

DESCRIPTION OF THE MALE OF THE GENUS *TYPHLORONCUS* MUCHMORE, 1979 (PSEUDOSCORPIONES: IDEORONCIDAE)

Gabriel A. Villegas-Guzmán and Oscar F. Francke

Colecciones Nacionales de Ácaros y de Arácnidos,
Departamento de Zoología, Instituto de Biología,
Universidad Nacional Autónoma de México,
Avenida Universidad 3000; Ciudad Universitaria;
C. P. 04510, Distrito Federal; México.
Email: GAV-G: gabrvill@yahoo.com, OFF: offb@ibiologia.unam.mx.

ABSTRACT

We describe the males of *Typhloroncus attenuatus*, Muchmore, 1982, which were collected in the Purificación Cave System, Tamaulipas, Mexico. Five species of the genus *Typhloroncus* are known, and all the descriptions are based on females; this is the first description of adult males for the genus. Males lack eyes, the pedipalps are extremely elongated, and the body is pale yellow-brown, as in the female. Males present some differences from the female: the number of contiguous marginal teeth on the fixed and movable fingers of the pedipalps is lower in males; males are slightly smaller than females and have the modified, longitudinally striate setae on tarsus IV diagnostic for the species.

RESUMEN

Se describen los machos de la especie *Typhloroncus attenuatus*, Muchmore, 1982, la cual fue colectada en cuevas del Sistema Purificación, Tamaulipas, México. Se conocen cinco especies del género *Typhloroncus*; todas las descripciones se han realizado en base a hembras, esta es la primera descripción de machos adultos para el género. Los machos difieren de la hembra en el número de dientes en los dedos de la quela del pedipalpo y poseen sedas modificadas, longitudinalmente estriadas e infladas basalmente en el tarso de la pata IV, que son diagnósticas de la especie. Al igual que la hembra, los machos carecen de ojos, los pedipalpos son alargados y el cuerpo es de color amarillo castaño.

INTRODUCTION

The genus *Typhloroncus* Muchmore was established for *Typhloroncus coralensis* Muchmore (1979), known from a single female from Coral Bay, U. S. Virgin Islands in the Caribbean. Four additional species have been found in Mexico, all of them collected in caves: *Typhloroncus troglobius* Muchmore 1982, *Typhloroncus diabolus* Muchmore, 1982, *Typhloroncus attenuatus*

Muchmore, 1982, and *Typhloroncus xilitlensis* Muchmore, 1986 (Muchmore, 1982, 1986) and the four are known only from females. In this paper we describe the males of *T. attenuatus*, which show typical troglomorphies, such as lack of eyes, the color is pale yellow-brown, and they have extremely elongated legs and pedipalps. This is the first male description for the genus.

