

Taxonomic revision of the *Apiomerus maya* species group (Heteroptera: Reduviidae: Harpactorinae)

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Abstract

The *Apiomerus maya* species group of the genus *Apiomerus* Hahn, 1831 (Hemiptera: Heteroptera: Reduviidae: Harpactorinae: Apiomerini), the bee assassins, is revised. Four species that are native to parts of Mexico and Central America are recognized and redescribed: *Apiomerus maya* Dispons, 1971, *A. pipil* Dispons, 1971, *A. venosus* Stål, 1872, and *A. immundus* Bergroth, 1898. Intraspecific polychromatism and male genital morphology are documented for the group. The taxonomy of two previously recognized species is updated: *A. tristis* Champion, 1899 **syn. nov.** is here synonymized with *A. venosus* and *A. guatemalensis* Dispons, 1971 **syn. nov.** with *A. pipil*.

Key words: bee assassin, true bug, polychromatism, systematics, Neotropical Region

Introduction

Apiomerus Hahn, 1831 (Hemiptera: Heteroptera: Reduviidae: Harpactorinae: Apiomerini) is a large New World genus (>100 described spp.) of assassin bugs known for their tendency to prey on bees and other pollinators (Coletto da Silva & Gil-Santana 2004; Maldonado 1990). Many species exhibit an unusual method of prey capture in which they collect and apply sticky plant resin to their bodies to ensnare prey (Miller 1956, Bérenger & Pluot-Sigwalt 1997). Female *Apiomerus* also exhibit maternal care by coating their eggs with resin to anchor them to a substrate, prevent desiccation, and deter predation (Choe & Rust 2007). Szerlip (1980) suggested that all North American *Apiomerus* species might engage in similar habits of resin gathering to facilitate prey capture. *Apiomerus* is most diverse in the Neotropics, but numerous species have also been described from the Nearctic. Much of the taxonomic work on North and Central American *Apiomerus* was accomplished by Sigurd Szerlip in his largely unpublished Ph.D. dissertation (Szerlip 1980), in which he laid out many of the species concepts within the genus, and defined species groups that have been mostly corroborated in recent molecular phylogenies (Forero *et al.* 2013). Szerlip (1980) recognized 41 species (several of them undescribed, which have remained manuscript names) of *Apiomerus* in North and Central America and placed these taxa into eight species groups. Only the *A. crassipes* and *A. pictipes* species groups have since been revised (Berniker *et al.* 2011).

This present revision treats another of Szerlip's groupings, the *A. maya* species group. This group encompasses some of the most prevalent taxa native to Mexico and Central America. Members are predominantly black or dark brown and are relatively small to medium-sized species of *Apiomerus*. Similar to other bee assassins which exhibit a diversity of genitalic structures relevant to species-level taxonomy (Forero & Weirauch 2012), genitalic morphology plays an important role in species delimitation and identification within the *maya* group. Szerlip (1980) diagnosed males of the *A. maya* species group as having an arrow-shaped dorsal phallosclerite and endosomal surface adorned with two longitudinal rows of “shark’s fin-shaped teeth,” referred to herein as endosomal denticles. Up to now, five species have been formally described within the species group: *Apiomerus guatemalensis* Dispons, 1971, *Apiomerus maya* Dispons, 1971, *Apiomerus pipil* Dispons, 1971, *Apiomerus tristis* Champion, 1899, and *Apiomerus venosus* Stål, 1872. In treating the *A. maya* species group we recognize and redescribe four species, *A. maya*, *A. pipil*, *A. venosus*, and *Apiomerus immundus* Bergroth, 1898. We include *A. immundus* in this revision based

on its general appearance and the many male genitalic similarities it shares with *A. maya* group taxa (i.e., morphology of the medial process of the pygophore, enlarged basal dorsolateral sclerites of the endosoma, high number of endosomal denticles). *Apiomerus tristis* is here synonymized with *A. venosus* based partly on similarity of the male genitalia. Two manuscript names Szerlip (1980) classified within the *A. maya* species group, “*Apiomerus azteca*” and “*Apiomerus maculatus*” are not recognized as representing distinct species in the present revision. *Apiomerus pipil* and *A. guatemalensis*, both described by Dispos (1971), are herein synonymized, redescribed, and conceptually expanded to include many similar looking specimens that Szerlip identified as “*A. azteca*.” Intraspecific morphological and polychromatic variation which may confound species identification is discussed.

Materials and methods

Specimens, depositories, and databasing

A total of 765 adult specimens belonging to the *A. maya* species group were examined, of which 416 were females and 349 males. Specimen information was databased using the American Museum of Natural History’s Planetary Biodiversity Inventory (PBI) instance of the Arthropod Easy Capture Database (<https://research.amnh.org/pbi/locality/index.php>) and can be accessed through the Heteroptera Species Pages (<http://research.amnh.org/pbi/heteropteraspeciespage>).

A list of the depositories from which specimens were studied or where types that could not be accessed are deposited are provided below.

AMNH	American Museum of Natural History, New York City, NY USA
BDGC	Bruce D. Gill Personal Collection, Ottawa, Canada
BMNH	Natural History Museum, London, UK
CAS	California Academy of Sciences, San Francisco, CA USA
CNC	Canadian National Collection of Insects, Ottawa, Canada
CUIC	Cornell University Insect Collection, Cornell, NY USA
DAR	David A. Rider Collection, North Dakota State University, Fargo, ND USA
FMNH	Field Museum of Natural History, Chicago, IL USA
FSCA	Florida State Collection of Arthropods, Gainesville, FL USA
HNHM	Hungarian Natural History Museum, Budapest, Hungary
INBIO	Instituto Nacional de Biodiversidad, Santo Domingo, Costa Rica
ISNB	Royal Belgian Institute of Natural Sciences, Brussels, Belgium
KU	University of Kansas Snow Entomological Museum, Lawrence, KS USA
LACM	Natural History Museum of Los Angeles County, Los Angeles, CA USA
MACN	Museo Argentino de Ciencias Naturales, Buenos Aires, Argentina
MZH	Finnish Museum of Natural History, Helsinki, Finland
MZSP	Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil
NHRS	Naturhistoriska Riksmuseet, Stockholm, Sweden
TAMU	Texas A & M University Insect Collection, College Station, TX USA
UCB	University of California Essig Museum of Entomology, Berkeley, CA USA
UCD	University of California, R.M. Bohart Museum of Entomology, Davis, CA USA
UCR	University of California Riverside Entomology Research Museum, Riverside, CA USA
UMSP	University of Minnesota Insect Collection, St. Paul, MN USA
UNAM	Universidad Nacional Autónoma de México, Mexico City, Mexico
USNM	United States National Museum of Natural History, Washington DC, USA
ZMAN	Universiteit van Amsterdam Instituut voor Taxonomische Zoologie, Amsterdam, Netherlands
ZSM	Zoologische Staatssammlung, Munich, Germany

Dissections

Prior to dissection, specimens were relaxed in a heated humidity chamber for approximately 10 minutes. The male pygophore was removed with a pair of forceps, placed in warm 10% potassium hydroxide (KOH) for 5–10 minutes

to dissolve soft tissue, and then rinsed with distilled water. Each pygophore was then placed in glycerol for imaging, further dissection, and storage. A similar procedure was followed for female specimens with the exception that the entire abdomen was removed from the body and bathed in KOH. The abdominal tergites were then carefully separated from the sternites along the margin of the connexiva to expose the internal genitalia and facilitate removal of the syntergite 9/10, gonocoxa 8, gonoplac and bursa copulatrix. Male and female genitalia were permanently stored in capsules affixed to each specimen.

