

CAECIDOTEA FONTICULUS, THE FIRST TROGLOBITIC
ASELLID FROM THE OUACHITA MOUNTAINS
(CRUSTACEA: ISOPODA: ASELLIDAE)

Julian J. Lewis

Abstract.—*Caecidotea fonticulus*, a member of the *Hobbsi* Group, is the first troglobitic isopod to be described from the Ouachita Mountains. This species appears to be most closely related to two species from the Ozarks, *C. spatulata* and *C. fustis*.

The species described herein is the first troglobitic asellid to be found from the Ouachita Mountains of central Arkansas and adjacent Oklahoma. Another species occurring in the Ouachitas, *Caecidotea oculata*, has reduced eyes and pigmentation, but is reported only from epigeal habitats (Mackin and Hubricht 1940). The discovery of this zoogeographically interesting new asellid was made possible by an extensive ongoing survey of Ouachita springs and their fauna by Dr. Henry W. Robison of Southern Arkansas University.

Caecidotea fonticulus, new species

Figs. 1–2

Material examined.—ARKANSAS: Polk Co., Abernathy Spring, 0.8 mi. W of Polk-Montgomery county line, on north side of Highway 8 (shown on U.S.G.S. Big Fork, Arkansas 7.5 minute quadrangle), 16 June 1979, H. W. Robison, 136 ♂ ♀ (USNM 191132); same locality, H. W. Robison, 21 May 1980, 16 ♂ ♂, 14 ♀ ♀ (USNM 191129); same locality, H. W. Robison, 16 Apr 1982, 29 ♂ ♀ (USNM 191133); same locality, Julian J. Lewis and Teresa M. Lewis, 31 May 1981, 9 ♂ ♂, 10 ♀ ♀ (USNM 191131).

A 5.0 mm ♂ from the 31 May 1981 collection is the holotype (USNM 191128), the other specimens are paratypes. All of the material examined has been deposited in the National Museum of Natural History, Smithsonian Institution.

Description.—Eyeless, unpigmented. Longest ♂ 6.0 mm, longest ♀ 5.0 mm; body slender, about 6.1× as long as wide. Head about 1.5× as wide as long, anterior margin concave, postmandibular lobes moderately produced. Pleotelson about 1.2× as long as wide, sides subparallel, caudomedial lobe produced.

Antenna 1 reaching midlength of last segment of peduncle of antenna 2, flagellum with up to 8 segments, esthete formula to 6-0, occasional segments with 2 esthetes. Mandibles with 4-cusped incisors and lacinia mobilis; palp with plumose setae in rows on distal segments. Maxilla 1, outer lobe with 13 robust spines, inner lobe with 5 plumose setae. Maxilliped with 5–6 retinacula.

Male pereopod 1 propus about 1.4× as long as wide; palmar margin with 2 short spines proximally, high subtriangular median process separated by U-shaped cleft from similar lower distal process; dactyl flexor margin without process, undulating, with small spines. Female pereopod 1 about 2× as long as wide,

