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A NEW BLIND ISOPOD OF THE
GENUS *CAECIDOTEA*, FROM A MISSOURI CAVE

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IN the summer of 1930 the writer, in company with E. B. Williamson, visited several caves in Missouri. Of the caves visited, none were more productive of animal life than the "River Cave" on the Snyder Estate, Hahatonka, Camden County, Missouri. The blind asellid isopod described below occurs in great abundance in the "River Cave," along with an apparently undescribed blind fish. The fish will be reported on by Carl L. Hubbs.

Genus *Caecidotea* Packard

Body narrow, elongate. Eyes wanting (present but reduced in *C. kawamurai*). Head nearly as wide as first thoracic segment. Terminal segment of abdomen, the telson, much longer than broad.

Caecidotea antricola, n. sp.

FIGS. 1-10

Male.—First antenna with broad basal segment armed at apex with three spines. Second segment one and one-half times as long as basal segment. Third segment about as long as the basal one. Flagellum composed of 20 segments. Apices of segments 12, 13, 15, 17, 18, 19, and 20 with a single club

shaped seta (perhaps of a sensory nature) in addition to normal setae which are found on almost every segment of first antenna (Fig. 7).

Second antenna with basal segment armed with five spines on outer lateral margin. Second segment larger than first, armed with spines on inner and outer margins, and with setae at apex. Third segment with spines on inner margin and with setae at apex. Fourth segment long, with a row of about ten spines on inner margin and a row of setae on outer. Fifth segment longer than fourth and setose on inner and outer margins. Flagellum with more than 109 segments, the first one enlarged. About every fifth segment near middle of flagellum bearing cluster of three or four setae. Second antenna more than twice as long as body.

Mandible (Fig. 8) with two series of teeth at apex, the outer with four, the inner with three. Margin of mandible below inner row of teeth with plumose setae. Mandibular palp with three segments, the last two bearing many long setae.

First maxilla (Fig. 5) with two terminal laminae, the longer bearing about eleven smooth setae, the shorter with five long plumose setae.

Second maxilla (Fig. 6) with two terminal laminae, one oval, the other squarish. Squarish lamina with about 50 pectinate setae varying greatly in size.

Maxilliped (Fig. 4) with rounded apex densely setose. Palp with five segments. Second segment largest and rounded on one side. All segments of palp setose, the basal one only slightly so. Basipodite large, rounded on side adjacent to palp, and with other two sides meeting at nearly right angles. Basipodite setose along margin nearest palp.

First walking leg (Fig. 9) with hooked dactylus, bearing notches on inner margin and terminating acutely. Inner margin with a few setae and a single spine before the sharp apex. Propodus with four tubercles, a spine and setae on margin opposed to dactylus. Carpus and merus triangular, the former armed with four spines on the apex of outer margin and the latter armed with four spines on the apex of

inner margin. Ischium armed with a biserial row of spines on inner margin.

Last six pairs of walking legs much alike; dactylus small with apical spines and setae; propodus and carpus elongated, about the same in length but with carpus somewhat thicker; merus small, triangular, apex armed with spines; ischium somewhat oval and with a biserial row of spines on anterior margin; basipodite club shaped and smaller than either propodus or carpus.

Head nearly as broad and long as first thoracic segment. Eyes absent. Head decreasing in width anteriorly, setose over entire dorsal surface and on margins.

First three thoracic segments each with greatest width anterior to the middle. Greatest width of fourth segment at middle point. Last three thoracic segments each with greatest width posterior to middle. First three walking legs attached toward anterior margin of segments. Fourth walking leg attached to middle lateral margin of segment. Fifth, sixth, and seventh pairs of walking legs attached toward posterior margins of segments. Dorsal surfaces and margins of all thoracic segments with setae.

Three abdominal segments visible from above. Telson longer than broad, setose above and on margins. Peduncle of uropod twice as long as telson. Inner terminal branch of uropod as long as peduncle, outer terminal branch about one-fifth as long as peduncle. Uropods about as long as body.

First pleopod (Fig. 3) large, covering second pleopod, composed of two segments, the terminal one bearing setae on outer margin.

Second pleopod (Fig. 2) with oval basal segment. Outer ramus consisting of two segments; apical one oval and provided with about fifteen plumose spines; distal segment irregular with cluster of five plumose spines on outer margin and a single plumose spine on inner margin. Inner ramus with a single irregular segment, armed at apex with three teeth and with an oval lobe on inner distal margin.