Measurements and imaging

Specimen measurements were taken with a dissecting scope mounted to a digital micrometer positioning system which was connected to a Microcode II® RS-232 digital readout (Boeckeler Instruments®). Since the hemelytra usually extend beyond and obscure the posterior end of the abdomen, total length of each specimen was measured from the clypeal apex to the apex of the forewing membrane. Dorsal, lateral, and ventral habitus images were captured using a Leica Microsystems imaging system (LAS software v4.3.0), stacked with Zerene Stacker v1.04 to create composite images, and then edited in Adobe Photoshop® CC 2017. For genitalic images, genitalia were mounted on glycerin jelly and submerged in 95% ethanol (EtOH).

Terminology and abbreviations

External morphology generally follows that of Weirauch (2008). Naming of genital structures primarily follows that described by Forero & Weirauch (2012). Structures identified on images herein use the following abbreviations: Male genitalia: **bdls**=basal dorsolateral sclerite of endosoma; **ddl**=distal dorsal lobes of the endosoma; **dps**=dorsal phallothecal sclerite; **ed**=endosomal denticles; **ls**=lateral sclerotization of endosoma; **pyg**=pygophore; **rm**=rami; **tp**=triangular projection of dorsal phallothecal sclerite.

Botanical taxonomy

If known, information regarding host plant association is given as part of each taxon's biological discussion. Plant names and their authors listed herein are based on the Integrated Taxonomic Information System database (www.itis.gov).

Taxonomy

Apiomerus maya species group

Figs 1–5

Diagnosis: Males are recognized from other species of *Apiomerus* by a combination of an arrow-shaped dorsal phallothecal sclerite, a pair of enlarged basal dorsolateral sclerites of the endosoma, and longitudinal rows of peg-like denticles (between 26–40 in total) on the dorsal surface of the endosoma. Also, the medial process of the pygophore is wide and its base indistinct, giving the appearance of the rami being inserted directly on the posterior margin of the pygophore. Both sexes are predominately black (or dark brown) with reddish-brown antennae and white or pale-yellow markings on the corial veins, thoracic venter, and connexiva.

Description: Male: Macropterous, body elongate ovoid, 11.5–17 mm in length. **COLORATION:** Body overall predominantly black; antenna reddish-brown; anterior pronotal lobe black or dark brown; posterior pronotal lobe and lateral surfaces of the legs variable, often dark brown; venter of neck, margins of prosternal stridulatory groove, anterior coxal cavities, mesal surface of forecoxa, fore- and mid trochanter and femur, corial veins (partially or completely), anterior portion of connexiva 2–7, area around of abdominal spiracles 2–7, and pair of spots on venter of pygophore white to pale yellow (or tan in some older specimens); membrane of hemelytra either entirely brown or bicolored with basal portion darkened and distal portion hyaline. **VESTITURE:** integument generally densely setose; head with long thin black or white setae; pronotum, scutellum, corium, and pleura covered with short thick white setae interspersed with longer, less conspicuous black setae; fore and mid legs densely setose, hind tibia more sparsely covered and with a short metatibial comb; abdominal venter sparsely covered with long shiny setae; medial process of pygophore with dense patch of long black setae; mesal surface of paramere covered with short fine setae, apex with long erect setae. **STRUCTURE:** **HEAD:** longer than wide, elongate ovoid, antecocular

and postocular region subequal in length, latter slightly convex in dorsal view; clypeus slender in dorsal view and apically blunt; labrum short and triangular; eye globular and weakly reniform in dorsal and lateral views, respectively; interocular sulcus deep and strongly curved; ocellus large, located on distinct tubercle, distance between ocelli greater than between anterior margin of ocellus and eye; antennifer near eye, short, and unarmed. Antenna: long, surpassing posterior margin of pronotum; scapus surpassing clypeus; pedicel subequal in length and diameter to scapus; basiflagellomere longer than distiflagellomere, diameters of both same as pedicel. Labium: segment 2 (first visible) short and stout, not reaching anterior margin of eye; segment 3 long and straight, reaching anterior margin of prosternum; segment 4 short and laterally compressed in cross section, reaching roughly to the middle of the stridulatory groove. THORAX: anterior pronotal lobe with rounded lateral margins, shorter and narrower than posterior lobe, vertex deeply sculpted with crescent-shaped furrow; longitudinal sulcus distinct, almost reaching anterior margin; posterior pronotal lobe smooth, disc slightly convex, humeral angle located anteriorly to posterior margin of pronotum, rounded, and the lateral margin of which forming an angle of roughly 90°; posterolateral margin of posterior pronotal lobe strongly keeled; scutellum triangular, margins rounded. Legs: coxa short and globular; trochanter subtriangular; femora cylindrical; fore- and mid tibiae thickened apically; foretarsus with two tarsomeres; mid and hind tarsus with three tarsomeres. Hemelytron: exceeding tip of abdomen by less than 1/4 of its length, corium well developed and leathery. ABDOMEN: strongly convex ventrally; connexivum expanded laterally beyond margin of hemelytron, abdominal sternites distinct. GENITALIA: base of the medial process of the pygophore wide and indistinct, rami inserted on posterior margin of pygophore, nearly vertical in lateral or caudal views; paramere thickened from base to 2/3 its length then weakly or strongly bent mesad, point of insertion is at the apical third of the pygophore, slightly hooked apically; inner margin of genital capsule (exterior rim of pygophore) with small protuberance; anterior opening of pygophore with smooth rim; tergite 9 divided into flat lateral sclerites and a medial membranous area; aedeagus elongate when inflated, with articulatory apparatus broad and triangular; dorsal phallosomal sclerite heavily sclerotized and arrow-shaped (with the exception of *A. immundus* which is subconical), apex reflexed and either slightly or deeply notched; phallosoma weakly sclerotized laterally and with transverse striations; endosoma with a pair of elongated basal dorsolateral sclerites, either flat or twisted apically; endosoma membranous and lightly striated; dorsal surface of endosoma with longitudinal rows of peg-like denticles (between 20–40 in total);

Female: Larger than male, 11.5–19 mm in length, similar to male except for the following: **COLORATION:** usually lacking conspicuous white or pale-yellow markings on the mesal surfaces of the fore- and mid femur and lateral spots on abdominal sterna 3–5. **VESTITURE:** metatibial comb much longer than that of male; abdominal venter densely covered with stiff shiny setae. **STRUCTURE:** ABDOMEN: lateral margins of tergite 8 rounded and not produced as deflexed lobes. **GENITALIA:** syntergite 9/10 roughly trapezoidal, lateral margins rounded; gonocoxa 8 large, L-shaped to roughly quadrangular, posterior margin lined with 20–30 very short, stout setae; gonoplac mitten-shaped, lightly fused medially, each side bearing a thumb-like dorsal medial projection topped with roughly two setae, and a strongly sclerotized posteriorly projecting lobe covered with many setae.

Discussion: In these taxa, the base of the medial process is greatly reduced giving the impression of the rami being inserted directly on the posterior rim of the pygophore (Fig. 2A–F). The rami are often broadly spaced from one another and render the medial process either V-shaped, as frequently observed in *A. pipil* (see Fig. 2C), or lyre-shaped (most male *A. venosus*, Fig. 2E–F). Other than using coloration, females in this group are best diagnosed through association with males as their genital morphology appears to be less variable at the species-level.