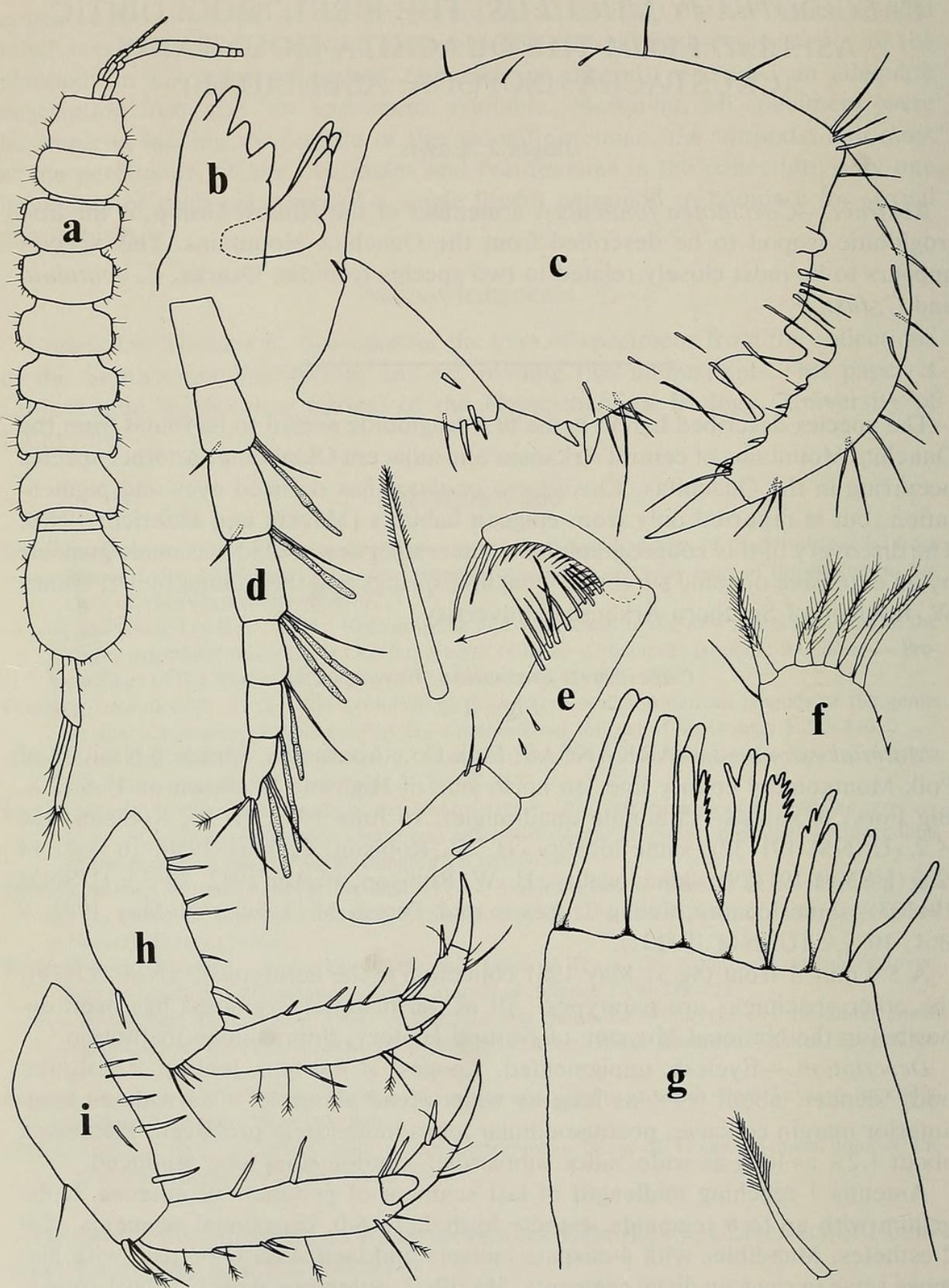


Fig. 1. *Caecidotea fonticulus*: a-h from ♂ paratypes, i from ♀ paratype: a, Habitus, dorsal; b, Incisor and lacinia, left mandible; c, Pereopod 1; d, Antenna 1, distal segments; e, Mandibular palp; f, Maxilla 1, inner lobe; g, Same, outer lobe; h, Pereopod 4, distal segments; i, Same.

