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A NEW CAVERNICOLOUS SPECIES OF *MUNDOCHTHONIUS*  
FROM THE EASTERN UNITED STATES  
(PSEUDOSCORPIONIDA, CHTHONIIDAE)

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ABSTRACT

A new pseudoscorpion species, *Mundochthonius holsingeri*, is described from a limestone cave in Virginia. It is the second species of this genus to be reported from a cave within the United States.

INTRODUCTION

The only currently described cavernicolous species of *Mundochthonius* from the United States is *M. cavernicolus* Muchmore (1968), collected in Saltpeter Cave, Illinois. The species herein described is based upon a specimen collected by John R. Holsinger from beneath mammal scat (probably racoon) 200 feet from the entrance in the dark zone of Helsley Cave, a 2,000 foot passage in limestone in the Shenandoah River drainage. It was first reported as "*Mundochthonius* sp." by Holsinger (1963) in his annotated checklist of the macroscopic troglobites of Virginia. The new species is named in honor of Dr. Holsinger who has contributed so extensively to the biospeleology of caves in Virginia.

Family CHTHONIIDAE Hansen  
Subfamily CHTHONIINAE Daday  
Tribe CHTHONIINI Chamberlin  
Genus *Mundochthonius* Chamberlin  
***Mundochthonius holsingeri*, new species**  
Figures 1-3

**Type Record**—Virginia, Shenandoah County, Helsley Cave, about six mi. NW of Mt. Jackson. Collected by John R. Holsinger, 3 November 1960, female holotype (DM-63.01001). Specimen is mounted in Canada balsam and deposited in the American Museum of Natural History.

**Diagnosis**—Medium-sized (male unknown, female 1.52 mm. long), apparently eyeless, cavernicolous species.

**MALE.** Unknown.

**FEMALE.** Carapace: about as long as broad, only slightly narrowed posteriorly; derm mostly reticular; anterior margin smooth, with a moderately-sized triangular, irregularly serrulate epistome (Fig. 1); chaetotaxy 6-4-4-2-2 = 18. Coxal area: chaetotaxy 2-1-2:mmm-2-1:2-4-CS:2-5:2-6; coxal spine (Fig. 2) on coxa II a single heavily sclerotized, deeply-incised blade with additional medial and lateral spicules, all arising from a translucent hillock; small, non-expanded, monosetose intercoxal tubercle.

Abdomen: ovate; pleural membrane finely papillate; tergal chaetotaxy 4:4:6:6:6:6:6:6:?:?: 1T2T1:0; sternal chaetotaxy 12:(5)13±(5):(3)?(3):?:?:9:9±:9:?:0:mm.

Chelicera: somewhat shorter than carapace; galea small angular elevation; serrula exterior of 18 blades; serrula interior with approximately 12 blades; flagellum of 11 unilaterally pinnate setae; fixed finger with about 14 conical teeth, the distal three largest, others decreasing greatly in size basally, movable finger with about 10 teeth; hand with *is*, *es*, *sb*, *b*, and two accessory setae (total of six).

Palp: similar to epigean species but somewhat more slender; derm relatively smooth except for scaly granulations on dorsum of chelal hand and base of fingers. Palpal proportions: femur 1.00 and chela 1.62 times as long as carapace; trochanter 1.8, femur 4.5, and tibia 1.7 times as long as broad; chela 4.2 times as long as broad, 4.4 times as deep; fingers 1.7 times as long as hand. Chelal chaetotaxy and dentition as illustrated (Fig. 3); fixed finger with 58, movable finger with 64 contiguous, marginal teeth which in both cases range from quadrate-shape distally to rounded proximally; movable finger with a small rounded tubercle on the external surface situated one-third of the distance from ST to SB.

Legs: somewhat more slender than those of epigean species of genus; leg IV with differentiated tactile setae on tibia, metatarsus, and telotarsus. Proportions: leg I: basifemur 4.2, telofemur 2.1, tibia 3.4, and miotarsus 7.0 times as long as deep; leg IV: "miofemur" 2.5, tibia 3.5, metatarsus 2.2, and telotarsus 5.6 times as long as deep.

Measurements (in mm), Female. Body length 1.52; abdominal breadth 0.50±; carapace length (including epistome) 0.48, "ocular" breadth 0.50, posterior breadth 0.47. Chelicera 0.41± long by 0.22 broad. Palpal trochanter 0.21 by 0.11; femur 0.48 by 0.10; tibia 0.25 by 0.14; chela 0.77 by 0.183 broad and 0.175 deep; hand 0.29 long; fingers 0.50 long. Leg I: basifemur 0.25± by 0.06; telofemur 0.14 by 0.06; tibia 0.16 by 0.04; miotarsus 0.28 by 0.04; leg IV: "miofemur" 0.40 by 0.16; tibia 0.29 by 0.08; metatarsus 0.13 by 0.06; telotarsus 0.25 by 0.04.