Identification key to the *Apiomerus maya* species group

- 1 Small species (11.5–12.5 mm), body and hemelytra predominantly dark brown, males with basal dorsolateral sclerites of the endosoma short to moderate in length, broad, flat, and round or oblong 2
- Medium to large species (14–19 mm), body and hemelytra variable in color (brown or black with light-colored markings on connexiva and corium, distal portion of membrane of hemelytra sometimes hyaline), males with basal dorsolateral sclerites of the endosoma elongate, often slightly twisted apically, and paddle-shaped 3
- 2 Dorsal phallosomal sclerite of males without a pair of prominent triangular projections at its base, basal dorsolateral sclerites of the endosoma of moderate length, oblong, and with fine sculpturing (Fig. 3A) *A. immundus* Bergroth, 1898
- Dorsal phallosomal sclerite of males with a pair of prominent triangular projections at its base (Figs 3B, F), basal dorsolateral sclerites of the endosoma short, round, and smooth or subtly striated longitudinally (Fig. 3B) *A. maya* Dispons, 1971
- 3 Quadrate cell of corium of hemelytra weakly delineated and is not completely outlined by light coloration (Fig. 1C), medial

process of pygophore of males V-shaped with narrowly separated rami (Fig. 2C), basal dorsolateral sclerites of the endosoma relatively narrow and short, constricted at middle (Fig. 3C), dorsal endosomal surface with about 26 peg-like denticles (proximal denticles forming two orderly rows) (Fig. 3C) *A. pipil* Dispons, 1971

- Quadrate cell of corium of hemelytra outlined entirely (or strongly delineated on at least three sides) by light coloration (Fig. 1D), medial process of pygophore of males lyre-shaped with widely separated rami (Fig. 2E–F), basal dorsolateral sclerites of the endosoma relatively broad throughout, not constricted at middle, dorsal endosomal surface with about 40 peg-like denticles (proximal denticles clustered) (Fig. 3D) *A. venosus* Stål, 1872

Apiomerus immundus Bergroth, 1898

Figs 1A, 2A, 2G, 3A, 3E

Apiomerus immundus Bergroth, 1898: 307. Syntype(s): Mexico; MZH.

Apiomerus immundus: Champion (1899: 238) (revision), Van Duzee (1916: 30) (catalog),

Wygodzensky (1949: 17) (catalog), Costa Lima *et al.* (1951: 340) (revision), Maldonado (1990: 5) (catalog).

Revised diagnosis: Recognized by the combination of the following characteristics: (1) relatively small size (<14 mm in length) and predominantly brown body and hemelytra, (2) males with lyre-shaped medial process of the pygophore with broadly spaced, short rami, (3) basal dorsolateral sclerites of the endosoma of moderate length, oblong, and with fine sculpturing, and (4) >26 endosomal denticles.

Redescription (based on the lectotype only): Male: Small, 11.45 mm in length, width across humeral angles 3.47 mm. COLORATION: Mostly brown; anterior pronotal lobe dark brown, posterior lobe brown (Fig. 1A); corium brown, veins near forewing membrane largely lacking light coloration, quadrate cell of the corium is not outlined in white or pale-yellow; entire forewing membrane brown with dark spots; basal spot of connexivum 7 roughly twice the size of marking on the preceding segment (from dorsal view); lateral spots of abdominal sterna absent. STRUCTURE: Medial process of pygophore lyre-shaped in caudal view, rami short and nearly straight (Fig. 2A); paramere weakly bent, with bristles subequal to or slightly longer than its maximal width (Fig. 2G); dorsal phallosclerite lacking distinct arrow-shaped in dorsal view, without pair of strongly developed triangular projections near base, apex of dorsal phallosclerite truncate and reflexed (Fig. 3A); basal dorsolateral sclerites of endosoma of moderate length, oblong, and covered with fine granules basally; dorsal surface of endosoma with >26 denticles arranged longitudinally; dorsolateral surface of endosoma with distinct sclerotization near base.

Female: Unknown.

Biology: Unknown.

Distribution: The geographical range of this species remains unknown. The type specimen was collected in Mexico, but no additional locality data was provided.

Discussion: This species is included in this revision based on its general appearance and the many male genital similarities it shares with species of the *maya* group, such as the lyre-shaped medial process of pygophore, enlarged basal dorsolateral sclerites of the endosoma, and high number of endosomal denticles. This species however lacks the distinct arrow-shaped dorsal phallosclerite that other *maya* group species possess (Fig. 3A) and has heavier lateral sclerotization along the dorsolateral surface of endosoma basally (Figs 3A, 3E). Szerlip (1980) included *A. immundus* among his *A. subpiceus* species group, a likely artificial grouping that he referred to as “a catchall for species from Central Mexico, the Yucatan Peninsula and Cuba” but did not examine Bergroth’s type specimen. Overall, *A. immundus* appears most similar to *A. maya* but lacks the paired triangular projections at the base of the dorsal phallosclerite, has slightly longer, more oblong dorsolateral sclerites of the endosoma with finer sculpturing, and appears to possess more endosomal denticles (>26).

Type information: The species was described based on an unspecified number of male individuals (Bergroth 1898). A single type of Bergroth from MZH, subsequently provided with a curatorial syntype label, has been examined (Fig. 1B). As the original description does not exclude the possibility that the species was described based on more than one individual, following Recommendation 73F of ICZN (1999), the examined specimen is regarded as a syntype, and here designated as lectotype of *A. immundus*.

Type material examined: Lectotype (present designation): ♂, **MEXICO:** exact locality and date unknown (UCR_ENT 00040816) (MZH) (Fig. 1A).

