

A REVIEW OF *CLIGENES* WITH THE
DESCRIPTION OF A NEW GENUS, *VALERIS*
(HEMIPTERA: RHYPAROCHROMIDAE: ANTILLOCORINI)

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ABSTRACT

Cligenes grandis (Lygaeoidea: Rhyparochromidae: Antillocorini), a new species from Mexico and Central America, is described and illustrated. New geographic records are given for *Cligenes distinctus*. *Valeris*, a new genus, is described and illustrated for *Cligenes subcavicola* Scudder, Darlington, and Hill.

Key Words: Hemiptera, Lygaeoidea, Lygaeidae, Antillocorini, *Cligenes*, *Botocudo*, *Valeris*, cave, bat, *Ficus*, seeds

RESUMEN

Se describe e ilustra *Cligenes grandis* (Lygaeoidea: Rhyparochromidae: Antillocorini), una especie nueva de México y Centroamérica. Se reportan nuevas localidades

de *Cligenes distinctus*. El género nuevo *Valeris* es descrito e ilustrado para la especie *Cligenes subcavicola* Scudder, Darlington, and Hill.

Slater (1964) included 35 species in the Neotropical lygaeoid genus *Cligenes* in his Catalogue of the Lygaeidae of the World. All but the type species, *Cligenes distinctus* Distant, and *C. subcavicola* Scudder, Darlington, and Hill, were subsequently assigned to other genera (see Slater and O'Donnell [1995]). *Cligenes* is distinguished from other antillocorine genera by a groove on the prosternum where the labium lies at rest. This character was not included in the original description of *Cligenes* by Distant (1893). It was mentioned under the name of "rostral groove" by Scudder (1962) to distinguish *Botocudo* from *Cligenes*. However, when describing *Cligenes subcavicola*, which lacks this character, Scudder et al. (1967) concluded that the rostral groove was not a diagnostic generic character for *Cligenes* because it was variable. I consider the prosternal groove as an autapomorphic character for *Cligenes* that defines this genus and is of high value since no other antillocorine is known to have it.

A new species of *Cligenes* is described below.

Cligenes subcavicola was originally placed in *Cligenes* because of its explanate pronotal lateral margins; however, in addition to the lack of a prosternal groove in *C. subcavicola* these margins are upturned. *Cligenes subcavicola* also differs from other *Cligenes* by having a caudal projection on the genital capsule of the males. *C. subcavicola* is here removed from *Cligenes* and designated as the type species of a new genus, *Valeris*.

All measurements are in millimeters.

The following abbreviations are used in the text: AMNH (American Museum of Natural History, New York); BMNH (The Museum of Natural History, London); CASC (California Academy of Sciences, San Francisco, CA); EMEC (Essig Museum of Entomology, Berkeley, California); FSCA (Florida State Collection of Arthropods, Gainesville, Florida); RMB (R. M. Baranowski collection, Homestead, Florida); UNAM (Colección Entomológica, Instituto de Biología, Universidad Nacional Autónoma de México, D.F., México); NMNH (National Museum of Natural History, Washington, D.C.).

Cligenes grandis Brambila, **NEW SPECIES**

(Figs. 1, 3, 6-15)

Diagnosis. A reddish brown antillocorine with a longitudinal groove on prosternum; anterior lobe of pronotum carinate, punctate, and strongly convex; and corium creamy white with apex brown. Measuring 2.30 to 3.20 mm in total body length it is one of the largest species among the Antillocorini and larger than most *Cligenes distinctus*.

Description. Male. Head brownish black. Anterior lobe of pronotum reddish brown with collar and lateral margins yellowish brown; posterior lobe yellowish brown with meson and humeral angles reddish brown and creamy white on each side of meson and anterior to humeral angles. Scutellum dark yellowish brown mesally, becoming dark brown laterally, apex white (Fig. 3). Clavus creamy white. Corium creamy white with apex brown and with light brown marking at midpoint next to margin. Membrane translucent white. Body below reddish brown with capsule yellowish brown. Antennae reddish brown, distal ends of segments II-IV yellowish brown and labium yellowish brown. Legs pale brownish yellow, coxae yellowish brown.

Dorsum of head rugose; tylus reaching middle of first antennal segment. Gula narrow reaching anterior margin of prosternum, contiguous with prosternal groove (Figs. 1 & 7). Labium reaching mesocoxae.

Pronotum with surface shining, glabrous, and punctate, with row of punctures along carina at lateral margins, row at indentation separating lobes, and irregular row of punctures marking a collar. Anterior lobe of pronotum strongly convex, nearly 2× longer than posterior lobe (Fig. 6). Lateral margins explanate and indented at area of transverse impression; posterior margin concave. Scutellum evenly punctate, except apex impunctate. Thoracic pleura with large punctures. Scent gland auricle on metapleuron curved posteriorly; evaporative area surrounding auricle covering less than half of metapleuron (Fig. 10). Meso- and metasternum with a median keel.

Clavus with three rows of punctures. Corium mesally with two rows of punctures parallel to clavus, followed laterally by smooth area, then by irregular rows of punctures except for uniform outer-most row. Lateral corial margins explanate with anterior half upturned and slightly sinuate; apical margin with mesal half deeply concave (Figs. 3 & 6). Abdominal sternum with decumbent setae; trichobothria on abdominal sternite V linear, anterior to spiracle V, and closer to each other than to trichobothria of segment IV (Fig. 8). Fore femur moderately incrassate (1.5× as wide as middle femur) with row of 7 ventral spines distally (Fig. 9). Genital capsule, parameres, and spermatheca as in Figs. 11-15.

Head length 0.44, width across eyes 0.60, interocular distance 0.33. Pronotal length 0.70, width across humeral angles 1.11. Scutellar length 0.60, width 0.66. Length of claval commissure 0.18. Wing length from base of corium 1.92. Length of antennal segments I 0.26, II 0.43, III 0.34, IV 0.42. Length of labial segments I 0.32, II 0.46, III 0.5, IV 0.22. Total body length 2.72.