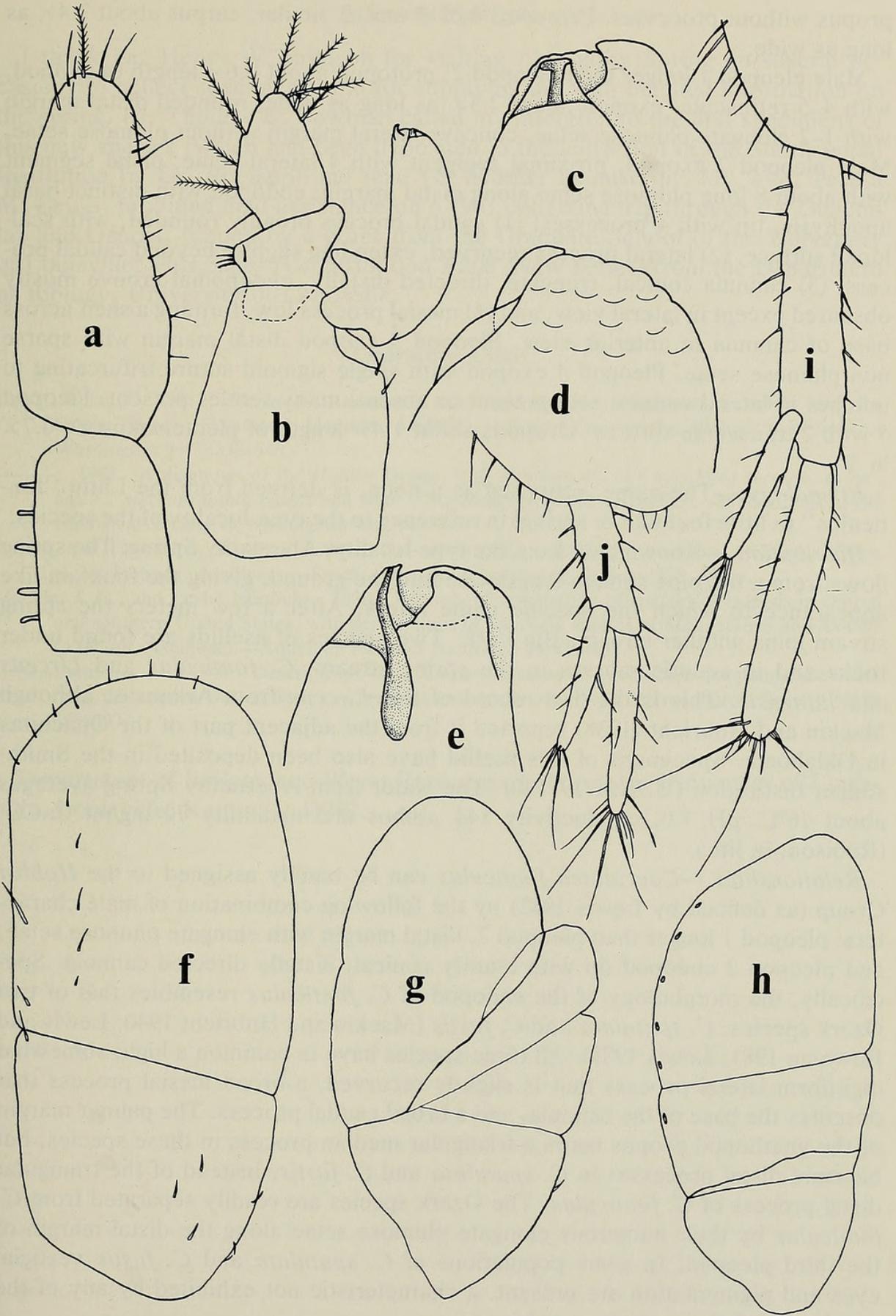


Fig. 2. *Caecidotea fonticulus*: a-i from ♂ paratypes, j from ♀ paratype: a, Pleopod 1; b, Pleopod 2; c-e, Same, endopod tip, anterior, posterior, lateral views; f, Pleopod 3; g, Pleopod 4; h, Pleopod 5; i, Uropod; j, Same.

propus without processes. Pereopod 4 of ♂ and ♀ similar, carpus about 2.4× as long as wide.

Male pleopod 1 longer than pleopod 2; protopod about 0.6× length of exopod, with 4–5 retinacula; exopod about 2.3× as long as wide, rounded distal margin with 1–2 elongate plumose setae, concave lateral margin without plumose setae. Male pleopod 2 exopod, proximal segment with 4 lateral setae, distal segment with about 8 long plumose setae along distal margin; endopod with distinct basal apophysis, tip with 4 processes: (1) caudal process broadly rounded, with scalloped surface, (2) lateral process recurved, extending slightly beyond caudal process, (3) cannula conical, truncate, directed distally, endopodial groove mostly obscured except in lateral view, and (4) mesial process low, forming a shelf across base of cannula in anterior view. Pleopod 3 exopod distal margin with sparse non-plumose setae. Pleopod 4 exopod with single sigmoid suture trifurcating to notches in lateral margin, seta present or absent, many setules present. Pleopod 5 with 2 transverse sutures. Uropods about 1.4× length of pleotelson in ♂, 0.7× in ♀.

Etymology.—The name, proposed as a noun, is derived from the Latin “fonticulus” (a little fountain or spring) in reference to the type-locality of the species.

