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PENINSULA

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U. S. Biological Survey

With 8 text-figures

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XIII

LARGER CAVE CRUSTACEA OF THE YUCATAN PENINSULA

EDWIN P. CREASER

U. S. Biological Survey

Of the crustaceans mentioned in this report, one new species of isopod was obtained and is described, two other new species remain undescribed because of the taxonomic confusion of the group or the paucity of material. However, sufficient material is at hand to indicate three sources from which this cave crustacean fauna has been derived. The first of these is from a marine habitat as evidenced by the presence of such forms as *Cirolana*, *Palaemon*, and *Antromysis*. The second source of faunal derivation is from a fresh-water habitat. The evidence of this lies in the occurrence of *Typhlatya* and *Caecidotea* in the caves. The third source of true crustacean fauna modified for cave life is from the land. The only complete example of this is the new blind isopod of the genus *Porcellio*.

Order MYSIDACEA

Antromysis cenotensis Creaser 1936

This species was originally described from specimens taken in Balaam Canche Cave near Chichen Itza, Yucatan. Dr. Pearse was successful in obtaining this species over a much wider area. His collection includes specimens from the following locations in Yucatan: Iuchil Cave at Tixcacal; a well at the iron mill at Oxkutzcab; Kaua Cave and Oxolodt Cave at Kaua; Balaam Canche Cave at Chichen Itza; Chac Mol Cave at Tohil; San Isidro Cave at Merida; Hochtun Cave at Hochtun; San Bulha Cave at Motul; Yunchen Cave at Libre Union; well on the Calcehtok Hacienda near San Bernardo; and the Xconsacab Cave at Tizamin.

The wide range of this minute mysid shrimp as now known indicates the widespread nature and ramification of the underground channels. Some of the localities from which these crustaceans were taken are at least 125 miles apart.

Dr. Pearse tells me that these crustaceans are frequently brought up with the buckets of water from hacienda wells.

Order ISOPODA

Family CIROLANIDAE

Cirolana anops Creaser 1936

Dr. Pearse obtained these isopods in the following locations: Spukil Cave at Calcehtok; Xconsacab Cave at Tizamin; Chac Mol Cave at Tohil; Gongora Cave at Oxkutzcab; San Isidro Cave at Merida; San Bulha Cenote at Motul; and Kaua

Cave at Kaua. In addition to these localities where Dr. Pearse obtained this cirrolanid isopod the species is also known from Amil Cave near Merida, Yucatan.

Dr. Pearse was successful in obtaining these isopods in a wire cone trap baited with meat and also by using a sponge in which a part of a dead bird had been buried.

Family ONISCIDAE

Porcellio pearsei n. sp.

Among the many interesting zoological discoveries made by Dr. Pearse in his investigations of the Yucatan caverns is the blind isopod crustacean described below. This description is based upon adult material from Balaam Canche Cave near Chichen Itza, Yucatan.

Male. Head length about one-half the width, anterior margin with three protuberances, the lateral ones most prominent. Eyes wanting. First pair of antennae rudimentary composed of three segments, terminal segment the smallest. Second antennae less than one-third total length of animal, composed of six segments. The two basal segments small, next two the largest, flagellum two-segmented with distal segment about one-half length of apical segment which is terminated with a spine.

Maxilliped with inner part composed of a large base tipped with two segments, one of which is truncate and spined, the other terminating acutely with a spine. Outer part of maxilliped smaller than inner, tapering and smooth and about as long as base of inner part. (The maxilliped apparently is a fine character for generic distinction.)

Outer part of first maxilla terminating with large curved teeth and with comb-like row of spines along apical lateral margin. Second maxilla with apex of two rounded lobes, outer lobe provided with friction or grinding edge.

Mandible without a palp, apical teeth strong and slightly curved. Inner lateral margin equipped with feathery setae.

Contour of body oval. Thoracic and abdominal segments with well-developed processes. Telson triangular.

