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A NEW SPECIES OF ISOPOD OF THE GENUS *CURASSANTHURA*
(CYMOTHOIDA, ANTHUROIDEA, LEPTANTHURIDAE) FROM
ANCHIALINE CAVES OF THE YUCATAN PENINSULA, MEXICO

BY

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ABSTRACT

A new stygobitic isopod from the anchialine systems of the Yucatan Peninsula, Mexico, is described, bringing the total number of anchialine isopods to seven. *Curassanthura yucatanensis* sp. nov. of the family Leptanthuridae is the first species of the genus to be recorded from a continental site. It can be distinguished from the other known species in the genus by the shape of the head, wider than long, and the number of robust setae (30) on the palmar margin of the propodus of pereopod 1.

Key words. — Caribbean, Isopoda, stygobitic, cenotes

RESUMEN

Un nuevo isópodo estigobítico de los sistemas anquihalinos de la península de Yucatán, México, es descrito llevando el número total de isópodos anquihalinos a siete. *Curassanthura yucatanensis* sp. nov. de la familia Leptanthuridae es la primera especie del género que se registra de una localidad continental. La nueva especie se puede distinguir de las otras especies del género por la forma de la cabeza, más ancha que larga, y el número de setas robustas (30) sobre el margen palmar del propodio del primer pereiópodo.

Palabras clave. — Caribe, Isopoda, estigobítico, cenotes

INTRODUCTION

The isopods that inhabit the anchialine systems of the Yucatan Peninsula (YP), Mexico, are a conspicuous group of cave-adapted organisms (Rocha-Ramírez

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et al., 2009). Six species have been described so far, all being endemic to the YP: *Metacirolana mayana* (Bowman, 1987); *Cirolana yucatanana* Botosaneanu & Iliffe, 2000; *Cirolana yunca* (Botosaneanu & Iliffe, 2000); *Creaseriella anops* (Creaser, 1936); *Haptolana bowmani* Botosaneanu & Iliffe, 1997; and *Yucatalana robutispina* Botosaneanu & Iliffe, 1999. *Creaseriella anops* is the most abundant and widely distributed species, occurring throughout the northern section of the YP; whereas the other five species are very rare numerically and have small distribution ranges.

In this paper, we describe a new species of the genus *Curassanthura*, family Leptanthuridae, from the YP. The new species was first collected in a cenote (sinkhole) in the area of Tulum, Quintana Roo, Mexico. This new leptanthurid, assigned to the genus *Curassanthura* Kensley, 1981, is the first to be described from a continental environment, as the other four previously known species are from Caribbean and North Atlantic islands: Curaçao (*C. halma* Kensley, 1981), the Canary Islands (*C. canariensis* Wägele, 1985), Bermuda (*C. bermudensis* Wägele & Brandt, 1985) and Jamaica (*C. jamaicensis* Kensley, 1992) (Poore, 2009).

MATERIAL AND METHODS

All specimens reported herein are deposited in the National Crustacean Collection (CNCR), of the Institute of Biology, National Autonomous University of Mexico (UNAM). All drawings were made with the aid of an Olympus SHZ-10 stereoscopic microscope and the photographs were taken with a Pentax WG-III, and a Leica DFC490 built into a stereoscopic microscope (Leica Z16 APOA); the Leica Application Suite (LAS) software was used for integrating layers. The sites of collection are indicated in fig. 1.

TAXONOMY

Family LEPTANTHURIDAE Poore, 2001

Genus *Curassanthura* Kensley, 1981

***Curassanthura yucatanensis* sp. nov. (figs. 2-3)**

Material examined.— Holotype: Female 9.0 mm tl; Quintana Roo: Tulum, Cenote Nohoch Nah Chich (20°17.91'N 87°24.21'W); coll. O. Cortes; 24 June 2015; CNCR 33131. Paratypes: Juvenile 4.3 mm tl; Yucatan: Kopoma, Cenote Chen Ha (20°41.33'N 89°52.56'W); coll. S. Benitez; 4 January 2017; CNCR 33582. Juvenile 4.0 mm tl; Yucatan: Mucuyche, Cenote Dzonotilá (20°37.91'N 89°39.65'W); coll. S. Benitez; 19 March 2016; CNCR 33279.