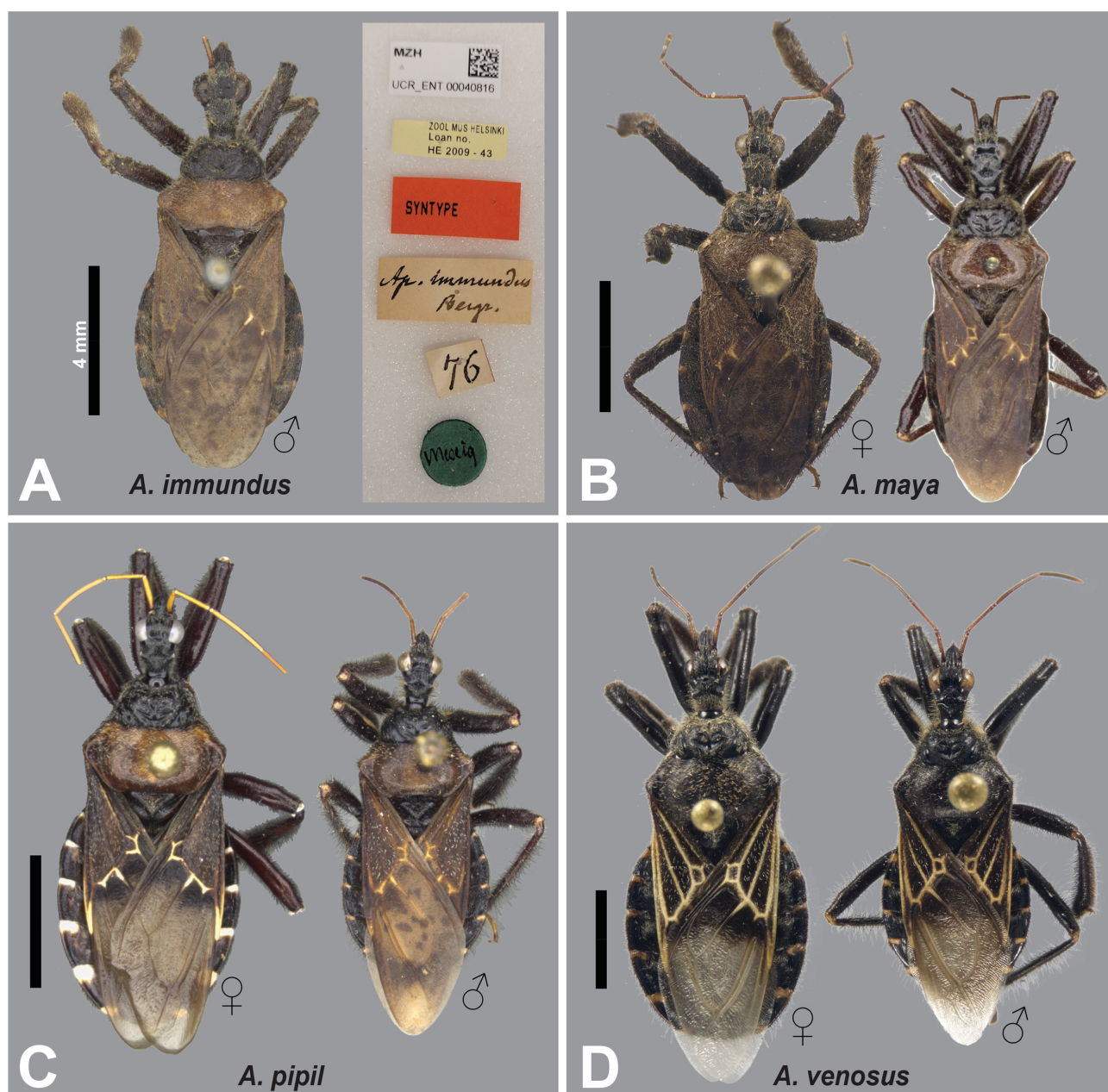


FIGURE 1. Dorsal habitus images of (A) *A. immundus* Bergroth, 1898 [♂ LECTOTYPE = UCR_ENT 00040816], (B) *Apiomerus maya* Dispons, 1971 [♀ = UCR_ENT 00013169, ♂ HOLOTYPE = UCR_ENT 00038047], (C) *A. pipil* Dispons, 1971 [♀ = AMNH_PBI 00218895, ♂ = UCR_ENT 00032865], and (D) *A. venosus* Stål, 1872 [♀ = UCR_ENT 00031790, ♂ = UCR_ENT 00032336]. All scale bars represent 4 mm.

Apiomerus maya Dispons, 1971

Figs 1B, 2B, 2H, 3B, 3F, 4

Apiomerus maya Dispons, 1971: 9. Holotype: ♂, Guatemala; ISNB.

Apiomerus maya: Maldonado (1990: 6) (catalog).

Revised diagnosis: Recognized by a combination of the following characteristics: (1) small size (<14 mm in length) and predominantly brown body and forewings, (2) males with lyre-shaped medial process of the pygophore with broadly spaced, slightly curved rami, (3) pair of strongly developed triangular projections near base of the dorsal phallothecal sclerite, (4) short, broad, flat, and round basal dorsolateral sclerites of the endosoma with longitudinal striations, and (5) about 26 endosomal denticles that are arranged into two longitudinal rows of about 13 pairs.

Redescription: Male: Small, 11.91–12.53 mm in length, width across humeral angles 3.67–3.96 mm (n=5). **COLORATION:** Mostly black; anterior pronotal lobe dark brown, posterior pronotal lobe brown (Fig. 1B); corium brown, only veins near forewing membrane white or pale-yellow, quadrate cell of the corium is not outlined in white or pale-yellow; entire forewing membrane brown; basal spot of connexivum 7 roughly twice the size of marking on the preceding segment (from dorsal view); lateral spots of abdominal sterna absent. **STRUCTURE:** Medial process of pygophore lyre-shaped in caudal view, rami widely separated and slightly bent away (laterally) from one another midway along their length (Fig. 2B); paramere weakly bent, with bristles subequal to or slightly longer than its maximal width (Fig. 2H); dorsal phallothecal sclerite arrow-shaped in dorsal view, with pair of strongly developed triangular projections near base (**tp**: Fig. 3B), apex of dorsal phallothecal sclerite strongly reflexed and deeply notched; basal dorsolateral sclerites of endosoma short, broad, flat, and round; dorsal surface of endosoma with about 26 denticles arranged into about 13 pairs forming two longitudinal rows; dorsolateral surface of endosoma with slight sclerotization near base.