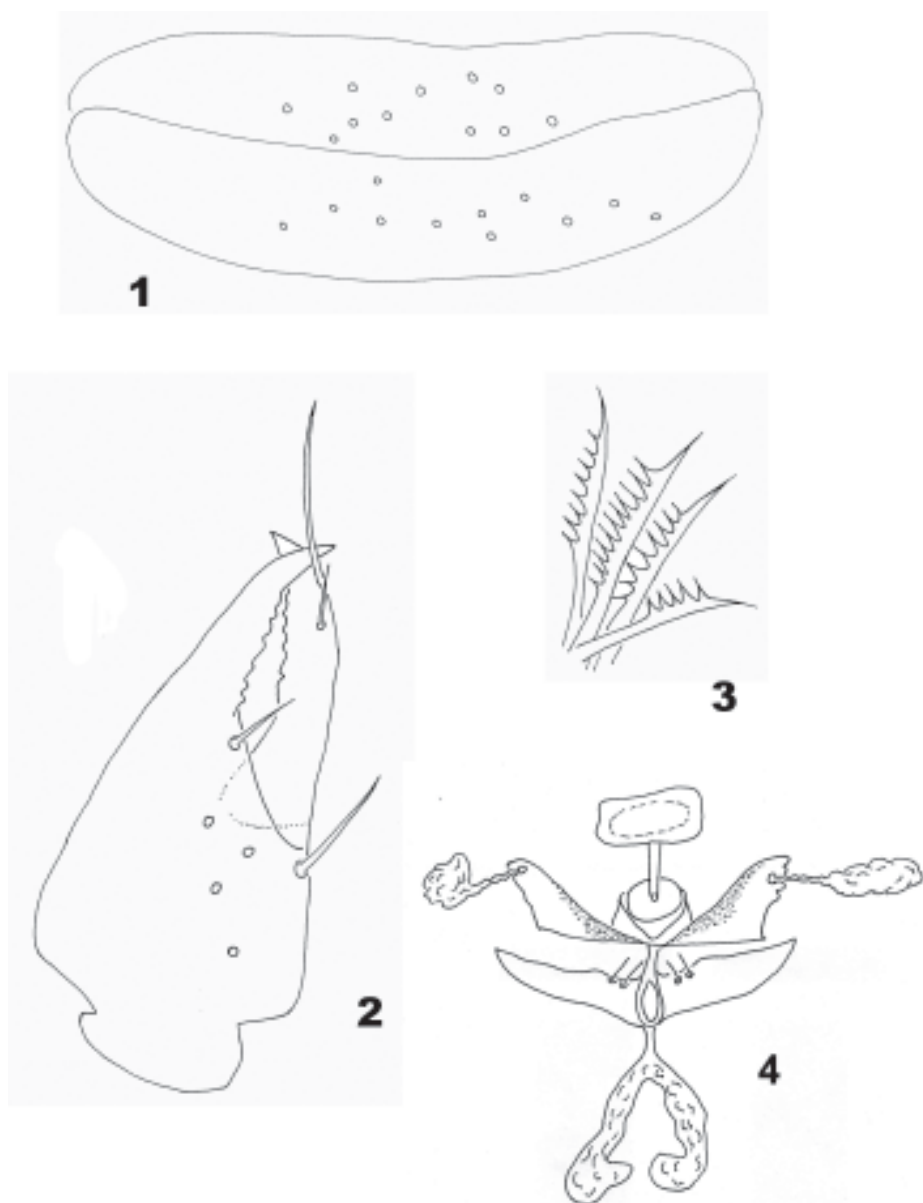
MATERIAL AND METHODS

The males were preserved in 80% ethanol upon collection, and were processed using Hoff's (1949) technique, modified after Wirth and Marston (1968). Measurements are given in millimetres and were obtained using Chamberlin's (1931) method, as modified by Benedict and Malcolm (1977). The morphological terminology mostly follows Chamberlin (1931) and Harvey (1992). Abbreviations used in the description are: L = length, W = width, L/W = length/width ratio. The specimens are deposited in the Colección Nacional de Arácnidos (CNAN), Instituto de Biología, Universidad Nacional Autónoma de México.

TAXONOMY

Family Ideoroncidae Chamberlin, 1930
Genus *Typhloroncus* Muchmore 1979

Type species.—*Typhloroncus coralensis* Muchmore 1979, by original designation.



Figures 1-4.—*Typhloroncus attenuatus*, male (CNAN-Ps000404). 1. Genital opercula, ventral view; 2. Right chelicera, dorsal view; 3. Rallum; 4. Male genitalia, dorsal/ventral aspect (CNAN-Ps000405).

Other species.—*T. attenuatus* Muchmore, 1982; *T. diabolus* Muchmore, 1982; *T. troglobius* Muchmore, 1982 and *T. xilitlensis* Muchmore, 1986.

Typhloroncus attenuatus Muchmore, 1982
Figs. 1-7

Material examined.—México: Tamaulipas: Male (CNAN-Ps000404) collected in the Infiernillo section, Sistema Cavernario Purificación (UTM NAD27 450559 2653383), 1121m asl, 15 June 2006, collected by Paul Bryant. Male (CNAN-Ps000405) with the same data, except that it was collected by Victoria Siegel and Marcela Ramirez.

Diagnosis.—Troglobite lacking eyes. Body with pale coloration, appendages very elongate: pedipalp ($L = 8.45-8.95$), leg I ($L = 4.15-4.34$), and Leg IV ($L = 5.45-5.75$). Chelal fingers with numerous teeth, movable finger 123-125, fixed finger 139-145. Carapace with four setae on anterior margin and two on posterior margin, and eight other setae. Leg IV tarsus distally with modified, longitudinally striate setae which are swollen basally.

Male description.—Body uniformly light yellow-brown throughout. Carapace as wide as long; the surface reticulated, without transverse furrow; with 4 setae on anterior margin, 9 on posterior margin, and 47 others.