Description.— Body (fig. 2A-B) unpigmented, 10.4 times as long as wide, eyes absent (fig. 2A). Cephalon (fig. 2F-G) wider than long, trapezoidal in dorsal view,

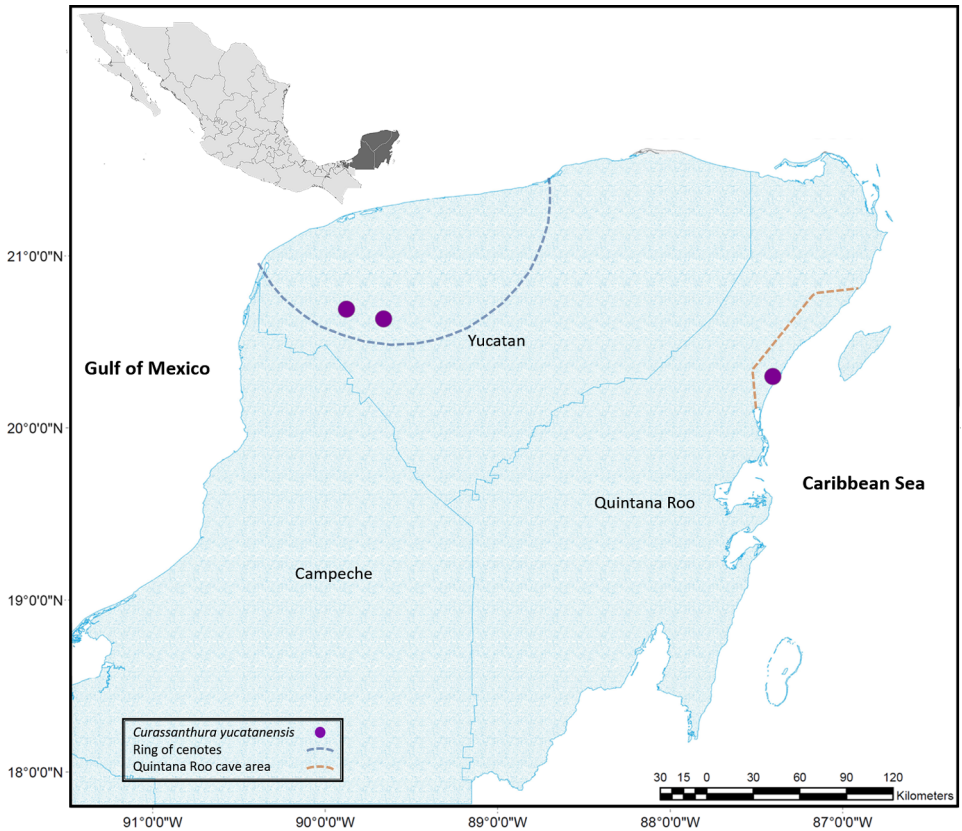


Fig. 1. Map of the Yucatan Peninsula of Mexico showing the localities where *Curassanthura yucatanensis* sp. nov. was collected.

tapering anteriorly, lateral margins straight; anterior margin biconcave, rostral tip at same level as anterolateral lobes; frontal lamina prominent. Buccal appendages projected anteriorly, forming a conical structure (fig. 3A). First pereonite longest, pereonites 2-4 subequal in length, pereonites 5-7 progressively decreasing in length, pereonite 7 one-sixth length of first (fig. 2A, B). All pleonites free, first one shortest, lateral margins rounded; pleonites 2-4 subequal in length, lateral margins straight; pleonite 5 about twice length of previous three combined; pleonite 6 longest, narrower than fifth, broadly rounded (fig. 3B). Telson suboval with single statocyst next to anterior margin; posterior margin with scattered long marginal setae (fig. 3B).

Antenna 1 composed of 3-segmented peduncle, flagellum with 6 articles with one aesthetasc each (fig. 2E). Antenna 2 with 5-segmented peduncle, flagellum with 8 articles, aesthetascs on first three flagellar articles (fig. 2D).