**NYMPHAL STAGES.** Unknown.

**Remarks**—Although *Mundochthonius holsingeri* does not superficially appear to be especially modified as a troglobite, slight adaptation to a cavernicolous environment is revealed when its overall characteristics are subjected to the type of analysis discussed by the authors in a previous paper (Benedict and Malcolm, 1973). *M. holsingeri* shows no indication of corneal development even under phase contrast optics. The ocular area, however, appears very lightly sclerotized and does not stain as deeply as the immediately surrounding carapacial derm.

When compared to the seven North American epigean species included in the genus, the new species and *M. cavernicolus* both exhibit the larger size frequently observed among cave forms (Table 1). *M. holsingeri* may be distinguished from *M. cavernicolus* by

Table 1.—Comparison of Selected Measurements of the North American Species of *Mundochthonius* Chamberlin.

	Epigean Species	Cavernicolous Species
Body length	1.1 - 1.5 mm	1.52 mm
Femur length	0.27 - 0.39 mm	0.48 - 0.57 mm
Chelal length	0.42 - 0.63 mm	0.77 - 0.92 mm

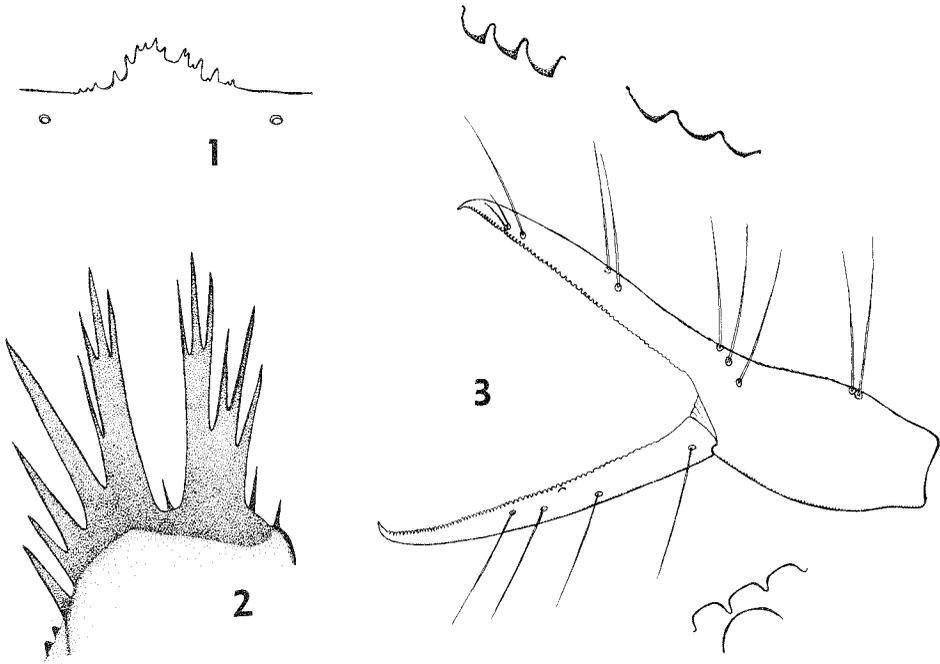


Fig. 1-3.—*Mundochthonius holsingeri*, n.sp., drawn from holotype female (DM-63.01001): 1; Epistomal area; 2, Coxal spine from right coxa II; 3. External aspect of chela; tubercle and details of teeth 48 to 50 of movable finger, and teeth 19 to 21 and 48 to 50 of fixed finger.

its geographic location; slightly smaller size, and the following structural differences: the spacing of the tactile setae and the position of the tubercle of the movable finger of the chela; the nature of the distal dentition of the fixed finger of the chela; the form of the coxal spine series; and various length to width ratios. In *M. holsingeri* seta ST is closer to T than it is in *M. cavernicolus*. Setae ST and SB, however, are about the same distance apart in spite of the greater chelal length of the latter species. In *M. holsingeri* the anterior denticles of the fixed finger of the chela form a more or less graded series merging with the remaining denticles, while in *M. cavernicolus*, the anterior six teeth, which are microdenticles, differ distinctly from the rest of the denticles. The tubercle of the movable finger of the chela is situated one-third the distance from ST to SB in *M. holsingeri*, while in *M. cavernicolus* it is almost opposite ST. For *M. holsingeri* the ratio of palpal femur length/carapace length is 1.00, of chela length/carapace length is 1.62, and of leg IV femur length/carapace length is 0.84. These same ratios for *M. cavernicolus* are 1.10, 1.75, and 0.96 respectively.

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