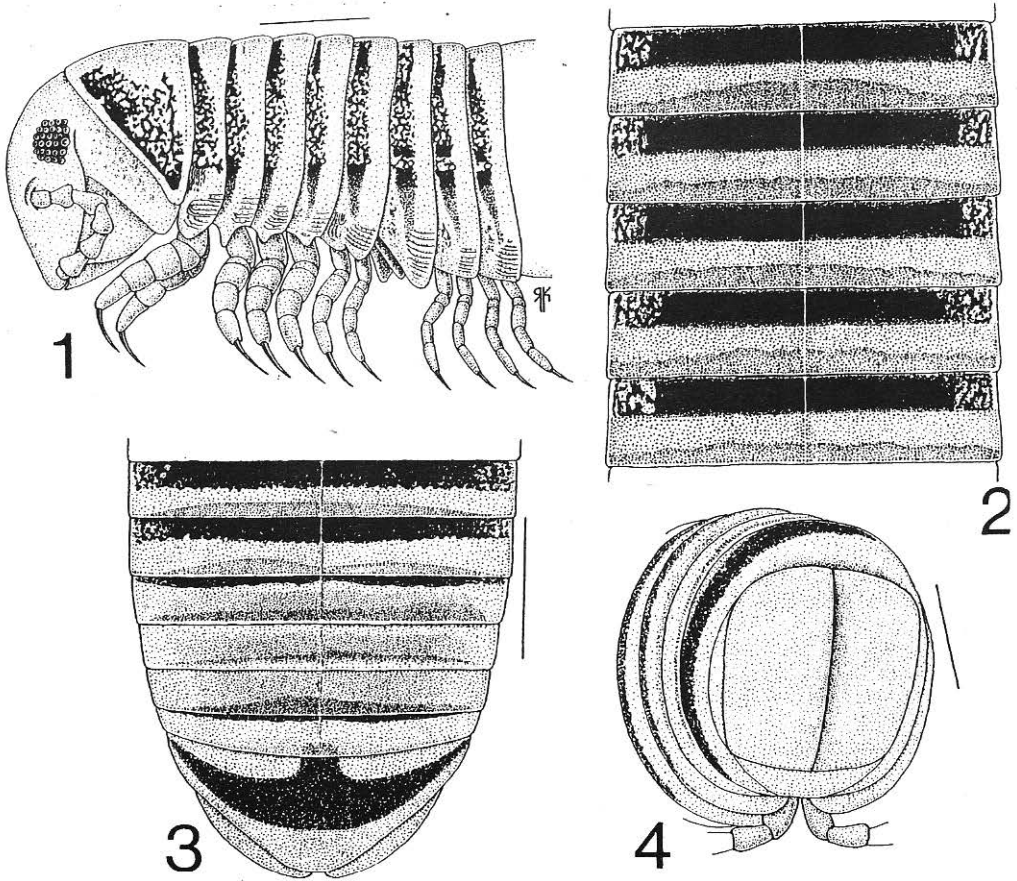
Distribution. Deserts of southern California and southern Arizona. The area extends some 380 mi (608 km) east/west from western San Bernardino County, California, to eastern Pima County, Arizona; north/south it extends some 130 mi (208 km) from the San Bernardino County locality to about 45 mi (72 km) north of the Mexican border in Yuma County, Arizona (Fig. 8).