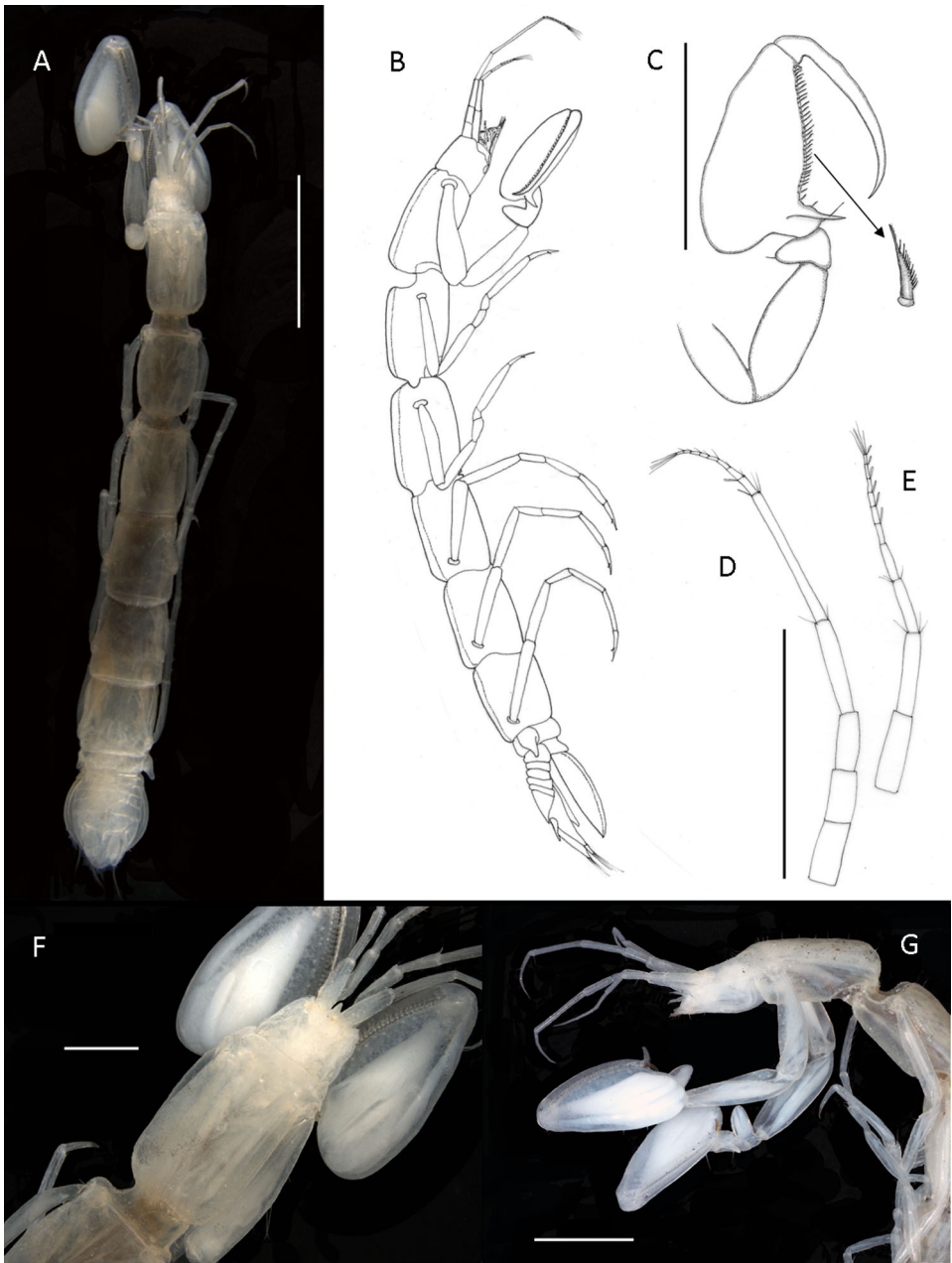


Fig. 2. *Curassanthura yucatanensis* sp. nov., female holotype: A, habitus, dorsal; B, habitus, lateral; C, pereopod 1 and detail of spine; D, antenna 2; E, antenna 1; F, dorsal view of head and pereonite 1; G, lateral view of anterior portion. Scale bars are: A, B = 2 mm; C = 1.5 mm; D, E, G = 1.0 mm; F = 0.5 mm.