All specimens are macropterous. Total body length range: 2.30 to 3.20 mm. Several specimens have the posterior lobe of pronotum nearly entirely creamy white or yellowish white. Some specimens have a diffuse brown macula on the corium adjacent to the lateral margin at midpoint; some have the wing membrane clear and colorless. Females are similar to males, except they have with fewer spines on fore femur.

HOLOTYPE: ♂ Mexico, OAXACA, Chacahua, 31-V-1987, L. Cervantes (UNAM). The holotype is in good condition, glued on its right side to a paper point, with the genital capsule removed and stored in a vial with glycerin. In UNAM.

PARATYPES: 19 ♂, 19 ♀. MEXICO, OAXACA: 1 ♀ Chacahua, 31-V-1987, coll. E. Barrera (UNAM). 1 ♀ Puerto Escondido, 23-VII-1975, Noct., coll. H. Brailovsky (UNAM); CHIAPAS: 1 ♂, 1 ♀ Tapachula, 19-IV-1983, coll. H. Brailovsky (UNAM); 1 ♀ Tapachula, 19-IV-1983, coll. H. Brailovsky (UNAM); 5 ♂, 1 ♀ Tapachula, 19-IV-1983, coll. E. Barrera (UNAM); 1 ♀ 5 Mi. N.E. of Chiapa, W92°58': N16°45', 22-VIII-1966, colls. J. & W. Ivie (AMNH); 1 ♀ Rosario, Izapa, 20-IV-1983, coll. H. Brailovsky (UNAM); 1 ♀ Frontera [=international border with Guatemala], 6-IV-1979, 400 m., coll. E. Barrera (UNAM); and 1 ♀ El Zapotal. 2 Mi. S. Tux. Gutierrez, 5-VII-1957, coll. P. D. Hurd (EMEC). EL SALVADOR: 1 ♂ San Salvador, 31-V-1959, coll. P. A. Berry (NMNH). COSTA RICA: 1 ♂ Prov. San Jose, 8 Km. S. Orotina, 16-II-1983, colls. R. M. Baranowski, F. Gilstrap (RMB); 1 ♂ Guanacaste, Prov. Sta. Rosa National Park, 22-V-1985, colls. Doyen & Powell (EMEC). PANAMA: 1 ♀ Cabima, 22-V-? [might be 1911], coll. August Busck (NMNH); 1 ♂ Coco Solo Hosp., Canal Zone, light trap, 5-V-1974, coll. D. Engleman (J. A. Slater Collection); 1 ♀ Coco Solo Hosp., C. Z., light trap, 20-VI-1975, coll. D. Engleman (UNAM); 1 ♀, 1 ♂ Coco Solo, 20-VI-1975, Noct., coll. D. Engleman (UNAM); 1 ♂, 1 ♀ Coco Solo Hosp., C. Z., 21-V-1976, light trap, coll. D. Engleman (UNAM); 7 ♂, 6 ♀ Coco Solo Hosp., C. Z., 21-V-1976, light trap, coll. D. Engleman (J. A. Slater Collection). In AMNH, EMEC, NMNH, UNAM, J. A. Slater and R. M. Baranowski collections.

DISCUSSION

This species was first discovered among specimens from Mexico believed to be *Cligenes distinctus* because of the prosternal groove. Comparison of the capsules, parameres and spermathecae revealed that these specimens were not conspecific with *C. distinctus* (Figs. 11-15, 20-24). *Cligenes grandis* n. sp. is larger and lighter in coloration than *C. distinctus* (with the exception of some specimens of the latter from Trinidad); the body size range for *C. distinctus* is 1.80 to 2.85 mm. An excellent illustration of the latter species is in Slater and Baranowski (1990). *Cligenes distinctus* is extremely variable in pronotal color and shape, making comparisons difficult. Although both species have four pale markings on the posterior lobe of the pronotum, *C. distinctus* usually has most of the posterior lobe concolorous with the anterior lobe (Fig. 4) while specimens of *C. grandis* n. sp. have most of the posterior lobe pale (Fig. 3). Antennal segment IV is reddish brown in *C. grandis* n. sp. but usually white in *C. distinctus*. *Cligenes distinctus* has two distinct brown maculae on each wing while most *C. grandis* n. sp. have only an apical macula and at most a diffuse macula at midpoint. The genital capsules of males differ in part by the absence in *C. grandis* n. sp. of posterior-pointing decumbent thick setae seen in *C. distinctus* ventrally, that is, below the cuplike sclerite (Fig. 22); furthermore, the arms of the cuplike sclerite are closer to each other and meet at a sharp angle on *C. grandis* n. sp. (Fig. 15) while in *C. distinctus* this angle is rounded and the arms are farther apart (Fig. 22).

ETYMOLOGY. The specific name refers to the body size of this species, larger than most *Cligenes distinctus*.

DISTRIBUTION. Mexico (southern states of Chiapas and Oaxaca), Guatemala, El Salvador, Costa Rica, and Panama, i.e. Mesoamerican distribution.

BIOLOGY. Unknown. Several specimens were captured at night in light traps.