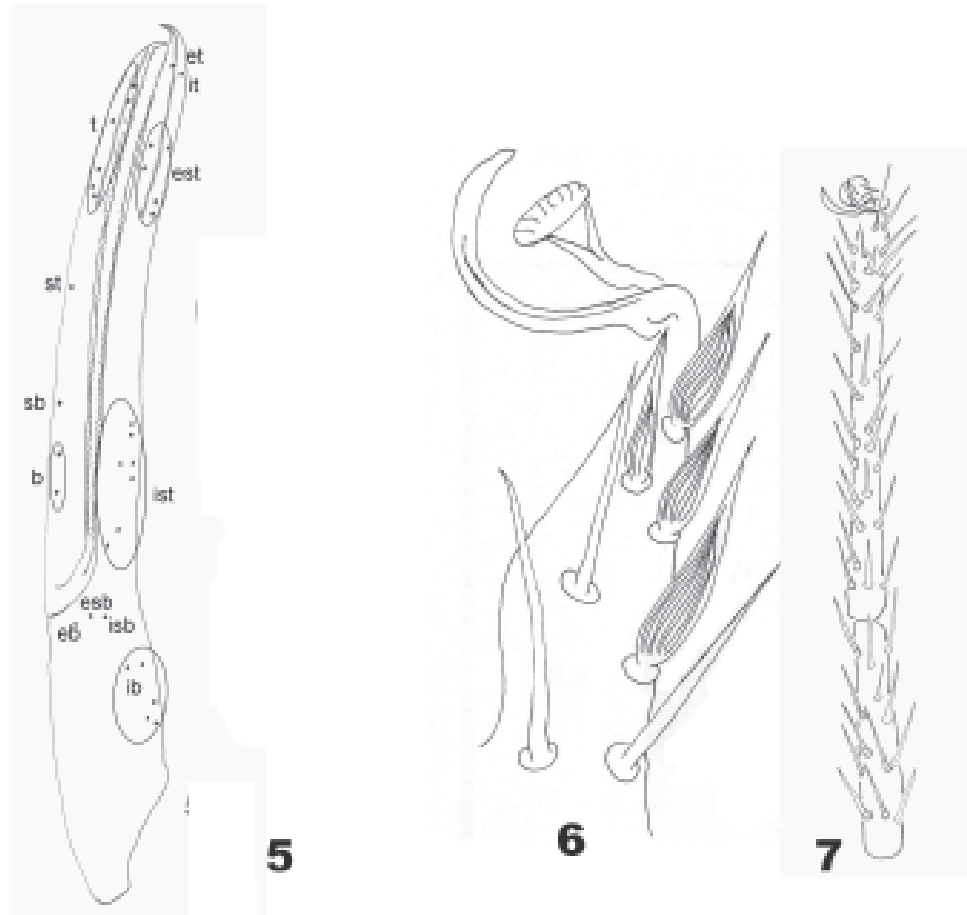
Abdomen with twelve segments; tergites and sternites entire, finely reticulated, and setae acuminate. Tergal chaetotaxy 2:2:2:2:4:4:4:4:4:4:2:2, setae of last tergite acuminate. Sternites: the first three are occupied by the genitalia, formed by two opercula, anterior with 11 setae, posterior with 12, those without particular disposition (Fig. 1), general appearance of male genitalia as illustrated, sclerotic genital sacs and a globular uterus masculinus internus (Fig. 4); IV-XII less sclerotized than tergites, chaetotaxy of sternites IV-XII 6:6:8:8:8:8:6:4:2, with one seta associated with spiracular plates. Chaetotaxy of the pedipalpal coxae 7:7:4:3, with two setae on manducatory process. Median maxillary lyrifissure located near margin left of maxilla.

Chelicera long, $L/W = 3-3.5$, with 6 setae on hand; margins of both fingers with teeth, movable finger with 7 and fixed with 9 (Fig. 2). Rallum of four serrated blades, three subequal and one slightly smaller (Fig. 3); serrula exterior with 30 blades and interior with 26. Galea long and slender, without branches; and subgaleal setae short and thin. Lamina exterior absent.

Genitalia: with median genital sac divided in two branches (Fig. 4), with two pairs of glandular setae, and lateral genital sac lengthened.

Pedipalps very long, surface reticulated. Trochanter $L/W = 1.6-1.8$; femur $L/W = 8-10$; patella $L/W = 7.3-8.4$; chela long and thin, with 32 trichobothria, venom apparatus present in both fingers. Movable finger with 123-125 marginal teeth, continuous, truncated, some of them are rounded; with 10 trichobothria, region *b* with two, *sb* and *st* with one, and region *t* with six (Fig. 5), in this region is the nodus ramosus. Fixed finger with 139-145 teeth; with 22 trichobothria, *eb*, *esb* and *isb* in straight row at base of finger, *ib* region with five setae near the internal margin of the finger (Fig. 5). Region *ist* with seven setae; region *est* with five and in this region is the nodus ramosus; *it* and *et* with one setae each.