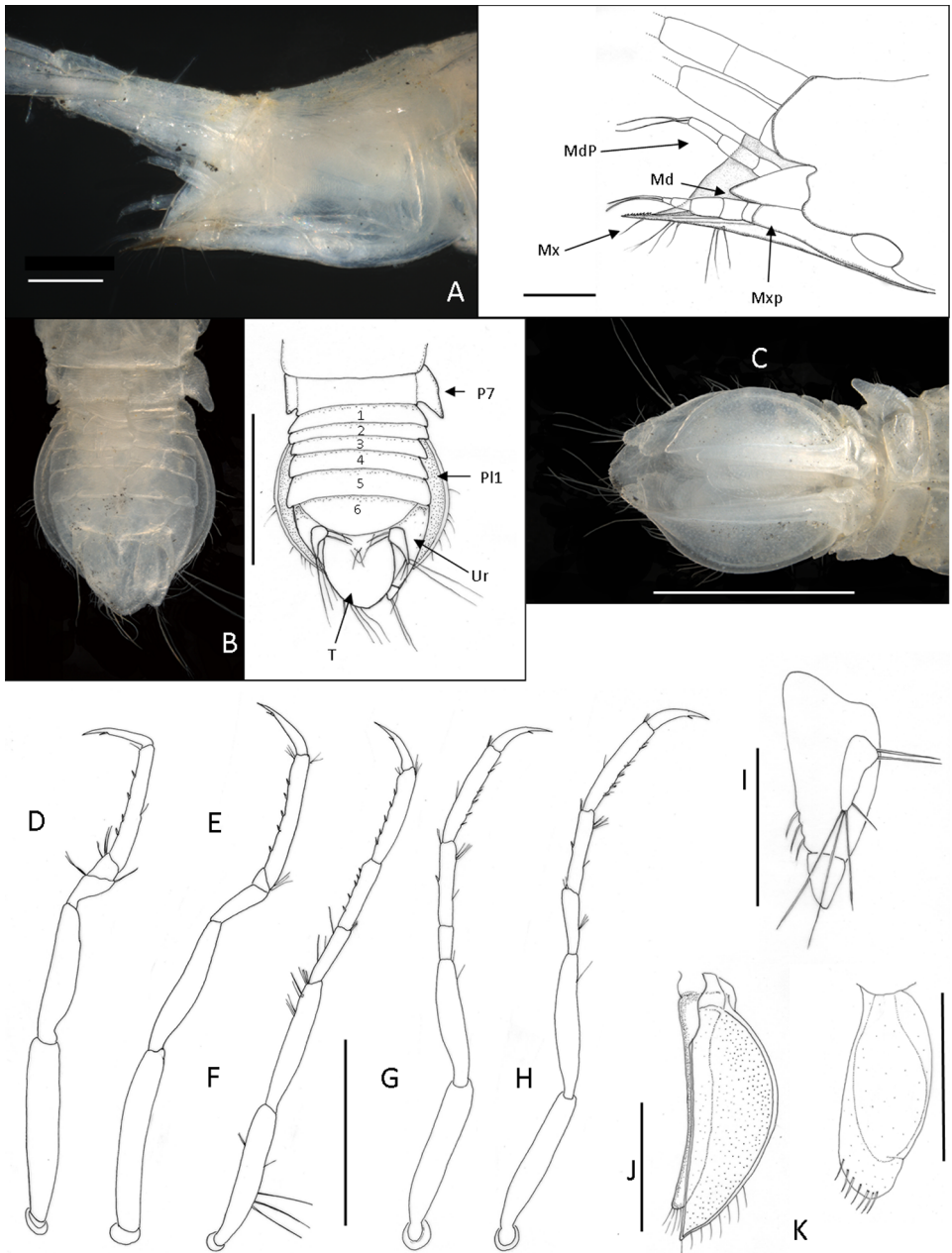


Fig. 3. *Curassanthura yucatanensis* sp. nov., female holotype: A, lateral view of head region: MdP, mandibular palp; Md, mandible; Mx, maxilla; Mxp, maxilliped; B, pleon and telson, dorsal view: P7, pereonite 7; P11, pleopod 1; Ur, uropod; T, telson; numbers 1-6, pleonites 1-6; C, pleopod 1, ventral view; D, pereopod 2; E, pereopod 3; F, pereopod 4; G, pereopod 5; H, pereopod 6; I, left uropod, dorsal view; J, pleopod 1; K, pleopod 2. Scale bars are: A = 0.4 mm, B-H = 1.0 mm, I-K = 0.5 mm.

Mandible tapering distally, ending in acute tip; palp 3-segmented, distal article with 3 setae (fig. 3A). Maxilla elongate, reaching beyond maxilliped, distal part armed with minute denticles. Maxilliped with 5-segmented palp, proximal article shortest, distal article bearing few long setae (fig. 3A).

Pereopod 1 subchelate; carpus short with large suboval expansion, 1.3 times as high as long (fig. 2C, G). Propodus broadly rounded proximally, large proximal tooth perpendicular to propodus' long axis, palmar margin bearing 31 robust pectinate setae; dactylus simple, as long as propodus (fig. 2C, F, G).