New Localities of *Cligenes distinctus* Distant

Cligenes distinctus is sympatric with *C. grandis* n. sp. in Mexico and Central America (Fig. 35). *Cligenes distinctus* was described from Panama (Distant 1893) and has also been reported from Cuba (Barber 1954) and Florida (Blatchley 1926) and as *Tomopelta munda* (Uhler 1893), a junior synonym, from St. Vincent Island. In Florida it is known from Brevard, Dade, and Monroe counties (Slater and Baranowski 1990). However, it is widespread. The following are new country records (numbers in parentheses refer to the number of specimens):

MEXICO: (1) Veracruz, Puente Nacional, 6 Mi. S.E. Rinconada, 30-IX-1975, at light, colls. J. Powell & J. Chemsak (EMEC). **NICARAGUA:** (1) Dept. Rivas, 10 Km. N.W. Sapoá, Rio Canas Gordos, 9-VI-1964, colls. Blanton, Broce (RMB). **BAHAMAS, GRAND BAHAMA ISL.:** (1) Freeport, 20-27-VI-1987, colls. W. E. Steiner, M. J. & R. Molineaux (NMNH); **MAYAGUANA ISL.:** (1) 27-VIII-1963, black light trap, coll. C. Murvosh (FSCA). **DOMINICA:** (1) 5 mi. E. Dublanc, 1250', 20-VIII-1986, C. W. and L. O'Brien (O'Brien Collection); (2) 4 mi. E. Salisbury, 19-VIII-1986, C. W. and L. O'Brien (O'Brien Collection); (1) Morne Trois Pitons N. P., Freshwater Lake Rd., 2600', 13-VIII-1986, C. W. and L. O'Brien (O'Brien Collection); (1) Trafalgar Falls, ca. 1200', 12-VIII-1986, C. W. and L. O'Brien (O'Brien Collection). **DOMINICAN REPUBLIC:** (1) Prov. Barahona, Barahona, 9-VI-1998, black light trap, colls. P. H. Freytag, B. K. Dozier, & R. E. Woodruff (R. E. Woodruff Collection). **GUADELOUPE:** (2) Duclos, 25-VI-1971, colls. J. A. Slater, R. M. Baranowski, J. E. Harrington (J. A. Slater Collection). **JAMAICA:** (1) Parish of St. Ann, 3 Mi. W. Ocho Rios, 4-VII-1971, colls. J. A. Slater, R. M. Baranowski, J. E. Harrington, A. [adults] and N. [nymphs] under *Ficus* sp. (UNAM); (1) Parish of St. Catherine, Worthy Park, 10-VI-1975, black light trap, coll. R. E. Woodruff (FSCA). **MARTINIQUE:** (1) 12 km. N. Fort de France (N-3), 23-VIII-1986, C. W. and L. O'Brien

(O'Brien Collection). PUERTO RICO: (1) Municipio de Lares, near Lares, at cross of roads 129 and 134, from leaf litter and soil picked at mouth of Cueva Golondrinas (across from Cueva Catedral), 31-VII-1999, coll. J. Brambila (FSCA). SABA: (1) Mt. Scenary [Mount Scenery], 800-840 m., 12-14-I-1968 (UNAM). TRINIDAD AND TOBAGO, *TRINIDAD*: (2) Arima Valley, 800-1200 ft., 10-22-II-1964, colls. Rosen & Wygodzinsky collectors (AMNH); (3) St. George Co., Simla, Arima Valley, 12-VII-1978, black light trap, coll. M. Ramla (NMNH). BRAZIL: (6) Pernambuco, Caruaru, 900 m., IV-1972, coll. M. Alvarenga (AMNH); (1) same, V-1972 (AMNH); (4) same, V-1972, J. Lima (AMNH); (1) [State of Rio de Janeiro], Guanabara, Corcovado, XI-1971, coll. M. Alvarenga (AMNH).

The following are previously unpublished collection records from Cuba, St. Vincent Isl., and Panama (unpublished records from Florida are numerous and will be presented in a different manuscript): CUBA: (1) Baraguá, T.P.R.F., Ent. No. 379, at light, coll. C. F. Stahl (AMNH). ST. VINCENT ISL.: (4) Charlotte Parish, 3 Mi. N.W. Georgetown, 21-VI-1973, 2000', under *Ficus* sp., colls. R. Baranowski, F. O'Rourke, V. Picchi, J. Slater (UNAM). PANAMA: (1) Barro Colorado [Isl.], CZ [Canal Zone], VIII-IX-1949, Berl. funnel, Zetek 5427 (NMNH); (1) Cerro Campana, 800 m., R. de Pan. [Republica de Panama], 8°40'N, 79°56'W, 28-IV-1973, coll. Engleman (J. A. Slater Collection).

Valeris Brambila, **NEW GENUS**

Type species: *Cligenes subcavicola* Scudder, Darlington & Hill, 1967. Monobasic.

Gula wide and shallow with bucculae meeting in a round arc (Fig. 25). Pronotum with lateral margins sinuate, explanate and upturned (Figs. 5 & 26), posterior margin concave. Transverse division between pronotal lobes moderately impressed. Metathoracic scent gland auricle straight, with apex pointed, elevated, and directed posteriorly at a diagonal (Fig. 27). Anterior half of lateral corial margin expanded and upturned. Trichobothria on abdominal tergites IV and V in linear configuration, with trichobothria on tergite V closer to each other than to trichobothrium on segment IV, and posterior trichobothrium of segment V directly below spiracle of segment V to slightly caudad (Fig. 28). Fore femur with two rows of spines (Fig. 29), spines of posterior row larger in males than in females. Male genital capsule, paramere, and spermatheca as in Figs. 30-34; capsule with a median caudal projection (Fig. 33).