Third pleopod with a short peduncle and an operculate lamina. Outer margin oval; apex and inner margin straight.

Outer margin and apex provided with about sixteen smooth spines. Ventral surface of operculate lamina with irregularly placed spines.

Fourth pleopod smaller than fifth and with irregularly oval lamina. Fifth pleopod with two laminae both irregularly oval, outer one smaller than inner.

Female dimorphic structures.—First, second, third, and fourth pairs of walking legs with oval oöstegites attached to bases.

First pleopod with very short peduncle and oval lamina. Second pleopod absent. Third pleopod operculate. Fourth and fifth pleopods with two terminal laminae, in each case the larger branch covering the smaller.

Dactylus (Fig. 10) of first leg armed with about ten spines on margin opposed to propodus. Propodus with two tubercles and nine spines and setae on inner margin. Apex of propodus with elongated spine, outer margin with six spines. Ischium with a uniserial row of spines on outer margin.

The male type, female allotype, and paratypes are deposited in the crustacean collection of the University of Michigan Museum of Zoology. The catalogue numbers are as follows: male type, No. 53259, female allotype, No. 53260, paratypes, No. 53261.

Type locality.—“River Cave” on Snyder Estate, Hahatonka, Camden County, Missouri. The specimens were collected on August 19, 1930, by E. B. Williamson and E. P. Creaser.

These animals were very abundant in “River Cave.” Many specimens were seen walking about in the shallow water and in the limestone “pans” which were filled with water. These isopods are milky white in life, and the outline of the intestine can be readily discerned by its black contents.

“River Cave” has two entrances, and upon occasion of heavy rainfall or of melting snow, leaves, sticks, and logs are carried into the cave. This material probably supplies an abundance of food.

This species of *Caecidotea* attains a remarkable size. The measurements of the male type are as follows: total length

(including antennae and uropods) 78 mm.; length of body (head, thorax, and abdomen included) 18 mm.; length of second antennae 41 mm.; length of uropods 19 mm.

AFFINITIES OF *Caecidotea antricola*

This blind isopod can, for the time being, best be considered an orphaned species. It is certainly unique in the possession of uropods of a length equal to that of the body. The number of segments in the flagellum of the first and second antennae exceeds that of any known species of the genus.

The status of the genus *Caecidotea* as a coherent biological unit is none too certain. Owing to the possibility that secondary sexual differences have been mistaken for specific characters in a few species, the following key is presented to replace the one used by Richardson (1905, pp. 433-434).

KEY TO THE SPECIES OF *Caecidotea*

- 1a. Eyes present but reduced. Japan.
C. kawamurai Tattersall, 1921
- 1b. Eyes absent.
 - 2a. Outer terminal ramus of uropod at least half as long as peduncle.
 - 3a. Length of telson and abdomen more than one-third as long as length of head and thorax. Tennessee and Georgia.
C. nickajackensis Packard, 1881
 - 3b. Length of telson and abdomen one-fourth as long as length of head and thorax. Japan.
C. akiyoshiensis Ueno, 1927
 - 2b. Outer terminal ramus of uropod distinctly less than one-half as long as peduncle.
 - 4a. Uropods not as long as body. Second antenna shorter than body.
 - 5a. Propodus of first walking leg of male with two tubercles along margin opposed to dactylus. Alabama.
C. alabamensis Stafford, 1911
 - 5b. Propodus of first walking leg of male with three tubercles along margin opposed to dactylus. Kansas.
C. tridentata Hungerford, 1922
 - 5c. Propodus of first walking leg of male with five tubercles along margin opposed to dactylus. Virginia, Kentucky, Indiana, and Illinois.
C. stygia Packard, 1871

5d. Propodus of first walking leg of male with about four long spines on inner margin. Dactylus with eleven spines on margin opposed to propodus. Tennessee.

C. richardsonae Hay, 1901

4b. Uropods as long as body. Second antenna twice as long as body. Missouri.

C. antricola Creaser

The key does not include the species *C. smithsii* Ulrich, which is known only from a single fragment obtained from the Bureau of Fisheries artesian well at San Marcos, Texas. Some of the characters of this species are known and may be briefly summarized as follows: first antenna with five segments in flagellum, two segments bearing club shaped setae; flagellum of second antenna with at least forty segments; size small, probably not more than 3 mm. The first leg is figured with spines, but the sex is not stated.

