

GUERROBUNUS VALLENSIS, A NEW SPECIES OF HARVESTMAN (OPILIONES: PHALANGODIDAE), FROM A CAVE IN VALLE DE BRAVO, STATE OF MÉXICO, MÉXICO

Ignacio M. Vázquez: Laboratorio de Acarología, Facultad de Ciencias, Universidad Nacional Autónoma de México, Coyoacan 04510 D.F., México

James C. Cokendolpher: Adjunct Professor, Department of Biology, Midwestern State University, Wichita Falls, Texas 76308 USA

ABSTRACT. *Caecoa* Šilhavý 1973 is synonymized under *Guerrobunus* Goodnight & Goodnight 1945. The third species of *Guerrobunus* is named. A taxonomic key to the species of *Guerrobunus* is provided. Two males and one female of the new species *Guerrobunus vallensis* are illustrated and described from a cave in Valle de Bravo, State of México, México.

RESUMEN. *Caecoa* Šilhavý 1973 se sinonimiza con *Guerrobunus* Goodnight & Goodnight 1945. Se le da nombre a la tercera especie de *Guerrobunus*. Se presenta una clave taxonómica para las especies del género. Se describen dos machos y una hembra de *Guerrobunus vallensis* nueva especie de una cueva de Valle de Bravo, Estado de México, México.

The arachnological fauna from Mexican caves is very rich and its study is in progress. Opilionids thus far reported from Mexican caves belong to the Neogoveidae, Cosmetidae, Phalangodidae, Nemastomatidae and Sclerosomatidae (= Gagrellidae). The Phalangodidae has the highest number of cave-adapted species world-wide (Rambla & Juberthie 1994) as well as in Mexico (Reddell 1981); seven described by Goodnight & Goodnight (1945, 1953, 1971, 1973), nine by Šilhavý (1974, 1977) and one each by Pickard-Cambridge (1904) and Shear (1977). Seven of these phalangodids are true eyeless troglobites: *Troglostygnopsis anophtalma* Šilhavý 1973 and *Mexotroglinus sbordonii* Šilhavý 1977 from Chiapas; *Troglostygnopsis inops* (Goodnight & Goodnight 1971) from Tamaulipas; *Hoplobunus apoalensis* Goodnight & Goodnight 1973 and *Neogovea mexasca* Shear 1977 from Oaxaca; *Hoplobunus planus* Goodnight & Goodnight 1973 from San Luis Potosí; and *Caecoa arganoi* Šilhavý 1973 from Veracruz.

During explorations of the caves in the

State of Mexico, three phalangodids that have eyes with clear cornea and unpigmented retina were collected. Because these specimens resemble *Guerrobunus minutus* Goodnight & Goodnight 1945 and *Caecoa arganoi*, a study was undertaken to determine the identity of the new specimens and the relationship of the two monotypic genera. Herein the new specimens are described as a new species and *Caecoa* is synonymized under *Guerrobunus*.

In 1945, Goodnight & Goodnight described the new genus *Guerrobunus* to contain their new species, *minutus*. Later, those same authors (1953) synonymized *Guerrobunus* (along with 14 other genera) under *Cynortina* Banks 1909. Realizing that *Cynortina* was preoccupied, Goodnight & Goodnight (1983) transferred the species of "Cynortina" known from Costa Rica to the next oldest genus, *Dapessus* Roewer 1933. This action resulted in those authors newly synonymizing seven genera (formerly listed as synonyms of *Cynortina*) and left seven of the genera which they had synonymized in 1953 unplaced. At that time, they also revalidated *Stygnoleptus* Banks

1914 and newly synonymized four other genera under *Stygnoleptus*. *Stygnoleptus* and three of these genera had previously (1953) been considered by them to be synonyms of *Cynortina*.

Three genera (*Azaca* Goodnight & Goodnight 1942, *Ethobunus* Chamberlin 1925, and *Guerrobunus*) synonymized under *Cynortina* in 1953 should have been listed as synonyms of *Dapessus* by Goodnight & Goodnight (1983), but they were not. Although *Azaca* and *Ethobunus* are known from Costa Rica and Panama, respectively; neither were mentioned in the Goodnight & Goodnight (1983) publication on the phalangodids of Costa Rica and will have to await further study to determine their true identities. Interestingly, the female and only known specimen of *Azaca longa* (Goodnight & Goodnight 1942) was collected on the same day, location, and by the same person as the two known specimens (both males) of *Dapessus parallelus* (Goodnight & Goodnight 1942). The lack of a listing of *Ethobunus* with *Dapessus* was questioned in the manuscript review by Cokendolpher (7 November 1981) of the paper by Goodnight & Goodnight (1983), and therefore it can be assumed that they had changed their mind on the 1953 synonymy. Furthermore, if *Ethobunus* is a synonym of *Dapessus*, it is the older name and would require a shifting of all specific names currently listed under *Dapessus*.