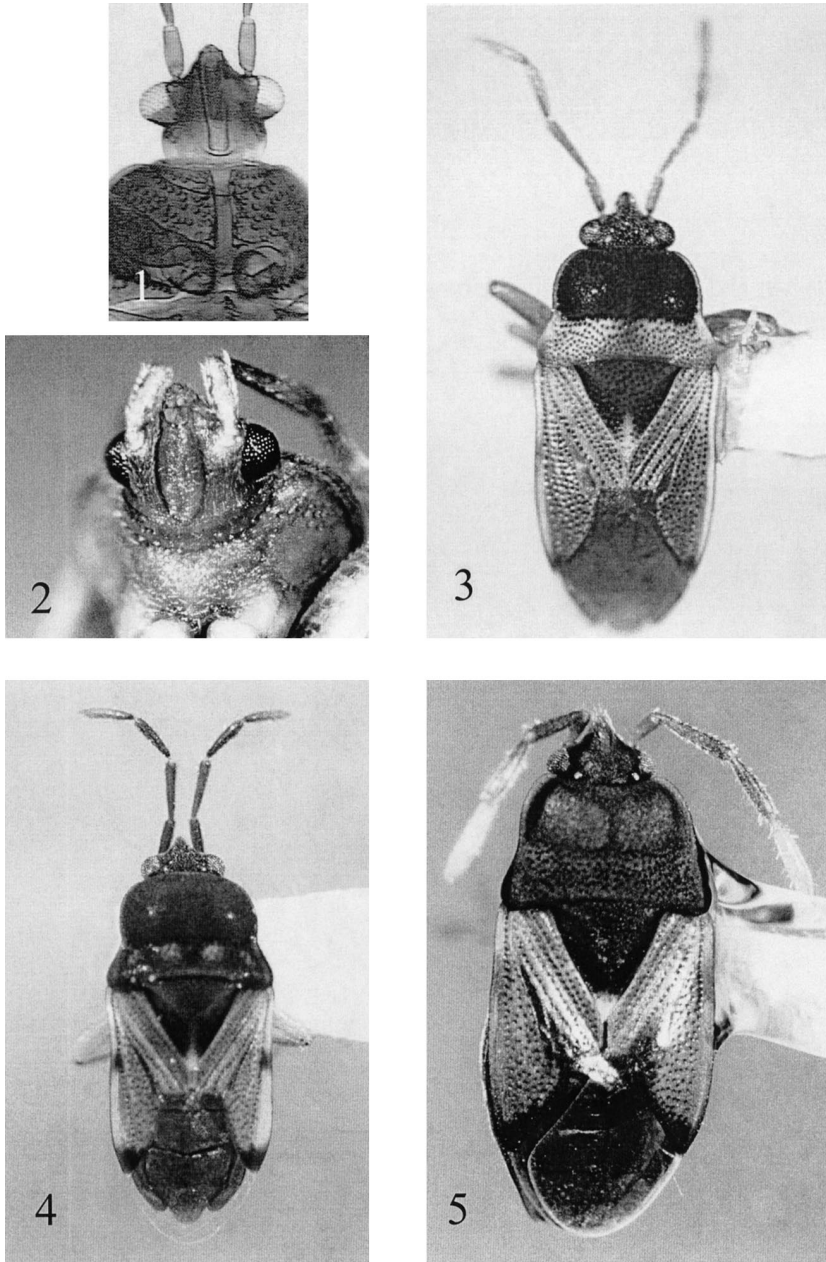
ETYMOLOGY. The name *Valeris* is from a Russian dancer. Learning about dance history is one of the author's interests.

Valeris subcavicola was originally placed in the antillocorine genus *Cligenes* due to the explanate pronotal lateral carina. However, *Valeris* differs from *Cligenes* by lacking a groove for the labium on the prosternum (Fig. 26) and by having a caudal projection on the genital capsules of the males (Fig. 33). It differs from *Cligenes* also by having only the anterior trichobothrium on abdominal sternal tergite V anterior to the spiracle of tergite V (Fig. 19) and by having two rows of spines on the fore femur instead of a single row (Fig. 18). *Valeris* also differs from *Botocudo* Kirkaldy because the type species of *Botocudo* (*B. diluticornis* [Stål]) has the two posterior trichobothria on segment V located dorso-ventrally in a diagonal relative to each other, lacks spines on the fore femur, and the pronotal lateral carinae are not explanate and upturned.

Valeris subcavicola (Scudder, Darlington & Hill), **NEW COMBINATION** (Figs. 2, 5, 25-34)

Cligenes subcavicola Scudder, Darlington and Hill, 1967: 465-469

Male, female, immatures, and eggs were described by Scudder, Darlington and Hill, but not illustrated. For antillocorines, *V. subcavicola* is large, with the holotype male



Figs. 1-5. 1: *Cligenes grandis*, n. sp., ventral view of prosternum, photograph. 2: *Valeris subcavicola*, n. comb. (Trinidad), ventral view of head, photograph. 3: *Cligenes grandis*, n. sp., dorsal view, photograph of holotype. 4: *Cligenes distinctus* (Trinidad), dorsal view, photograph. 5: *Valeris subcavicola*, n. comb., dorsal view, photograph.