The club shaped setae described by Ulrich (1902, p. 93) for *C. smithsii* are also developed in *C. richardsonae*, *C. tridentata*, and *C. antricola*. The form, number, and situation of these setae may prove to be a valuable systematic character.

Additional studies of the genus *Caecidotea* are greatly needed. A remarkable opportunity is afforded in such a study to ascertain more certainly the affinities, if such exist, of the various species.

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PLATE 1

- Fig. 1. Drawing of male *Caecidotea antricola*.
- Fig. 2. Second pleopod of male.
- Fig. 3. First pleopod of male.

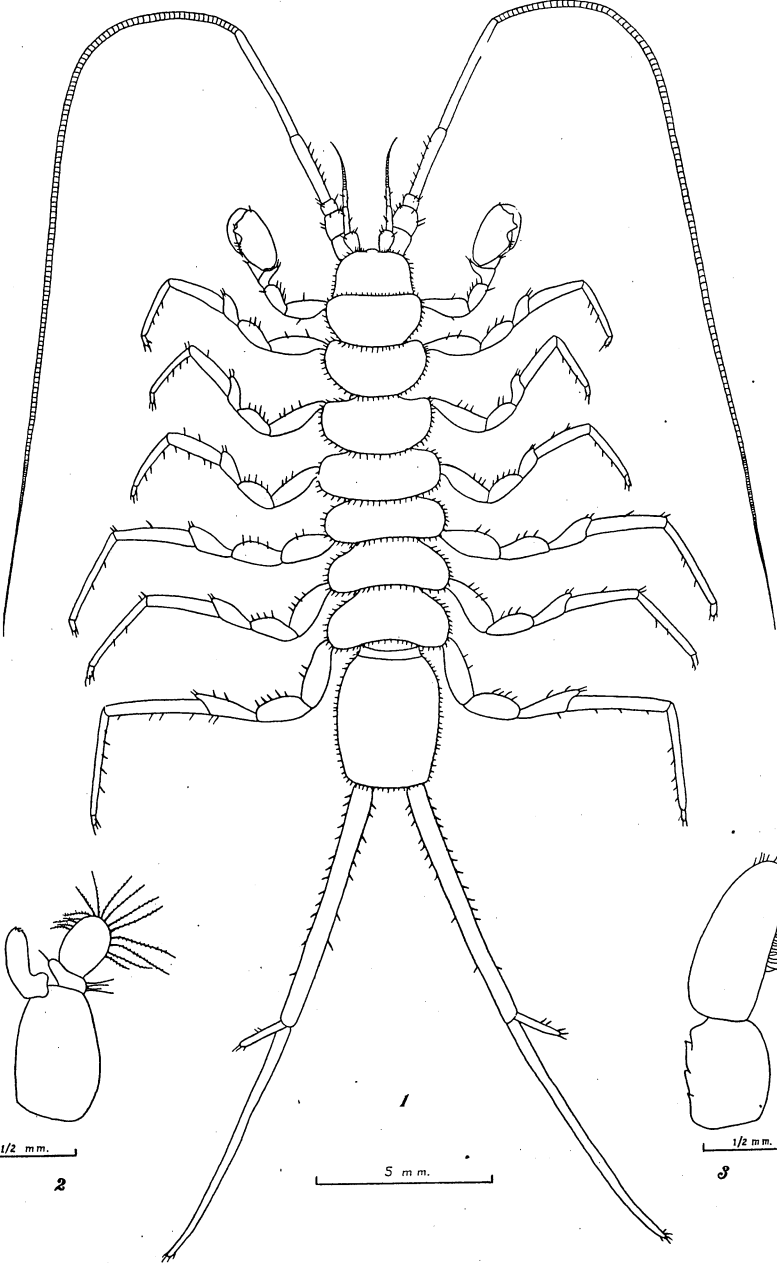


PLATE 2

- Fig. 4. Maxilliped of male.
- Fig. 5. First maxilla of male.
- Fig. 6. Second maxilla of male.
- Fig. 7. Last four segments of first antenna of male.
- Fig. 8. Mandible of male.
- Fig. 9. First walking leg of male.
- Fig. 10. First walking leg of female.