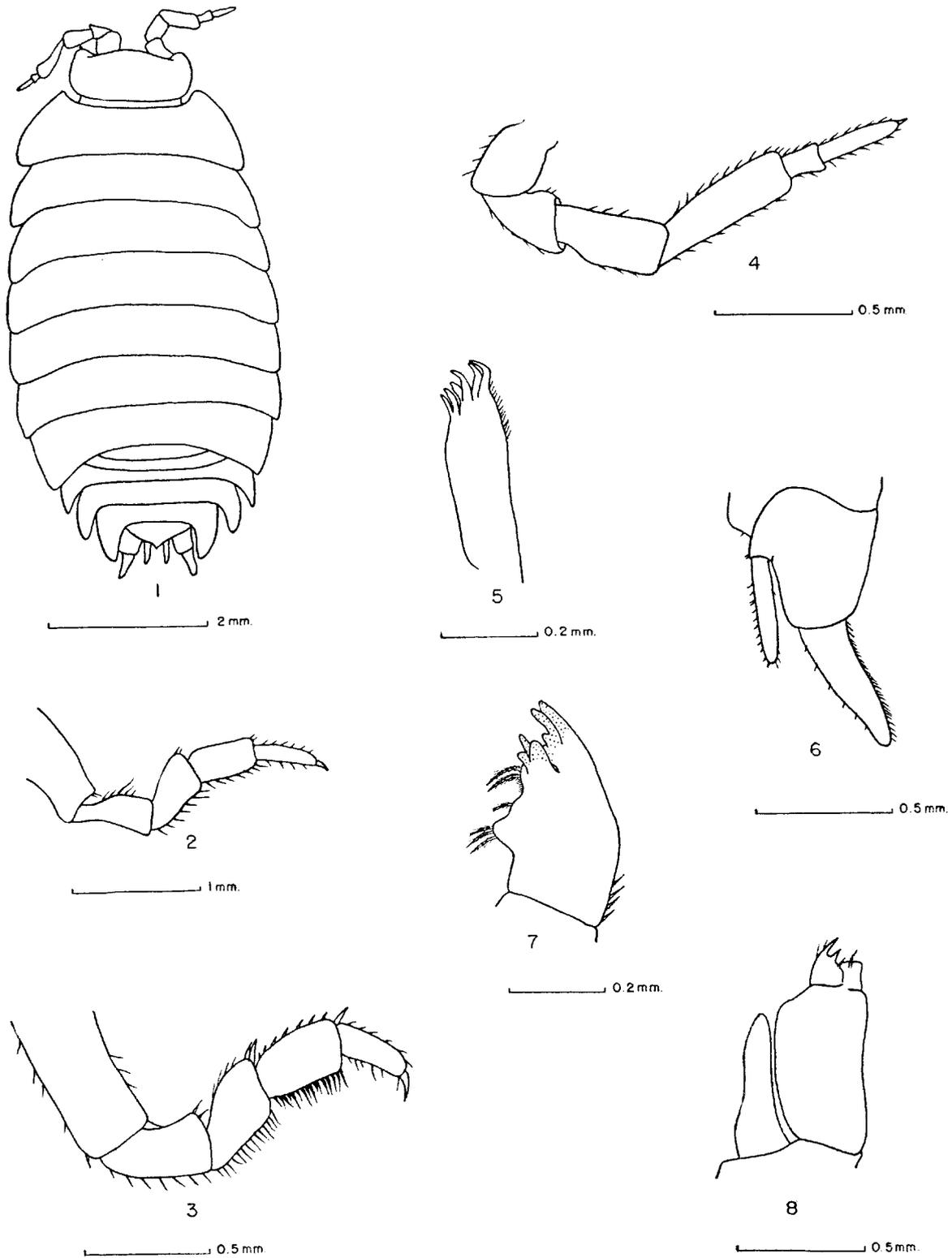
Uropod with inner part attached to base near the adjoining segment on the inner lateral margin. Outer part of uropod longer than inner part.

Female. Similar to the male with the usual sexual differences. I can discern no differences in the length of the uropods mentioned as a sexual difference in other species of this or related genera.

MEASUREMENTS.—I have seen a male from Sazich Cave at Calcehtok, Yucatan, which was 7 mm. long. The females are smaller than the males.

RELATIONSHIPS.—This new species resembles *Porcellio pubescens* Dollfus 1893 in the arrangement in size of the segments of the flagellum. This eyed species is known from Venezuela. Although poorly described the figure of the uropods indicate that this character as well as the condition of the eyes differs greatly from *Porcellio pearsei*.

TYPES.—The male type and the female allotype from Balaam Canche Cave near Chichen Itza, Yucatan, are deposited in the United States National Museum.



FIGS. 1-8—*PORCELLIO PEARSEI* n. sp.
 (Drawn with aid of camera lucida. Scales indicate enlargement.)

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|-----------------|--------------------------|-------------------|----------------|
| 1: Adult male. | 3: First ambulatory leg. | 5: First maxilla. | 7: Mandible. |
| 2: Seventh leg. | 4: Second antenna. | 6: Uropod. | 8: Maxilliped. |

LOCALITIES.—Balaam Canche Cave near Chichen Itza, Yucatan, June 12, 1936; Sazich Cave near Calcehtok, Yucatan, August 6, 1936; Puz Cave near Oxkutzcab, Yucatan, July 20, 1936; Spukil Cave near Calcehtok, Yucatan, August 5, 1936; first cave on San Roque road near Oxkutzcab, Yucatan, July 22, 1936; San Bulha Cave at Motul, Yucatan, July 9, 1936.

This isopod was obtained under stones and rubbish in the caves mentioned. This new species is the first blind member of this genus to be discovered in North America. It apparently is rather widespread in its distribution throughout Yucatan.

Porcellionides Miers 1877

(*Metoponorthus* Budde Lund 1885)

A small isopod of this genus was taken in several localities by Dr. Pearse in his cave investigations. The species has reduced eyes and very little pigmentation. This pigmentation consists of a very light brown color in preserved specimens. In view of the reduced eyes and pigmentation it may best be considered as an incipient cave form. The second antennae have a very small first segment in the flagellum. This first segment is about one-half as long as the apical segment of the flagellum which bears a spine at the tip.