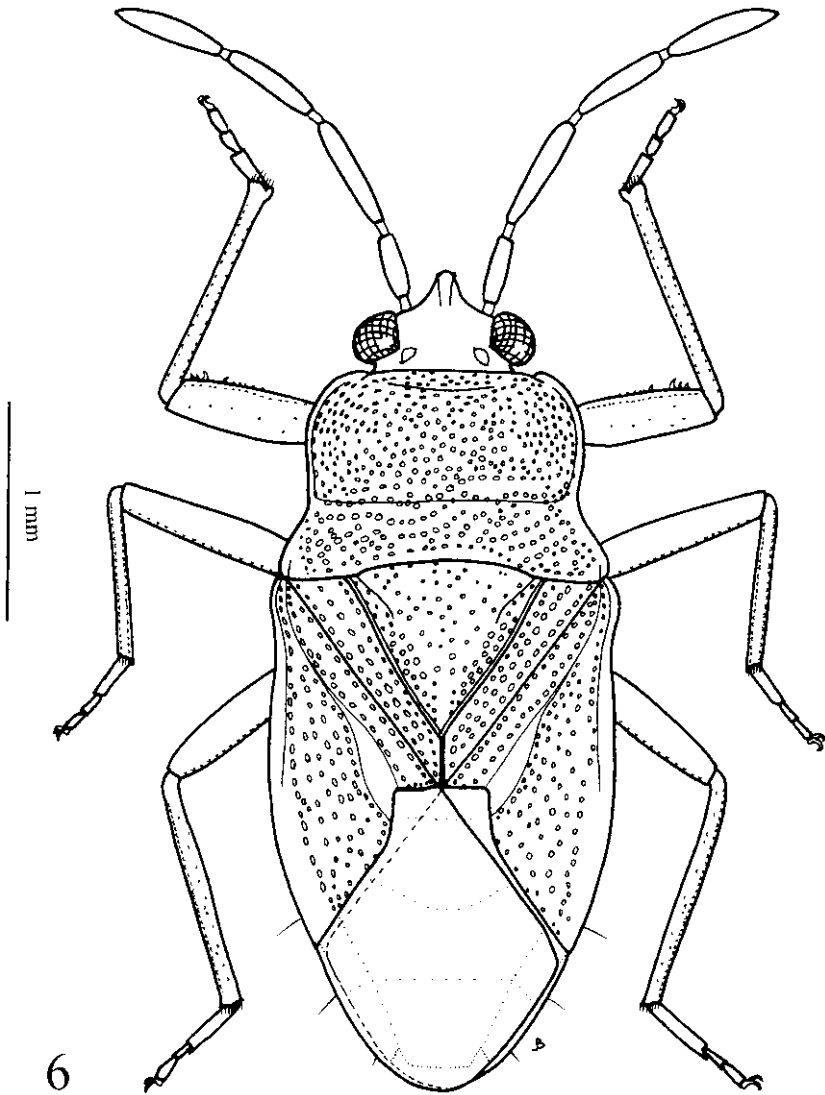
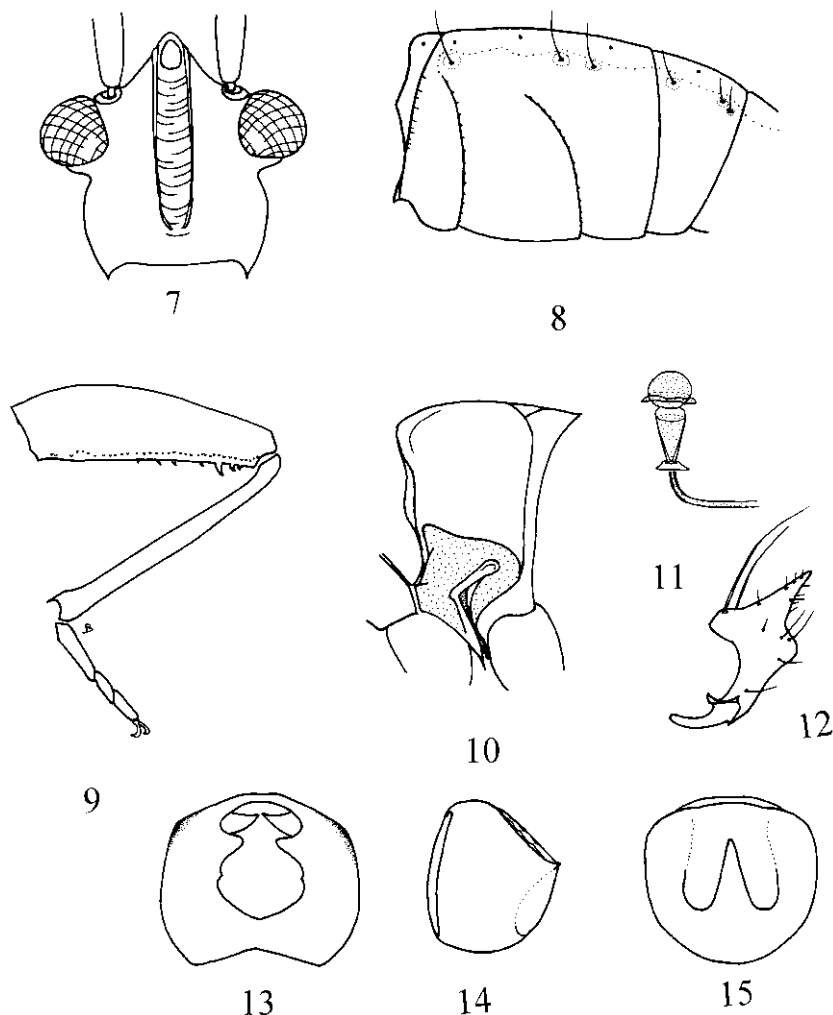