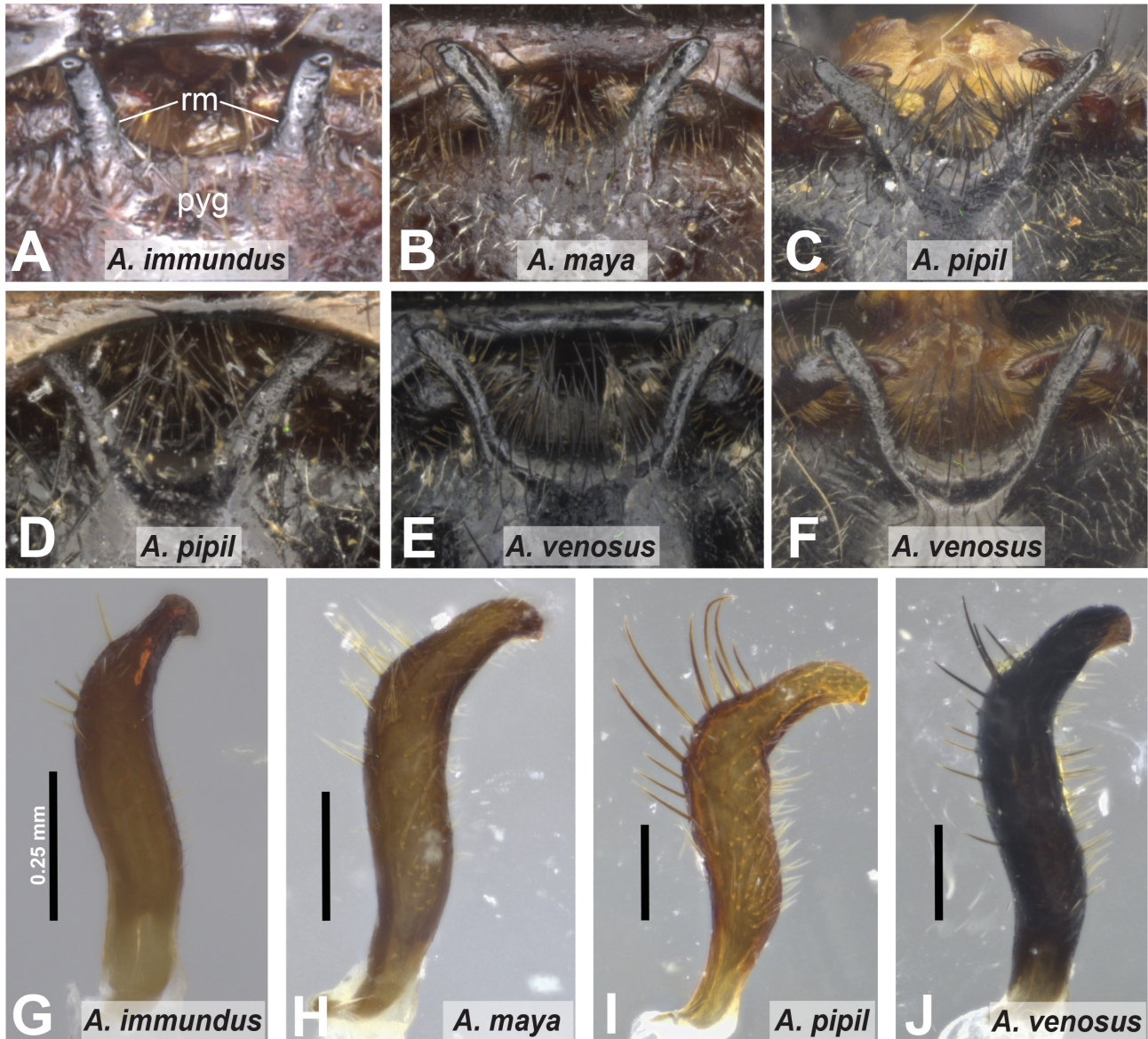


FIGURE 2. (A–F) Caudal views of the pygophores (**pyg**) of males of the *maya* species group displaying the bifid medial process with rami (**rm**). In these taxa, the base of the medial process is greatly reduced giving the impression of the rami being inserted directly on the posterior rim of the pygophore. The rami are often broadly spaced from one another and render the medial process either V-shaped, as frequently observed in *A. pipil* (see C), or lyre-shaped (most male *A. venosus*). Figs. A–F are not to scale. (G–J) Dissected right parameres. All scale bars for Figs. G–J represent 0.25 mm.

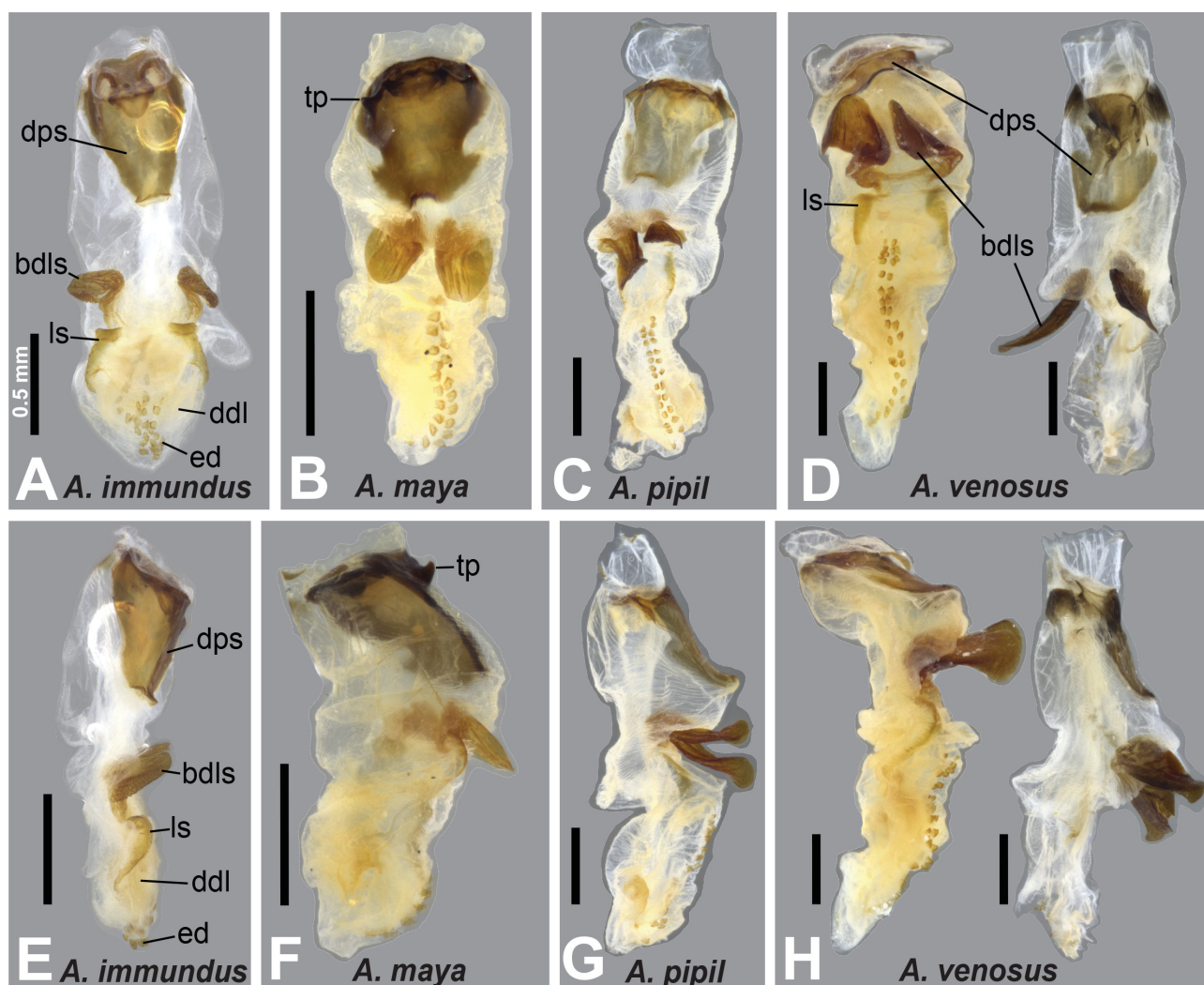


FIGURE 3. Dorsal (A–D) and lateral (E–H) views of the aedeagus of males of the *maya* species group. An arrow-shaped dorsal phallothecal sclerite (**dps**) is commonly seen in males of these species (subconical in *A. immundus*). Note the paired triangular projections (**tp**) positioned basally on the dps of *Apiomerus maya* (B & F); these projections are absent in other *maya* group taxa. The basal dorsolateral sclerites of the endosoma (**bdls**) can be short and round (*A. maya*), moderately elongated with fine sculpturing basally (*A. immundus*), or greatly elongated and slightly twisted (*A. pipil* and *A. venosus*). The number of peg-like endosomal denticles (**ed**) aligned longitudinally along the distal dorsal lobes of the endosoma (**ddl**) varies across the group. In some taxa, notably *A. immundus* and some *A. venosus*, lateral sclerotizations of the endosoma (**ls**) may be observed along the endosoma's proximal dorsolateral surface. All scale bars represent 0.5 mm.

Female: Small, about 11.75 mm in length, width across humeral angles about 3.47 mm (n=1).

Biology: This species has been collected from April to June at elevations ranging between 45–335 meters.

Distribution: *Apiomerus maya* inhabits the coastal lowlands of southeastern Mexico, Belize, and Guatemala.

Discussion: This species is represented by relatively few specimens compared to the other species in the *A. maya* species group. It is easily separated from both *A. pipil* and *A. venosus* by its small size, color, and from *A. immundus* by the unique morphology of the male aedeagus.

Type material examined: Holotype: ♂, **GUATEMALA:** exact locality and date unknown, leg. Rodriguez (UCR_ENT 00038047) (ISNB).

Additional specimens examined: 3 ♂♂, 2 ♀♀ (see Appendix).