Onychelus obustus Cook

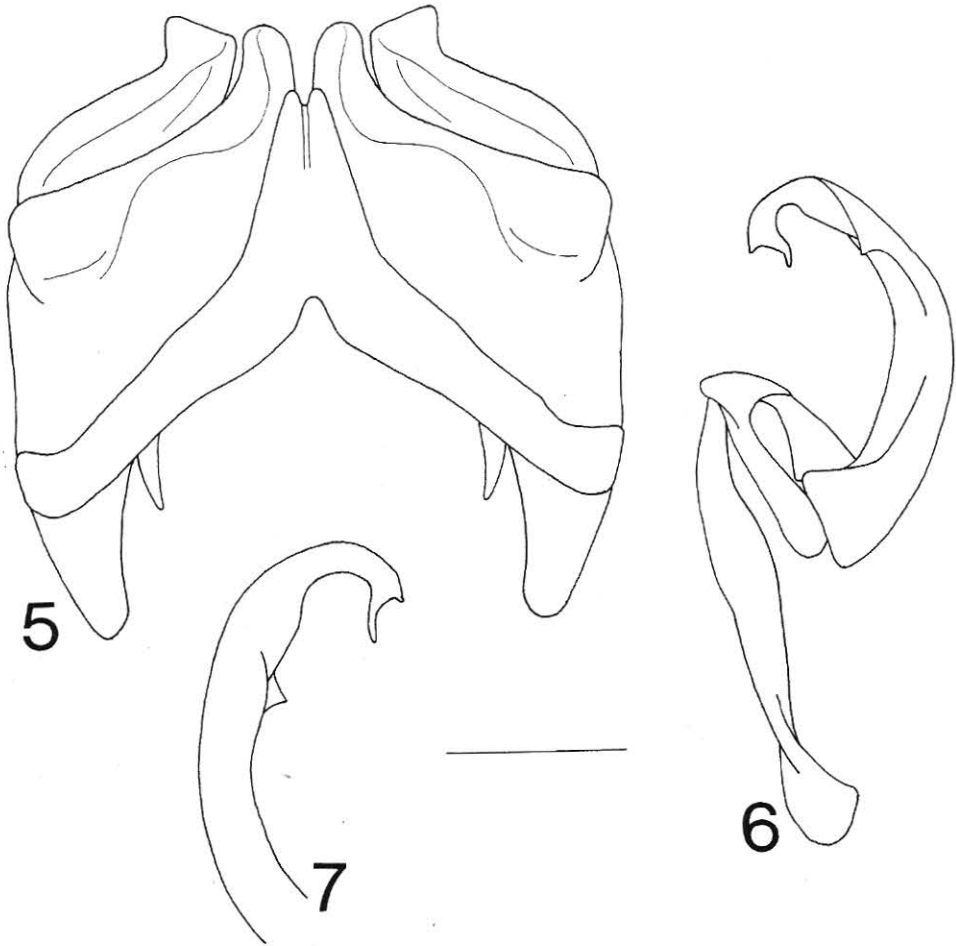
Figs. 1-7

Onychelus obustus Cook, 1904:68. Chamberlin and Hoffman, 1958: 157. Hoffman and Orcutt, 1960:142-144, figs. 8a-c.

Hiltonius thebanus Chamberlin, 1941:8, pl. 1, fig. 7. Chamberlin and Hoffman, 1958:165. Keeton, 1960:113, figs. 201, 208, 215. **New synonymy.**



Figs. 1-4. *Onychelus obustus*, somatic features of male from Riverside County, California. 1, head and segments 1-9, lateral view, setation omitted. 2, five midbody segments, dorsal view. 3, epiproct and last six segments, dorsal view. 4, epiproct, paraproct, and hypoproct, oblique caudal view. Scale lines = 1.00 mm for each figure.



Figs. 5-7. *Onychelus obustus* gonopodal features of male from San Diego County, California. 5, anterior gonopods, anterior view. 6, left posterior gonopod, caudal view. 7, distal extremity of the same, anterior view. Scale line = 0.80 mm for figs. 5-6, 0.50 mm for fig. 7.

Onychelus medolus Chamberlin, 1941:13, pl. 2, figs. 17-18. Chamberlin & Hoffman, 1958:157. Hoffman & Orcutt, 1960:144. **New synonymy.**

Onychelus jaegeri Chamberlin, 1947:50, figs. 54-55. Chamberlin & Hoffman, 1958:157. Hoffman & Orcutt, 1960:145. **New synonymy.**

Gosichelus jaegeri Chamberlin, 1949:168.

Gosichelus medolus Chamberlin, 1949:168.

Type specimens. Male holotype and two male and one female paratypes (NMNH) collected by C. R. Orcutt on an unknown date from the Colorado Desert,

Riverside County, California, exact location unknown.

Diagnosis. With the characters of the genus (Figs. 1-7).

Ecology. The only habitat information accompanying the specimens is the statement, "in sand dune," with that from Yuma County, Arizona.