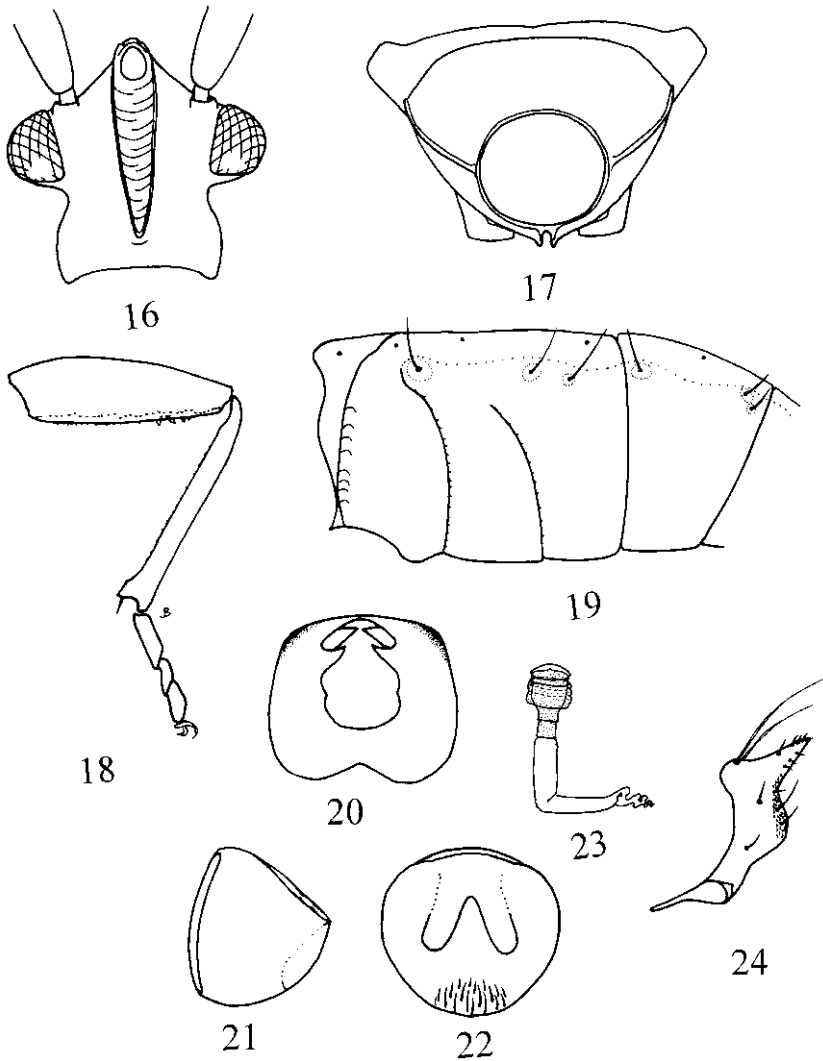
Fig. 6: *Cligenes grandis*, n. sp., dorsal view, illustration.

3.10 mm and a female 3.11 mm in length, both measured to the end of the membrane. Specimens from Peru are even larger, reaching 3.54 mm to the end of the body. Scudder, Darlington and Hill indicated that the mesosternum and metasternum of only *C. subcavicola* has a median irregular keel. However, examination of other antillocorines, including *C. distinctus*, shows this to be a widely shared character, not unique to *C. subcavicola*; furthermore, the median keel is also present on the prosternum in *Valeris* and in other antillocorine genera, though usually visible only between the forecoxae.



Figs. 7-15. *Cligenes grandis*, n. sp., illustrations, not to scale. 7: head, ventral view; 8: abdominal sternites 3-6, lateral view; 9: fore leg, anterior view; 10: metathorax, scent gland auricle, evaporative area; 11: spermatheca; 12: right paramere; 13-15: genital capsule dorsal view, lateral view, and caudal view.

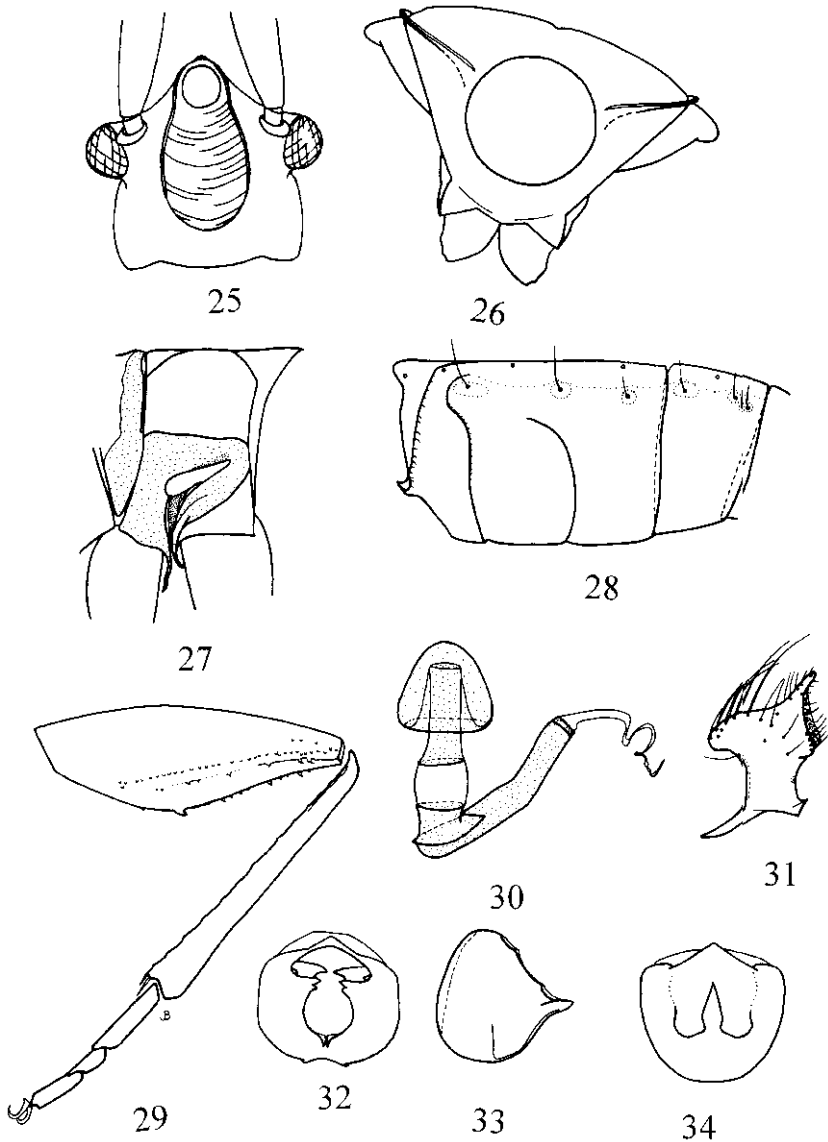
These authors indicated as well that males differed from females by having "fore tibia slightly curved and crenulate to inside"; however, both males and females have a crenulate inner surface of the tibia and only an occasional male has the fore tibia slightly curved. *Valeris subcavicola* is apparently quite variable in pronotal shape and color; the pronotum color ranges from yellowish brown, to reddish brown, to very dark brown, with the anterior lobe varying in amount of convexity in profile. No reliable structural differences have been found. I believe that the above variants belong to a single species.