Distribution.—Known only from the type-locality, Abernathy Spring. The spring flows from a tile pipe sunken lengthwise into the ground, giving the fountain-like appearance to which the specific name refers. After a few meters the spring stream joins another stream, Big Fork. Two species of asellids are found under rocks and in aquatic mosses in the spring stream, *C. fonticulus* and *Lirceus ouachitaensis*. This is the first record of this *Lirceus* from Arkansas, although Mackin and Hubricht (1938) reported it from the adjacent part of the Ouachitas in Oklahoma. Specimens of this asellid have also been deposited in the Smithsonian Institution (USNM 191130). The water from Abernathy Spring averages about 16°C, pH 7.0, conductivity 144 μmhos and alkalinity 70 mg/ml CaCO₃ (Robison, in litt.).

Relationships.—*Caecidotea fonticulus* can be readily assigned to the *Hobbsi* Group (as defined by Lewis 1982) by the following combination of male characters: pleopod 1 longer than pleopod 2, distal margin with elongate plumose setae, and pleopod 2 endopod tip with bluntly conical, distally directed cannula. Specifically, the morphology of the endopod of *C. fonticulus* resembles that of two Ozark species, *C. spatulata* and *C. fustis* (Mackin and Hubricht 1940; Lewis and Bowman 1981; Lewis 1981). All three species have in common a high, somewhat digitiform lateral process that is slightly recurved, a broad mesial process that obscures the base of the cannula, and a broad caudal process. The palmar margin of the gnathopod propus bears a triangular median process in these species, but bicuspid distal processes in *C. spatulata* and *C. fustis*, instead of the triangular distal process of *C. fonticulus*. The Ozark species are readily separated from *C. fonticulus* by their numerous elongate plumose setae along the distal margin of the third pleopod. In some populations of *C. spatulata* and *C. fustis* vestigial eyes and pigmentation are present, a characteristic not exhibited by any of the specimens of *C. fonticulus* examined.

Acknowledgments

I thank Dr. Henry W. Robison for visiting Abernathy Spring on several occasions to collect specimens, and for supplying me with detailed information on the spring. Dr. Thomas E. Bowman called my attention to the first specimens of this new species (which had been deposited in the collection of the Smithsonian Institution by Dr. Robison) and read yet another manuscript. My wife, Teresa M. Lewis, provided field assistance on a 1981 collecting trip through the Ouachitas and Ozarks, funded by a grant from the Graduate School of the University of Louisville. This paper is contribution #208 (New Series) from the Department of Biology, University of Louisville.

Literature Cited

- Lewis, Julian J. 1981. *Caecidotea salemensis* and *C. fustis*, new subterranean asellids from the Salem Plateau (Crustacea: Isopoda: Asellidae).—Proceedings of the Biological Society of Washington 94(2):338–346.
- . 1982. A diagnosis of the *Hobbsi* Group, with descriptions of *Caecidotea teresae*, n. sp., and *C. macropoda* Chase and Blair (Crustacea: Isopoda: Asellidae).—Proceedings of the Biological Society of Washington 95(2):81–94.
- , and Thomas E. Bowman. 1981. The subterranean asellids (*Caecidotea*) of Illinois (Crustacea: Isopoda: Asellidae).—Smithsonian Contributions to Zoology 335, 66 pp.
- Mackin, J. G., and Leslie Hubricht. 1938. Records of distribution of species of isopods in central and southern United States, with descriptions of four new species of *Mancasellus* and *Asellus* (Asellota, Asellidae).—American Midland Naturalist 19:628–637.
- , and ———. 1940. Descriptions of seven new species of *Caecidotea* (Isopoda, Asellidae) from the central United States.—Transactions of the American Microscopical Society 59(3): 383–397.

Department of Biology and Water Resources Laboratory, University of Louisville, Louisville, Kentucky 40292.



Lewis, J.J. 1983. "Caecidotea fonticulus, the first troglobitic asellid from the Ouachita Mountains (Crustacea: Isopoda: Asellidae)." *Proceedings of the Biological Society of Washington* 96, 149–153.

View This Item Online: <https://www.biodiversitylibrary.org/item/107577>

Permalink: <https://www.biodiversitylibrary.org/partpdf/45314>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Biological Society of Washington

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.