The status of the genus *Porcellionides* and its respective members is not at all certain at this time. Many species are very inadequately known and accordingly I hesitate naming these specimens. They are on deposit in the U. S. National Museum for future reference by workers on this group. I have seen specimens from the following locations: San Isidro Cave near Merida, Yucatan; Hoctun Cave near mouth at Hoctun, Yucatan; San Bulha Cave, Motul, Yucatan; Spukil Cave at Calcehtok, Yucatan; Ziz Cave at Oxkutzcab, Yucatan; Chac Mol Cave at Tohil, Yucatan.

Family ASELLIDAE

Genus *Caecidotea* Packard 1871

A single specimen of a species of this genus was found in Balaam Canche Cave near Chichen Itza, Yucatan, June 12, 1936. Unfortunately only a single immature female without uropods and antennae was obtained. In view of this the species cannot be described in a satisfactory manner. This genus is widely distributed in caverns over the United States. The generic affinities are with *Asellus*.

The occurrence of a species of this genus in the Balaam Canche Cave is interesting because this cave is one of two which the atyid shrimp *Typhlatya pearsei* has been found. *Typhlatya* like *Caecidotea*, very probably was derived from fresh-water forms.

Order DECAPODA

Family ATYIDAE

Typhlatya pearsei Creaser 1936

This blind atyid shrimp is not widely distributed in the subterranean waters of the Peninsula of Yucatan. Dr. Pearse in his diligent search for cave life through-

out Yucatan obtained this species in the summer of 1936 only from the type locality: Balaam Canche Cave 4.8 km. east, 0.8 km. south of Chichen Itza, Yucatan. The 1932 expedition also obtained a single specimen of this shrimp from Santa Elena Cave 4.8 km. south of Talcha, Yucatan.

Family PALAEMONIDAE

Palaemon morleyi Creaser 1936

The previous collection of this subterranean shrimp made in 1932 consisted of eight specimens from three localities. The caves in which these crustaceans were found at that time were the following: San Isidro Cave near Merida, Yucatan, Balaam Canche Cave near Chichen Itza, Yucatan and Amil Cave near Merida, Yucatan. A single large claw was found in Motul Cave at Motul, Yucatan. This differed from the claws on the small specimens in having a tooth on the immovable finger and an incision opposite it on the movable finger. The large series at my disposal now show that this is the normal condition and that the smooth inner margins of the fingers represent either juvenile or regenerated chelae.

This fine series of specimens also show considerable variation in the number of rostral spines. This variation is from 0 to 4 spines below and from 6 to 10 spines above. Since this variation occurs in individuals from a single locality no taxonomic significance is attached to this variation.

FOOD.—An examination was made of the stomach contents of three specimens taken from Hoctun Cave at Hoctun, Yucatan. This examination disclosed nothing but chitinous parts including one small claw of *Palaemon morleyi*.

LOCALITIES.—As has been previously noted in connection with the earlier paper (Creaser, 1936, p. 132) these subterranean crustaceans have a wide range in the Peninsula of Yucatan. This particular species is now known from the following localities: San Isidro Cave near Merida, Amil Cave southeast of Merida, Balaam Canche Cave near Chichen Itza, Chac Mol Cave near Tohil, Hoctun Cave at Hoctun, Yunchen Cave at Libre Union, Gongora Cave at Oxkutzcab, and Spukil Cave at Calcehtok. Shrimps were seen in a small pool in Xconsacab Cave, Tizamin, which probably belonged to this species.

METHODS OF CAPTURE.—Dr. Pearse was notably successful in capturing these crustaceans with a cage trap consisting of a wire screen with conical entrances. This was baited with meat.

ORIGIN OF THE CAVE CRUSTACEAN FAUNA

The researches of Dr. Pearse in Yucatan cast considerable light on the origin of the fauna of the caves. In view of the rather complete list of species it seems plausible now to assume that the fauna has arisen from three independent sources. *Porcellio pearsei* and the apparently new *Porcellionides* sp. unquestionably were derived from land forms. These isopods belong to genera which are of widespread and general distribution. Of the various cave crustaceans these isopods very likely were the last to become differentiated into cave forms. In fact *Porcellionides* sp.

seems to be merely an incipient cave species. There can be but little doubt that the three species, *Cirolana anops*, *Palaemon morleyi* and *Antromysis cenotensis*, are related to marine crustaceans. *Typhlatya pearsei* and the species of *Caecidotea* are probably derived from fresh-water forms. The status of *Typhlatya* is not known with certainty. The family Atyidae, of which it is a member, is known only from fresh waters but has its closest relationships with a marine family. The particular species of the caves of Yucatan differs greatly from the forms now living in fresh waters of the Americas but may be related to them. In connection with the origin of the cave crustacean fauna it will be interesting to compare the results and conclusions of Dr. Carl Leavitt Hubbs on the fish fauna (see paper XXI of this series).

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