Figs. 16-24. *Cligenes distinctus*, illustrations, not to scale. 16: head, ventral view; 17: pronotum, anterior view; 18: fore leg, anterior view; 19: abdominal sternites 3-6, lateral view; 20-22: genital capsule dorsal view, lateral view, and caudal view; 23: spermatheca; 24: right paramere.

DISTRIBUTION. This species is now known to occur in Trinidad, Panama, Venezuela, Brazil, and Peru (Fig. 35).

BIOLOGY: *Cligenes subcavicola* was described from 145 specimens collected in the Tamana Caves in the Central Range Forest Reserve in Trinidad on 28-VI-1966 by J. P. E. C. Darlington and S. B. Hill. Interestingly, in 1954, thirty-seven specimens of



Figs. 25-34. *Valeris subcavicola*, n. comb., illustrations not to scale. 25: head, ventral view; 26: pronotum, anterior view; 27: metathorax, scent gland auricle, evaporative area; 28: abdominal sternites 3-6, lateral view; 29: fore leg, anterior view; 30: spermatheca; 31: right paramere; 32-34: genital capsule dorsal view, lateral view, and caudal view.

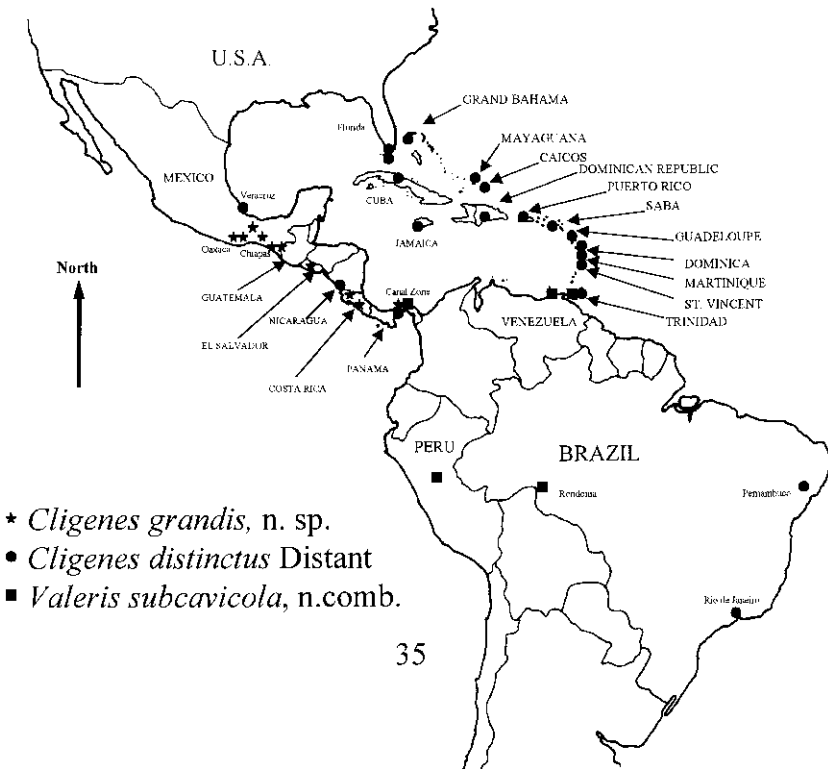


Fig. 35. Collection sites of *Cligenes grandis* n. sp. (stars), *Cligenes distinctus* (circles), and *Valeris subcavicola* n. comb. (squares).

this species had been collected in the Monson Cave in Peru. It has subsequently been collected in other caves in Trinidad, Peru, and Venezuela, and in an abandoned building in Trinidad, as explained below. In Brazil, however, it was collected in 1992 and 1993 only in ultraviolet and mercury vapor light traps. Scudder et al. (1967) mentioned that rearing in the laboratory was done for months with “nothing but the guano and its associated fauna”, not indicating if they fed upon seeds or other organisms in the bat guano. Slater (1984) reported observations in 1971 by Dr. R. T. Schuh in Lechuzas Cave in Peru that this species was confined to the outer-most chamber, not deeper and not immediately outside of the cave either. Schuh described the guano as containing thousands of tiny seeds mixed with soil and bat and parrot guano, a great proportion of the seeds being of one of more species of *Ficus*. Slater (1984) reported this species in great numbers feeding in the upper layers of bat guano in an abandoned building at Simla, Trinidad, which housed a large colony of bats. The guano contained many seeds of *Piper*. Slater observed that small seeds were seen carried on the end of the rostrum, as I also have seen with *Cligenes distinctus* in Florida.

This species was reported by Scudder, Darlington and Hill (1967) as the first record of Lygaeidae living and breeding in caves. Slater (1984) described a second cave dwelling species, *Botocudo cavernicola*, from New Guinea, this species and *V.*

subcavicola being "the only lygaeids thus far known to live in caves where both feed on mature seeds that have passed through the digestive tracts of frugivorous bats." However, neither of the species show "any of the adaptations usually associated with true cavernicoles such as loss of body pigmentation and reduction of the wings, eyes, and ocelli" (Slater 1984).

Ueshima and Ashlock (1980) illustrated the chromosomes of *Valeris subcavicola* and reported that chromosome cytology during meiosis was unusual, differing from that in other known antilocorines. During metaphase I in *V. subcavicola* the X and Y chromosomes locate in the center of the autosomal ring, while the micro-chromosome pair, which does not pair during meiotic prophase, tends to locate on the periphery with the 6 pairs of autosomes. The two m-chromosomes normally locate in the center of the autosomal ring together with the sex chromosomes.