The rediagnosis of *Dapessus* by Goodnight & Goodnight (1983) clearly excludes *Guerrobunus* because of the higher number of tarsal elements in species of *Dapessus*. Furthermore, the male and female genitalia differ greatly.

Guerrobunus Goodnight & Goodnight

Guerrobunus Goodnight & Goodnight 1945:1.
Caecoa Šilhavý 1974:189 (new synonymy).

Diagnosis.—Small to medium sized phalangodids, body length 1.6–3.0 mm, cephalothorax narrower anteriorly; with several obtuse tubercles on anterolateral corners. With five distinct thoracic areas, first without a median line, three free abdominal tergites. Body and leg surfaces without spines, smooth or with small granulations and tiny setae. Eye mound hemispherical, without armament, with or without eyes, at the anterior margin or slightly removed. Maxillary lobes of second

coxae with ventral projections variable in size. Spiracles not visible. Tarsal segments: 3:4:4(5):5, both distitarsi I and II with two segments. Penis with sclerotized truncus, stylus and glans soft; truncus with paired terminal ventral apophyses, sometimes also with dorsal pair of apophyses. Ovipositor short, with many setae and pair of apophyses at the distal end.

Key to the Species of *Guerrobunus*

- 1a. Eyes absent, large ventral projections on maxillary lobes of coxae II present (Šilhavý 1973, fig. 40) (from State of México). *G. arganoi*
- 1b. Eyes present (retina may be unpigmented), projections on maxillary lobes small (Fig. 9) 2
- 2a. Retina of eyes darkly pigmented, eye mound with small rounded tubercles, male body length less than 1.7 mm (from Guerrero) *G. minutus*
- 2b. Cornea clear, retina unpigmented, eye mound smooth, male body length more than 2.5 mm (from State of México) *G. vallensis* new species

Guerrobunus minutus
Goodnight & Goodnight

Guerrobunus minutus Goodnight & Goodnight 1945:1.

Cynortina minutus: Goodnight & Goodnight 1953: 15 (by implication).

Comments.—Examination of the female holotype (from American Museum of Natural History) revealed that the ovipositor had been removed and is apparently lost. The "female" paratype (Universidad Nacional Autónoma de México) was also examined and determined to be a male. The penis was not illustrated or described because the curator of the museum did not allow the dissection.

Goodnight & Goodnight (1977) described a new species, *Cynortina minutus* from Belize which was a secondary homonym of *Cynortina* (= *Guerrobunus*) *minutus*. As they are no longer considered to be congeneric they are no longer homonyms requiring a replacement name.

Guerrobunus vallensis new species
Figs. 1–10

Diagnosis and comparisons.—Medium sized (male 2.6 mm body length), ventral projections on maxillary lobes of coxae II small;

Table 1.—Appendage lengths (mm) of male holotype/male paratype of *Guerrobunus vallensis* new species.

Segment	Pedipalp	Leg I	Leg II	Leg III	Leg IV
Trochanter	0.16/0.16	0.16/0.20	0.20/0.20	0.20/0.20	0.24/0.22
Femur	0.76/0.72	0.86/0.90	1.10/1.18	0.90/0.90	1.06/1.16
Patella	0.50/0.50	0.34/0.36	0.44/0.44	0.30/0.30	0.40/0.44
Tibia	0.48/0.46	0.54/0.60	0.94/1.00	0.64/0.64	0.94/0.98
Metatarsus	—	0.60/0.68	0.90/0.98	0.84/0.84	1.16/1.24
Tarsus	0.50/0.50	0.54/0.58	1.04/1.16	0.60/0.62	0.74/0.80
Totals	2.40/2.34	3.04/3.32	4.62/4.96	3.48/3.50	4.54/4.84

coxae I with two tubercles anteriorly (larger in female), eyes present, corneas clear, retina unpigmented; ocular tubercle smooth; penis without paired apophysis on truncus dorsally. *Guerrobunus vallensis* new species appears to be closely related to *Guerrobunus minutus* but the former differs by the lack of low tubercles on the free tergites, the absence of pigment in the eyes and the total length of the body. The general structure of the penis of *G. vallensis* is similar to that of the male paratype of *G. minutus*. A detailed study of the paratype was not possible because the specimen could not be dissected, but the portion of the glans which is extending beyond the operculum appears very similar to *G. vallensis*. The penis of *Guerrobunus arganoi* (Šilhavý 1973, fig. 41) is also similar to that of *G. vallensis*. The differences between them are: the number of setae below the ventral plate, the stylus in *G. vallensis* is blunt with projections, it is pointed in *G. arganoi* with two lamella on the stylus; there are ten setae between blades in *G. vallensis* whereas *G. arganoi* has eight. Other difference is: pedipalp of male *G. vallensis* has three seta-bearing tubercles on patella, in *G. arganoi* is one.