Apiomerus pipil Dispons, 1971

Figs 1C, 2C, 2D, 2I, 3C, 3G, 4

Apiomerus pipil Dispons, 1971: 6. Holotype: ♂, San Salvador: La Libertad; ISNB.

Apiomerus guatemalensis Dispons, 1971: 10. Holotype: ♂, Guatemala; ISNB. **Syn. nov.**

Apiomerus pipil: Maldonado (1990: 7) (catalog).

Apiomerus guatemalensis: Maldonado (1990: 5) (catalog).

Revised diagnosis: Recognized by the combination of the following characteristics: (1) large size (>14 mm in length), (2) quadrate cell weakly delineated by light coloration, (3) basal spot of connexivum 7 that is roughly twice the size of the marking on the preceding segment (from dorsal view), (4) males with V-shaped medial process of pygophore with narrowly spaced, relatively straight rami, (5) elongate basal dorsolateral sclerites of the endosoma that are paddle-shaped (constricted through their midsection) and strongly twisted apically, (6) about 26 endosomal denticles that are arranged into two longitudinal rows of about 13 pairs (proximal denticles arranged into two orderly rows).

Redescription: Male: Medium to large, 14.72–17.18 mm in length, width across humeral angles 4.44–5.30 mm (n=6). **COLORATION:** Mostly black; anterior pronotal lobe dark brown, posterior lobe brown (Fig. 1C); corium predominantly black or dark brown, only veins near forewing membrane white or pale-yellow (tan in some older specimens), quadrate cell of the corium is not completely outlined in white or pale-yellow; entire forewing membrane often brown with dark spots, sometimes bicolored with basal portion darkly pigmented and distal portion lighter; basal spot of connexivum 7 roughly twice the size of marking on the preceding segment (from dorsal view); lateral spots of abdominal sterna 3–5 white or pale-yellow (in some specimens they may be tan). **STRUCTURE:** Medial process of pygophore V-shaped in caudal view (Fig. 2C–D); rami narrowly separated and relatively straight along their length; dorsal phallosclerite arrow-shaped in dorsal view, with pair of subtle rounded projections near base; apex of dorsal phallosclerite slightly reflexed and shallowly notched; basal dorsolateral sclerites of endosoma elongated, paddle-shaped, constricted at middle, slightly wider towards apex, and outwardly rotated apically; dorsal surface of endosoma with about 26 denticles arranged into two longitudinal rows comprised of about 13 pairs; dorsolateral surface of endosoma with slight sclerotization near base.

Female: Large, 17.42–19.29 mm in length, width across humeral angles 5.34–5.86 mm (n=5).

Biology: Specimens have been collected between elevations of 50–1400 m. Adults are typically active from June through September.

Distribution: *Apiomerus pipil* ranges from southern Mexico (Chiapas) to Costa Rica.

Discussion: Dispons (1971) described *A. pipil* and *A. guatemalensis* as two different species; the former was described from a pair collected from El Salvador and the later from a singleton male from Guatemala. We here synonymize the two, giving precedence to *A. pipil* acting as First Reviser following Art. 24.2 of ICZN (1999).

While Szerlip (1980) did not include *A. pipil* as a member of the *A. maya* species group, the types of *A. pipil* bear many similarities with respect to general habitus and genitalic morphology to those of *A. guatemalensis* and *A. venosus*. The male holotype of *A. pipil* in particular possesses an arrow-shaped dorsal phallosclerite, a pair of elongate basal dorsolateral sclerites of the endosoma, and longitudinal rows of peg-like endosomal denticles. Overall, this species is very similar to some *A. venosus* specimens. *Apiomerus pipil* tends to be slightly larger and lacks extensive white markings on the corial veins. The white or pale-yellow markings of the abdomen roughly double in size posteriorly on each successive connexivum. The rami on the pygophore are inserted much closer to one another than those of *A. venosus*.

In his unpublished dissertation, Szerlip (1980) gave names to two other putative new species in the *A. maya* species group, “*Apiomerus azteca*” and “*Apiomerus maculatus*.” He concluded that *A. guatemalensis* was different from these based on the elongate pointed shape of its basal dorsolateral endosomal sclerites. The types of *A. guatemalensis* and *A. pipil* share many similarities with other specimens from the same region that Szerlip had identified as either “*Apiomerus azteca*” and “*Apiomerus maculatus*.” We have observed plasticity in these structures however and argue that their shape is not consistent enough to warrant recognition of four distinct species.

Type material examined:

Apiomerus pipil Dispons, 1971. Holotype: ♂, **EL SALVADOR: La Libertad:** San Salvador, 1-Jul-1954, J. Bechyné (UCR_ENT 00038053) (ISNB). Allotype: ♀, same locality, date and collector as holotype (UCR_ENT 00038054) (ISNB).

Apiomerus guatemalensis Dispons, 1971. Holotype: ♂, GUATEMALA: exact locality and date unknown, Gisquière (UCR_ENT 00038050) (ISNB); in poor condition with both antennae and the entire right foreleg missing and forewing membranes severely tattered. The total body length (including the apex of the forewings) that Dispons (1971) recorded (11 mm) is quite shorter than what we measured (14.72 mm).

Additional specimens examined: 38 ♂♂, 55 ♀♀ (see Appendix).

Apiomerus venosus Stål, 1872

Figs 1D, 2E, 2F, 2J, 3D, 3H, 4, 5

Apiomerus venosus Stål, 1872: 97. Syntypes: ♂, ♀, Mexico; NHRS.

Apiomerus tristis Champion, 1899: 232, 238. Syntypes: ♂, ♀, Mexico: Tepic; BMNH. **Syn. nov.**

Apiomerus venosus: Stål (1872: 97) (original description), Lethierry & Severin (1896: 146) (catalog), Champion (1899: 233) (key), Wygodzinsky (1949: 18) (catalog), Costa Lima *et al.* (1951: 342) (revision), Maldonado (1990: 9) (catalog).

Apiomerus tristis: Wygodzinsky (1949: 18) (catalog), Costa Lima *et al.* (1951: 343) (revision), Maldonado (1990: 9) (catalog).

Revised diagnosis: Recognized by a combination of the following characteristics: (1) relatively large size (>14 mm in length), (2) well delineated quadrate cell, (3) basal spot of connexivum 7 that is roughly equal in size to or only slightly larger than marking on the preceding segment (from dorsal view), (4) males with lyre-shaped medial process of pygophore with broadly spaced, slightly curved rami, (5) elongate and relatively broad paddle-shaped basal dorsolateral sclerites of the endosoma, and (6) large number of endosomal denticles (about 40), the basal most of which are clustered rather than arranged into two orderly rows.

Redescription: Male: Medium to large, 14.37–16.30 mm in length, width across humeral angles 4.49–4.94 mm (n=5). **COLORATION:** Mostly black; anterior pronotal lobe dark brown or black, posterior pronotal lobe and legs dark brown or black (Fig. 1D); corium black or dark brown, majority of veins white or pale-yellow, usually with all or a majority (3 sides) of the quadrate cell and basal portions of most veins completely outlined; forewing membrane bicolored with basal portion pigmented and distal portion hyaline; basal spot of connexivum 7 roughly the same size as or only slightly larger than marking on the preceding segment (from dorsal view); lateral spots of abdominal sterna 3–5 white or pale-yellow. **STRUCTURE:** Medial process of pygophore lyre-shaped in caudal view (Fig. 2E–F); rami widely separated and slightly bent away (laterally) from one another midway along their length; paramere weakly bent, with bristles subequal to or slightly longer than its maximal width (Fig. 2J); dorsal phallosclerite arrow-shaped in dorsal view, without pair of triangular projections near base, apex of dorsal phallosclerite slightly reflexed and shallowly notched; basal dorsolateral sclerites of endosoma elongated, broad at base, tapering distally and slightly rounded and hooked at apex, slightly rotated along length; dorsal surface of endosoma with about 40 denticles total that are clustered proximally and arranged into two longitudinal rows apically; dorsolateral surface of endosoma with slight to moderate sclerotization near base.