Pereopods 2-3, basis longest article, carpus shortest article; propodus of pereopod 2 with 4 short robust setae along posterior margin, that of pereopod 3 with 5 robust setae (fig. 3D, E). Dactyli of pereopods 2-6 bearing small spine on distal third of posterior margin. Pereopod 4, merus with spine on anterodistal angle, carpus longer than merus, carpus and propodus bearing 5 robust setae along posterior margin (fig. 3F). Pereopod 5, merus shortest article, carpus with single spine on middle of anterior margin, propodus bearing 5 robust setae on posterior margin (fig. 3G). Pereopod 6, merus with small spine on anterodistal angle, remaining articles similar to those of pereopod 5 (fig. 3H).

Pleopod 1 with exopod operculiform, approximately semicircular, about 3 times as long as wide, surface punctate; endopod elongate, digitiform, distal end rounded, 0.9 length of exopod (fig. 3C, J). Pleopod 2 exopod with transverse suture, endopod oval shaped, 0.8 length of exopod (fig. 3K).

Uropodal protopodite approximately trapezoidal, anterior margin 2.3 times posterior one, bearing 3 setae on laterodistal margin (fig. 3I). Exopodite articulated on mid-dorsal portion of protopodite, 3 times as long as wide, proximomesial lobe bearing 2 long setae, distal margin with 4 setae, 3 very long. Endopodite subtriangular, approximately one-third length of protopodite.

Etymology.— To be in accordance with the species names of other congeners, we use the Latin suffix “ensis”, meaning “pertaining to”, but also used to end names based on geographical localities, to construct “*yucatanensis*”. The name thus is an adjective, agreeing in gender with the (feminine) generic name.

Remarks.— The new species belongs to the Leptanthuridae as it presents: an elongate body, pereopodal propodi 2-6 similar and much narrower than long, pleonites 1-5 free and shorter than wide, pleopod 1 wider than the rest, mouthparts acutely produced, and palm of pereopod 1 with strong spine (Poore, 2001). Within the Leptanthuridae, the new species is placed in the genus *Curassanthura* based on the following characters: absence of pereopod 7, flagella of antennae 1 and 2 with fewer than 9 articles, and mandibular palp 3-segmented (Kensley, 1981; Poore, 2001).

Curassanthura yucatanensis sp. nov. can be distinguished from its congeners through the following unique characters: head wider than long, propodus palmar

TABLE I
Comparison of selected characters among the species of *Curassanthura* Kensley, 1981

	Salinity (ppt)	Cephalon	A1	A2	Body	Eyes	Palmar margin	Pleonite 6
<i>C. halma</i> Kensley, 1981	18-30	longer than wide	P3, F12	P4, F8	12.5	present	spines 12 setae 4	rectangular
<i>C. canariensis</i> Wägele, 1985	marine	longer than wide	P3, F7	P4, F8	11	absent	spines 20 setae 10	trapezoidal
<i>C. bermudensis</i> Wägele & Brandt, 1985	26	longer than wide	P3, F6	P5, F8	13	absent	spines 10-11 setae 6-7	fused with telson
<i>C. jamaicensis</i> Kensley, 1992	14	as long as wide	P3, F6	P5, F8	9.3	present	spines 14 setae 8	trapezoidal
<i>C. yucatanensis</i> sp. nov.	<1	wider than long	P3, F6	P5, F8	10.4	absent	spines 31 setae 12	rounded

For columns A1 and A2, P is the number of articles in the peduncle and F in the flagellum. In the Body column the number is how many times the body is as long as wide. Palmar margin refers to the propodus of the first pereopod.

margin of pereopod 1 with 30 spines, and posterior margin of pleonite 6 rounded (table I). Other important elements are: the new species was collected in fresh water in contrast to the other four species in the genus, which were found in brackish to marine conditions, and the new species is the first one from a continental site (table I). The new species was collected under rocks, always in fresh water, at depths ranging from 10 to 15 m.

The ampho-Atlantic distribution pattern of the species of *Curassanthura*, along with other anchialine stygobionts, such as: remipedes, thermosbaenaceans, atyid shrimp, metacragonyctid amphipods, halocyprid ostracods, plus misophrioid, epacteriscid and ridgewayiid copepods, points to an ancient Tethyan origin, of at least 100+ my as first pointed out by Wägele (1985). Isolation and dispersal of these ampho-Atlantic taxa was tied to plate-tectonic movements including the opening of the Atlantic Ocean, breakup of Gondwana, and closure of the Tethys Seaway (Jurado-Rivera et al., 2017).

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