Distribution. Same as that of the genus (Fig. 8). In addition to the types, the following specimens were examined:

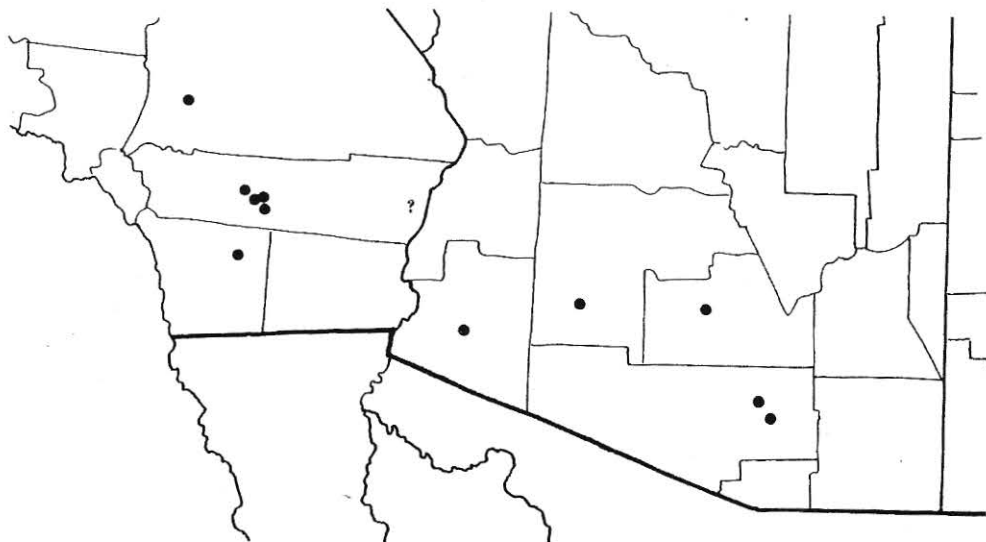


Fig. 8. Distributions of *Onychelus* and *O. obustus*. The question mark signifies the general area where the types were collected, in the Colorado Desert, Riverside County, California.

California: *Riverside Co.*, sandhills nr. Indio, 5M, F, November 1946, Smith, Jaeger (NMNH); Palm Springs, ♂, ♀, date unknown, R. V. Chamberlin (NMNH), Andreas Canyon, ♂, ♀, 7 December 1924, O. F. Cook (NMNH), Devil's Garden, ♀, 29 January 1939, D. L. Tiemann (LACMNH), and nr. Tramway, 3 ♀, 29 November 1981, B. Hebert (LACMNH); Thousand Palms, ♀, 21 February 1955, W. R. Richards (NMNH); Windy Pt., along CA hwy. 111 ca. 8 mi (12.8 km) NW Palm Springs, ♂, 20 January 1979, W. Icenogle, W. F. Rapp (FMNH); and 6 mi (9.6 km) SE Windy Pt., 10 ♂, 4 ♀, 4 March 1992, D. B. Weissman, V. F. Lee (CAS). *San Bernardino Co.*, 5 mi (8 km) E Cajon Pass, ♂, ♀, 1 February 1965, Schlinger, Irvin (UCD). *San Diego Co.*, Borrego Valley, 2.5 mi (4.0 km) SE Christmas Circle in heart of Borrego Springs, 21 ♂, 13 ♀, 2 December 1964, C. Parrish (CAS).

Arizona: *Maricopa Co.*, Theba, ♀, 5 January 1941, S. & D. Mulaik (NMNH). *Pima Co.*, Tucson, ♂, 1934, collector unknown (CAS); and 12 mi (19.2 km) NW

Tucson, M, 30 March 1975, M. Bentzien (UCB). *Pinal Co.*, Olberg, 8M, 6F, 27 December 1940, S. & D. Mulaik (NMNH). *Yuma Co.*, Roll, F, 20 April 1956, V. B. Roth, Clark (NMNH).

Remarks. Hoffman & Orcutt (1960) provided a full anatomical description of *O. obustus* that I cannot improve. They stated that the types of *O. jaegeri* were at the Academy of Natural Sciences, Philadelphia, but they are now at the NMNH. The types of *O. medolus* were cited as being in the "Chamberlin collection," which was transferred to the NMNH in 1972.

The label with the female holotype of *H. thebanus* states, "*Eurelus thebanus*," indicating that Chamberlin originally recognized it as an atopetholid but changed his mind and incorrectly assigned it to *Hiltonius* in the Spirobolidae. Keeton (1960) reported a female from Madera Canyon, Santa Rita Mountains, Santa Cruz County, Arizona. I cannot confirm this locality for *O. obustus* and hence omit it.

The banded pigmentation pattern fades on the caudal pleurotergites, which are primarily light colored although there is a strong dark band on the epiproct. The dark pigment on the mesozona fades laterad, below the ozopores, and the legs and sterna are only slightly darker than the light bands (Figs. 1, 3-4).

ACKNOWLEDGEMENTS

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Address of the author:

Dr. Rowland M. Shelley
North Carolina State Museum of Natural Sciences
P. O. Box 29555
Raleigh, North Carolina 27626-0555