Female: Large, 17.50–18.47 mm in length, width across humeral angles 5.29–5.62 mm (n=5).

Biology: Specimens have been collected at elevations ranging from 100–2,000 meters and adults are typically active during June, July, and August.

Distribution: Common throughout central and southern Mexico and has been collected from Guatemala too.

Discussion: *Apiomerus venosus* displays polychromatism across its range with many central and western populations being very darkly colored (e.g., pronotum, corium, and legs black) and some eastern populations being much lighter in color overall (e.g., pronotum, corium, and legs light brown, see Fig. 4). This aptly named species has conspicuous white veins over most of the corium. In some western (Jalisco and Nayarit) and eastern (Chiapas) populations however, the extent of white coloring is limited to portions of the quadrate cell and apical margins of the corium. Stål described *A. venosus* based on male and female syntypes from Mexico which are housed at the NHRS. We here designate a male specimen (NHRS-GULI 000003183 = UCR_ENT 00041023) as the lectotype (Fig. 5A–C). Szerlip (1980) selected Champion's male syntype of *A. tristis* (UCR_ENT 00048736) to serve as the lectotype but never published this act in a Code-compliant way. We were able to examine an image (Fig. 5D) of this specimen which is housed at the BMNH and here formally designate it as the lectotype of *A. tristis*. The main differences between this species and *A. venosus* are wing color (a highly plastic trait, see Fig. 4) and (as noted in Szerlip's description of the dissected genitalia) the number of endosomal denticles, 19 pairs of the former vs. 22–24 pairs of the latter (another trait that exhibits some plasticity and admittedly difficult to quantify for some specimens). Based on

Szerlip's description of this specimen and careful examination of other *A. maya* species group specimens collected near the type locality in Nayarit, Mexico which we held to be this species, *A. tristis* appears to be nothing more than a darker geographical variant of *A. venosus*. Therefore, we here synonymize the former with the latter.



FIGURE 4. Examples of intraspecific polychromatism across ranges of *maya* species group taxa.

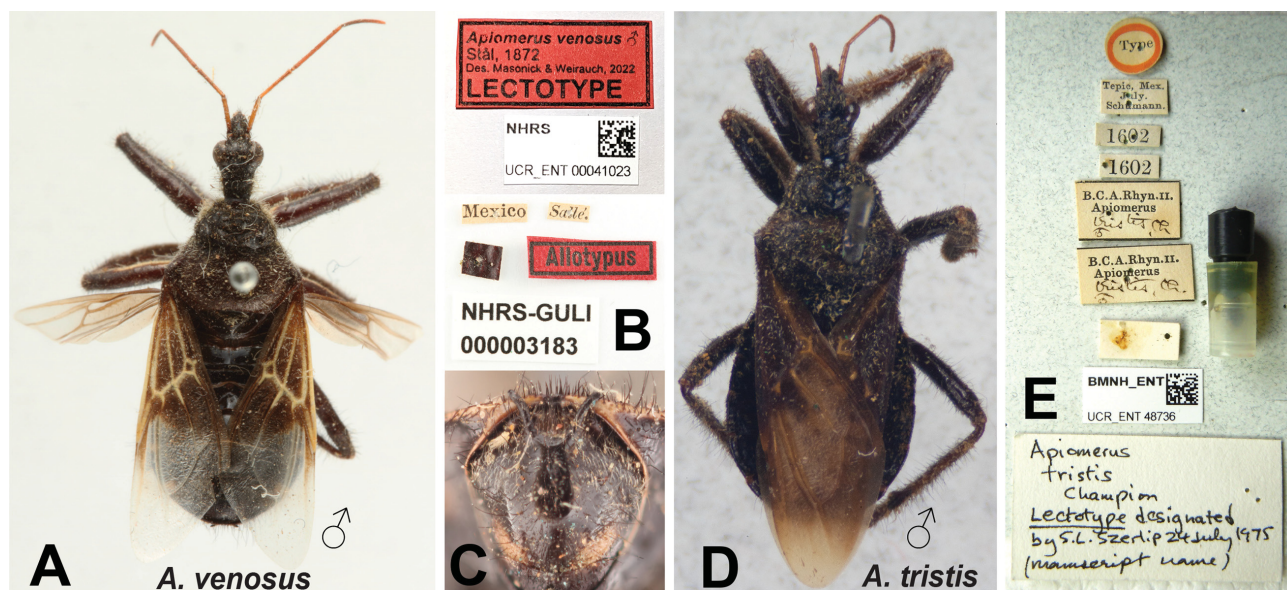


FIGURE 5. *Apimerus venosus* lectotype dorsal habitus (A), specimen labels (B), and caudal view of pygophore (C). The “Allotypus” label associated with this specimen is a curatorial artifact. Dorsal habitus (D) and labels (E) of the *A. tristis* lectotype (UCR_ENT 00048736). Figures A and D are not to scale. A–C photographed by Gunvi Lindberg (© 2022 NHRS). Original photos cropped, light levels and contrast adjusted. Made available by the Swedish Museum of Natural History under Creative Commons Attribution 4.0 International Public License, CC-BY 4.0.

Type material examined:

Apimerus venosus Stål, 1872. Lectotype (present designation): ♂, **MEXICO**: exact locality and date unknown, Sallé (NHRS-GULI 000003183, UCR_ENT 00041023) (NHRS). We examined photographs of Stål's syn-

type series of *A. venosus* (4 ♂♂, 6 ♀♀) housed at the NHRS. Images of these are available at http://www3.nrm.se/en/het_nrm/v/apiomerus_venosus.html and the Heteroptera Species Pages (<http://research.amnh.org/pbi/heteropterasespeciespage>).

***Apiomerus tristis* Champion, 1899.** Lectotype (present designation): ♂, **MEXICO: Nayarit:** Tepic, July (year unknown), Schumann (UCR_ENT 00048736) (BMNH).

Additional specimens examined: 303 ♂♂, 357 ♀♀ (see Appendix).

Acknowledgments

We dedicate this revision to the late Sigurd Szerlip whose Ph.D. dissertation served as the foundation for the present study. We also wish to express our sincere gratitude to Dimitri Forero who shared his invaluable expertise regarding apiomerine systematics and morphology; Dávid Rédei and Hécio Gil-Santana for providing thorough reviews and comments that improved the manuscript; to the following curators and collection managers who provided specimen loans: R. T. Schuh and Christine Johnson (AMNH), Bruce Gill (BDGC), Norman Penny (CAS), R. G. Footitt (CNC), Rick Hoebeke and Jim Liebherr (CUIC), David Rider (DAR), James Boone (FMNH), Susan Halbert and David Ziesk (FSCA), Dávid Rédei (HNHM), Jim Lewis (INBIO), Jerome Constant (ISNB), Zachary Falin (KU), Brian Brown and Weiping Xie (LACM), Diego Leonardo Carpintero (MACN), Larry Huldén (MZH), Carlos José Einicker Lamas (MZSP), Edward Riley (TAMU), Cheryl Barr (UCB), Steve Heydon (UCD), Doug Yanega (UCR), Philip Clausen (UMSP), Harry Brailovsky (UNAM), Thomas Henry and Floyd Shockley (USNM), Willem Hogenes (ZMAN), and Tanja Kothe (ZSM); to Gunvi Lindberg (NHRS) who provided images of Stål's syntype series of *A. venosus*; to John Heraty, Erin Rankin, Mark Springer for reviewing drafts of this manuscript; and to past and present members of the Weirauch Heteropteran Systematics lab at UCR for their support and inspiring discourse. This study was funded by the NSF grants 093333853 and 1655769 awarded to Christiane Weirauch.