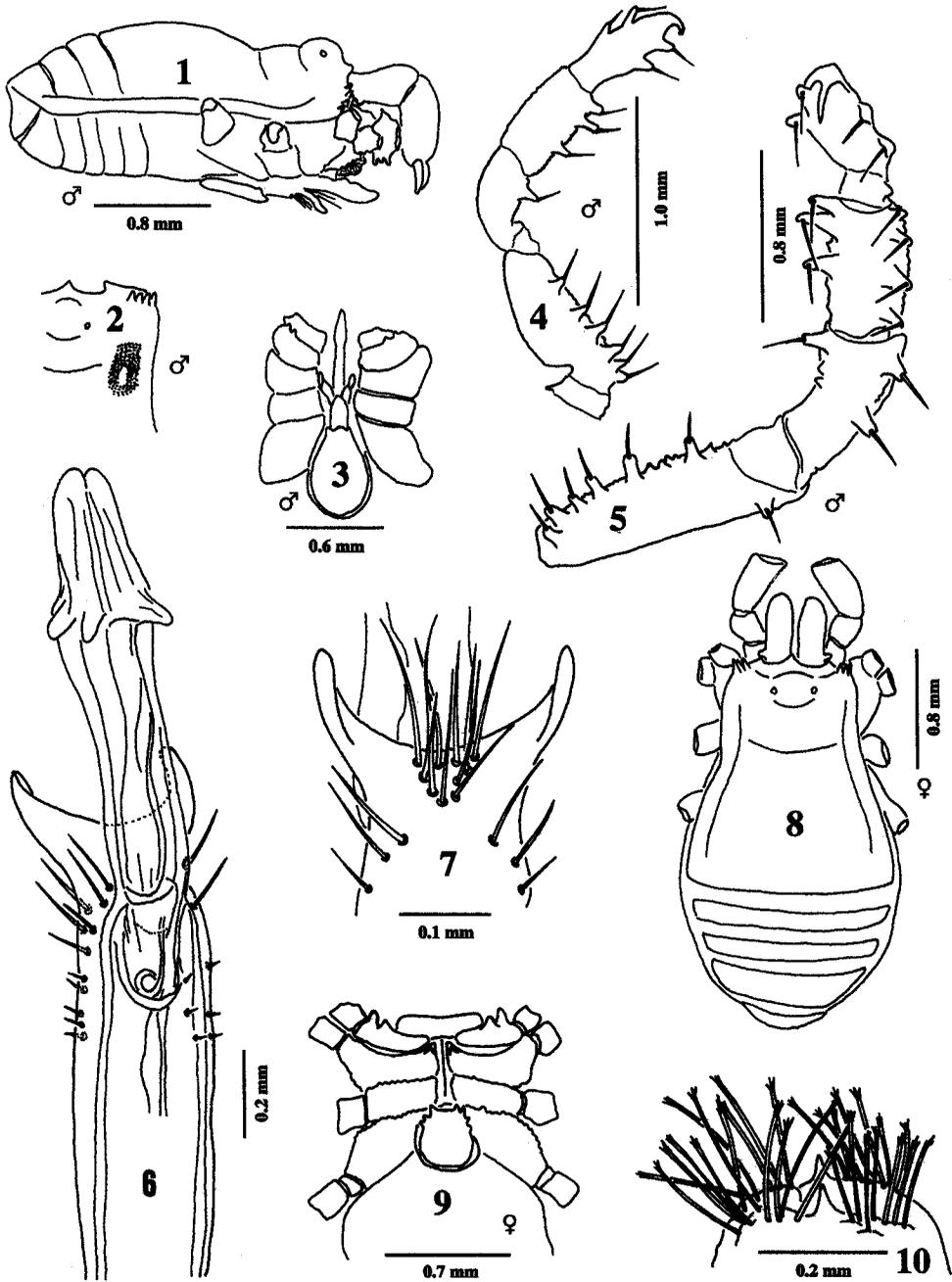
Type data.—Male holotype, female allotype and male paratype from Cueva del Diablo, Valle de Bravo, State of México, México; 25 April 1990, I. Vázquez. Male holotype and female allotype deposited in the arachnologi-

cal collection of Laboratorio de Acarología of Instituto de Biología, UNAM. Male paratype deposited at the American Museum of Natural History.