Legs are elongated, reticulated, pale yellow-brown; arolium not divided, slightly indented and shorter than claws (Fig. 6). Leg I: trochanter robust $L/W = 1.2-1.5$; femur long, $L/W = 8.3-9$; patella short and robust, $L/W = 3.3$; tibia long and thin, $L/W = 8.5-9$; metatarsus short



Figures 5-7.—*Typhloroncus attenuatus*, male (CNAN-Ps000404). 5. Left pedipalpal chela, lateral view showing distribution of the trichobothria; 6. Arolium, claw and setae of tarsus leg IV, dorsal view showing longitudinally striate setae; 7. Metatarsus and tarsus, leg IV, dorsal view showing setal arrangement.

and thin, L/W = 4.2-5.1; tarsus long, L/W = 7.8-8.3. Leg IV: trochanter short and robust, L/W = 2; femur+patella long, L/W = 7.4-8; tibia long and thin, L/W = 6.7-8.6; metatarsus short and robust, L/W = 5; tarsus long, L/W = 13-14. Metatarsus and tarsus, in both legs, have subterminal simple setae (Fig. 7). Ventrodistally on tarsus IV are present modified setae, longitudinally striate and swollen basally (Fig. 6).

Dimensions. (n=2).—Body L 3.95-4.15, W 1.1-1.3. Carapace L 1.0, W 1.0-1.1. Chelicera L 0.65-0.7, W 0.2-0.3. Pedipalps: trochanter L 0.4-0.45, W 0.25; femur L 2.4-2.5, W 0.25-0.3; patella L 2.1-2.2, W 0.25-0.3; chela (with pedicel) L 3.55-3.8, W 0.45-0.5; hand L 1.1-1.25; movable finger 2.3-2.5. Leg I: trochanter L 0.3, W 0.2-0.25; femur L 1.25-1.35, W 0.2-0.25; patella L 0.5, W 0.15; tibia L 0.85-0.9, W 0.1; metatarsus L 0.42-0.52, W 0.10; tarsus L 0.78-0.83, W 0.1. Leg IV: trochanter L 0.5, W 0.25; femur+patella L 1.85-2.0, W 0.25; tibia L 1.30-1.35, W 0.15-0.20; metatarsus L 0.5, W 0.10; tarsus L 1.3-1.40, W 0.10.

Remarks.—Males differ slightly from the female: on the female the movable finger of the pedipalp chela has 133 teeth and the fixed finger has 149 (Muchmore, 1982), whereas the males have 123-125 teeth on the movable finger and 139-145 on the fixed finger. The size of the males is slightly smaller than the female: total length of the males is 3.95-4.15, and the female is 4.5; male carapace measures 1.00, and the female 1.37, the palpal femur measures 2.54 on the female and 2.4-2.5 on the males. The female has five setae on the left chelicera and six on the right, whereas the males have six setae on both sides. Furthermore, on the tarsus of leg IV the males have modified setae similar to the female, a character that distinguishes *Typhloroncus attenuatus* from the other species of the genus. The number of setae on carapace is low. The specimens of both sexes were collected in the same cave system, but in different places and time.

The bipartite median genital sac of *T. attenuatus* males is noteworthy because in most pseudoscorpions this structure is rounded or elliptical. However, several genera of Ideoroncidae share the bipartite condition (Harvey and Volschenk, 2007), and *Typhloroncus* can now be added to that list.

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LITERATURE CITED

- Chamberlin, J. C. 1931. The arachnid order Chelonethida. Stanford University Publications, Biological Science, 7:1-284.
- Benedict, E. M., and D. R. Malcolm. 1977. Some garypoid false scorpions from western North America (Pseudoscorpionida: Garypidae and Olpiidae). *Journal of Arachnology*, 5:113-132.
- Harvey, M. S. 1992. The phylogeny and classification of the Pseudoscorpionida (Chelicerata: Arachnida). *Invertebrate Taxonomy*, 6:1373-1435.
- Harvey, M. S., and E. S. Volschenk. 2007. Systematics of the Gondwanan pseudoscorpion family Hyidae (Pseudo-scorpiones: Neobisioidea): new data and a revised phylogenetic analysis. *Invertebrate Systematics*, 21:365-406.
- Hoff, C. C. 1949. The pseudoscorpions of Illinois. *Illinois Natural History Survey Bulletin*, 24:409-498.
- Muchmore, W. B. 1979. Pseudoscorpions from Florida and the Caribbean area 9. *Typhloroncus*, a new genus from the Virgin Islands (Ideoroncidae). *Florida Entomologist*, 62:317-320.
- Muchmore, W. B. 1982. Some new species of pseudoscorpions from caves in Mexico. (Arachnida: Pseudoscorpionida). *Bulletin of the Association for Mexican Cave Studies*, 8:63-78.
- Muchmore, W. B. 1986. Additional pseudoscorpions, mostly from caves, in México and Texas (Arachnida: Pseudoscorpionida). *Texas Memorial Museum, Speleological Monographs*, 1:17-30.
- Wirth, W. W., and N. Marston. 1968. A method for mounting small insects on microscope slides in Canada balsam. *Annals of the Entomological Society of America*, 61:783-784.