MATERIAL EXAMINED: TRINIDAD: (324) St. George Co., Arima-Blanchisseuse Rd., Simla, 23-IX-1979, feeding on seeds in bat guano in old building, coll. R. M. Baranowski (293 RMB, 31 NMNH); (115) St. Andrew Co., Tamana Caves, 27-IX-1979, coll. R. M. Baranowski (100 RMB, 15 NMNH); (13) St. Andrew Co., Tamana Main Cave, Upp. Pt. 6, in guano, 25-II-1989, coll. J. P. E. C. Darlington (AMNH); (1) St. George Co., Arima, Guanapo Valley Rd., guano, Berlese funnel, 15-VII-1979, coll. L. N. Sorkin (AMNH); (1) Simla, 23-VII-1982, in dry bat guano, colls. J. A. Slater, R. M. Baranowski, R. Clayton (UNAM); (9) St. George Co., Guanapo Cave, in guano, 8-VII-1989, coll. Darlington (AMNH); (12) St. George Co., Lopinot, Darceuil Cave, 11-IX-1989, coll. J. P. E. C. Darlington (AMNH); (11) St. George Co., Lopinot, Colada Cave, 4-X-1989, coll. J. P. E. C. Darlington (AMNH). Also examined were the following paratypes: (5) Trinidad, Tamana Caves, Main Cave, on bat guano, 28-IV-1966, colls. J. Darlington & S. E. Hill (4 AMNH, 1 UNAM). PERU: (3) Cueva de las Lechuzas, ca. Tingo maria, 12-VII-1968, colls. L. & C. W. O'Brien (NMNH); (5) Huanuco Prov., Cueva de Lechuzas, near Tingo Maria, on floor cave, 12-VII-1968, colls. C. W. & L. B. O'Brien (AMNH); (42) Huanuco, Cueva de las Lechuzas, 10 km NW Tingo Maria, 30-XI-1971, colls. R. T. & J. C. Schuh (AMNH); (2) Peru (RMB); (4 on one card), Dep. Huan., Cueva de las Lechuzas, Tingo Maria, 800 m., Bordon leg, 16-V-1972 (UNAM); (9) Depto. Huanuco, Cueva de las Lechuzas, Tingo Maria, 3-IV-1974, coll. P. Reyes C. (UNAM); (48) Tingo Maria, in dry bat guano, 20-VII-1980, coll. M. J. W. Cock (RMB); (37, including 6 nymphs), Monson Cave, Tingo Maria, 15-XII-1954, colls. E. I. Schlinger & E. S. Ross (36 CASC, 1 UNAM). BRAZIL: 1 ♀ Brazil, Rondonia, 62 Km. S.W. Ariquemes, nr Fzda. Rancho Grande, mercury vapor & black lights, 30-III-10-IV-1992, coll. J. E. Eger (NMNH); 1 ♀ Brazil, Rondonia, 62 Km. S.W. Ariquemes, nr Fzda. Rancho Grande, 5-17-X-1993, black light trap, coll. J. E. Eger (FSCA); 1 ♀ Brazil, Rondonia, 62 Km. S.W. Ariquemes, nr Fzda. Rancho Grande, black light trap, 8-IX-1993, coll. U. Schmitz (FSCA). VENEZUELA: 2 ♀ Edo. Miranda, 20 Km. W. Curiepe, Cueva Alfredo Jahn, 200m., guano, 7-III-1971, coll. S. Peck (NMNH). PANAMA: 1 ♀ Coco Solo Hosp., C. Z., light trap, 9-VI-1973, coll. D. Engleman (J. A. Slater Collection).

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REFERENCES CITED

- BARBER, H. G. 1954. The family Lygaeidae (Hemiptera-Heteroptera) of the island of Cuba and the Isle of Pine—Part II. Mem. Soc. Cubana Hist. Nat. "Felipe Poey". 22 (4): 335-353.
- BLATCHLEY, W. S. 1926. Heteroptera or true bugs of Eastern North America, with special reference to the faunas of Indiana and Florida. The Nature Publishing Company, Indianapolis. 1116 pp.
- DISTANT, W. L. 1893. Biologia Centrali-Americana. Insecta. Rhynchota. Hemiptera-Heteroptera. Vol. I. Suppl., 378-462. Taylor & Francis, London.
- SCUDDER, G. G. E. 1962. The world Rhyparochrominae (Hemiptera: Lygaeidae). I. New synonymy and generic changes. Can. Entomol. 94: 764-773.
- SCUDDER, G. G. E., J. P. E. C DARLINGTON, AND S. B. HILL. 1967. A new species of Lygaeidae (Hemiptera) from the Tamana Caves, Trinidad. Annales de Speleologie, 22, fasc. 2: 465-469.
- SLATER, J. A. 1964. A Catalogue of the Lygaeidae of the World. University of Connecticut. 2 vol., 1668 pp.
- SLATER, J. A. 1984. On the biology of cave inhabiting Antillocorini with the description of a new species from New Guinea (Hemiptera: Lygaeidae). J. New York Entomol. Soc. 91(4): 424-430.
- SLATER, J. A., AND R. M. BARANOWSKI. 1990. Lygaeidae of Florida (Hemiptera: Heteroptera). Arthropods of Florida and Neighboring Land Areas, 14: 1-211. Florida Department of Agriculture and Consumer Services, Division of Plant Industry.
- SLATER, J. A., AND J. E. O'DONNELL. 1995. A Catalogue of the Lygaeidae of the World (1960-1994). New York Entomol. Soc., New York, NY. 410 pp.
- UESHIMA, N., AND P. D. ASHLOCK. 1980. Cytotaxonomy of the Lygaeidae (Hemiptera-Heteroptera). Univ. Kansas Sci. Bull. 51 (26): 717-801.
- UHLER, P. R. 1893. A List of the Hemiptera-Heteroptera collected in the Island of St. Vincent by Mr. Herbert H. Smith; with descriptions of new genera and species. Proc. Zool. Soc. London 1893: 705-719.