Description (measurements in mm).—*Male*: Total length (without chelicerae) 2.60, width 1.40; scute length (prosoma) 1.80, 1.40 wide at boundary with free tergites. Length of legs in Tables 1, 2. Anterolateral corners of cephalothorax each with a row of four obtuse tubercles, extending laterally (Fig. 2); thoracic tergites almost indistinct (Fig. 1), only visible in lateral view. Ocular tubercle rounded, not cone-shaped, close to anterior margin of prosoma; eyes placed on each side of ocular tubercle (Fig. 1). Low hump behind ocular tubercle; free tergites without rows of small tubercles. Pedipalps (Figs. 4, 5) with spine-bearing ventrolateral tubercles: trochanter with one, femora with seven, patella with three, tibia with seven, tarsus with four. Maxillary lobes of second coxae not distinct, with one small tubercle on each, as in female (Fig. 9); coxae I with two tubercles anteriorly. Tarsal segments 3:4:5:5; distitarsus I with two segments, II with three segments (both males same). Pedipalp lengths in Table 1. Color light red to orange, except leg tarsi and eyes white. Body and legs finely granulated. Penis (Fig. 6) with two visible parts: glans blunt, with lateral projections, truncus cylindrical, oval in cross section, with a pair of sclerotized blades

Table 2.—Leg lengths (mm) of the species of *Guerrobunus*.

Taxa	Leg I	Leg II	Leg III	Leg IV
<i>Guerrobunus minutus</i> (holotype female)	2.20	3.62	2.50	3.60
<i>Guerrobunus vallensis</i> (allotype female)	4.40	5.20	3.70	5.20
<i>Guerrobunus vallensis</i> (holotype male)	3.14	3.84	3.42	4.42
<i>Guerrobunus arganoi</i> (holotype male)	4.20	6.70	4.50	6.40



Figures 1-10.—*Guerrobunus vallensis* new species. 1-7, Male holotype. 1, Lateral view; 2, Dorsal view of prosoma (right corner), with detail of granulation; 3, Ventral view, genital operculum with penis; 4, Right pedipalp, lateral view; 5, Right pedipalp, medial view; 6, Distal part of penis, dorsal view; 7, Distal part of truncus with detail of setae, ventral view. 8-10, Female allotype. 8, Dorsal view; 9, Ventral view, genital operculum and coxae; 10, Distal end of ovipositor.

Table 3.—Comparison of males of the species of *Guerrobunus* (scute length of *G. arganoi* obtained by measuring Šilhavý 1973: fig. 42).

	<i>Guerrobunus minutus</i>	<i>Guerrobunus vallensis</i>	<i>Guerrobunus arganoi</i>
Scute length	1.06	1.80	1.9
Total length	1.62	2.60	2.60
Pedipalp segment ratios	7:4:7:6	7:3:7:4	7:2:6:4
Pedipalp length	1.90	2.44	2.30
Tarsal segments	3:4:5:5	3:4:5:5	3:4:4:5
Distitarsus I:II	2:2	2:3	2:2
Eyes	present/pigmented	present/no color	absent

(= ventral plate); truncus with five pairs of tiny setae below the paired blades of ventral plate. Ventrally, between the blades, are ten long and thick setae in a triangular arrangement (Fig. 7). Penis 1.29 long; glans plus stylus 0.75 long, truncus 0.54 long; with four paired dorsal setae just below blades, and three pairs of ventral setae; six short spiny setae are on each side of truncus below glans. Stylus blunt, maximum width 0.20 (Fig. 7). Genital operculum 0.62 long, 0.48 wide, with 14 pairs of setae and one apophysis on each anterolateral corner (Fig. 5).

Female: Total length 2.40; scute 1.54 long, 1.50 wide at the boundary with abdomen. Leg lengths as in Table 2. Anterolateral corners of prosoma each with a row of three obtuse tubercles (Fig. 3). General structure of prosoma and abdomen as in male. Spination of pedipalps as in male (Figs. 4, 5). Tarsal segments: 3:4:5:5; distitarsus I and II with two segments each. Tubercles on coxae I more robust than in male (Fig. 9). Color light red, leg tarsi and eyes white. Genital operculum almost as wide as long with three or four spine-like apophyses on each anterolateral corner (Fig. 9). Distal end of ovipositor (Fig. 10) with 29 long setae (each with 3–5 tips), arranged in four groups, three with 7 and one with 8 setae; two spine-like apophyses between setae groups.

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