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APPENDIX

Material examined

Apiomerus maya Dispos, 1971

Total non-type records reported: 5; total adult male: 3; total adult female: 2

Other specimens examined: **BELIZE: Cayo:** Never Delay, [17.316°N, 88.75°W], Aug-1959, N. L. H. Krauss, 1♂ (UCR_ENT 00010291) (AMNH). **GUATEMALA: Peten:** Tikal, [17.217°N, 89.623°W], 21-Jun-1975, J. Hafernik, 1♂ (UCR_ENT 00031619) (TAMU). **MEXICO: Campeche: None or unknown Co.:** Escarcega El Tormento, [18.6°N, 90.733°W], 23-Jun-1985, M. Vertiz, 1♂ (UCR_ENT 00025423) (IBUNAM). **Veracruz: None or unknown Co.:** 27 mi W. Cotaxtla, [18.832°N, 96.801°W], 27-Jun-1962, D. H. Janzen, 1♀ (UCR_ENT 00032600) (UCB). Dos Amates Mun. Catemaco, [18.492°N, 95.060°W], Aug-1974, P. Hubbel, 1♀ (UCR_ENT 00013169) (UMSP).

Apiomerus pipil Dispos, 1971

Total non-type records reported: 93; total adult female: 55; total adult male: 38

Other Specimens Examined: **COSTA RICA: Guanacaste:** “3 km NO de Nacaome, P. N. Barra Honda”, [10.212°N, 85.302°W], 5-Jul-1992–27-Jul-1992, M. Reyes, 1♂ (UCR_ENT 00014193) (INBIO). “3 km SE of Rio Naranjo, Finca Montezuma”, 5-Nov-1991–16-Nov-1991, A. S. Menke, 1♂ (UCR_ENT 00009589), 1♀ (UCR_ENT 00009590) (USNM). “7 km NW of Canas, Finca La Pacifica”, [10.461°N, 85.145°W], 8-Jul-1969–15-Jul-1969, D. H. Janzen, 1♀ (UCR_ENT 00009591) (USNM). “Comelco, 8 km NW Bagaces”, [10.569°N, 85.306°W], 24-May-1972, P. A. Opler, 1♀ (UCR_ENT 00032656) (UCB). “Estacion Las Pailas, P. N. Rincon de la Vieja”, [10.786°N, 85.292°W], 27-Jul-1992–15-Aug-1992, D. Garcia, 1♀ (UCR_ENT 00014195) (INBIO). “Estacion Maritza, Lado oeste del Volcan Orosi”, [10.956°N, 85.495°W], Aug-1990, Parataxonomos curso, 2♂ (UCR_ENT 00014190, UCR_ENT 00014191) (INBIO). “Finca Jenny, 30 km norte de Liberia”, 5-Aug-1993–26-Aug-1993, E. Araya, 1♂ (UCR_ENT 00014187) (INBIO). “Finca La Pacifica, 5 km NW Canas”, [10.457°N, 85.128°W], 20-Jul-1973, J. Doyen & P. A. Opler, 1♀ (UCR_ENT 00032657) (UCB). “La Pacifica, 4 km NW of Canas”, [10.458°N, 85.125°W], 2-Jun-1973–4-Jun-1973, P. A. Opler, 1♂ (UCR_ENT 00032654) (UCB); 7-Oct-1973–10-Oct-1973, P. A. Opler, 1♀ (UCR_ENT 00032658) (UCB). “Los Almendros, P. N. Guanacaste”, [10.224°N, 85.112°W], 13-Oct-1993–3-Nov-1993, K. Martinez, 1♂ (UCR_ENT 00014192) (INBIO). “Cerro El Hacha, 12 km SE de La Cruz”, [11°N, 85.5°W], Jun-1988, Unknown, 1♂ (UCR_ENT 00014188) (INBIO); Sep-1991, “E. Lopez, R. Espinoza”, 1♀ (UCR_ENT 00014194) (INBIO). “Estacion Santa Rosa”, [10.839°N, 85.618°W], Jun-1989, Unknown, 1♂ (UCR_ENT 00014189) (INBIO). “Palo Verde”, [10.35°N, 85.35°W], 5-Aug-1974, Lauren Green, 1♂ (UCR_ENT 00032653) (UCB). “Rincon de la Vieja Las Pailas”, [10.783°N, 85.35°W], 10-Sep-2009, D. Maslov, 1♀ (UCR_ENT 00003209) (UCR). **Puntarenas:** “Finca Los Leiton. San Luis de Monteverde”, Sep-1991, N. Obando, 1♀ (UCR_ENT 00014196) (INBIO). **EL SALVADOR: Ahuachapan:** “Bosque El Imposible”, [13.866°N, 89.983°W], 18-Jun-1979, R. D. Cave, 1♂ (UCR_ENT 00011723) (FSCA). **Chalatenango:** “La Palma”, [14.316°N, 89.166°W], 7-Jul-1959–9-Jul-1959, J. Bechyne, 1♀ (UCR_ENT 00037914) (ISNB). **Cuscatlan:** “Rosario”, [13.7667°N, 88.9167°W], 18-Jun-1953, Salazar, 1♂ (UCR_

ENT 00008942) (USNM). **La Libertad**: “2.5 W of Quezaltepeque”, [13.833°N, 89.266°W], 3-Jul-1961, M. E. Irwin, 1♂ (UCR_ENT 00043430) (UCD); 3-Aug-1961, Unknown, 1♀ (UCR_ENT 00001093) (UCR); 12-Aug-1961, M. E. Irwin, 1♀ (UCR_ENT 00043433) (UCD). “3 mi S of Quezaltepeque”, [13.789°N, 89.267°W], 19-Jul-1961, M. E. Irwin, 1♂ (UCR_ENT 00001089) (UCR); 18-Aug-1961, M. E. Irwin, 1♀ (UCR_ENT 00001091) (UCR). “3 mi W of Quezaltepeque”, [13.833°N, 89.312°W], 1-Aug-1961, M. E. Irwin, 1♂ (UCR_ENT 00005759) (CAS), 1♂ (UCR_ENT 00043431) (UCD), 1♂ (UCR_ENT 00001090) (UCR). “6 mi W. Quezaltepeque”, [13.833°N, 89.356°W], 12-Aug-1963, D. A. Cavagnaro & M. E. Irwin, 1♀ (UCR_ENT 00005762) (CAS). “Hacienda Argentina”, [13.533°N, 89.533°W], 17-Jun-1960, J. Bechyne, 3♂ (UCR_ENT 00037904-UCR_ENT 00037906), 5♀ (UCR_ENT 00037907-UCR_ENT 00037911) (ISNB). **Morazan**: “Perquin”, [13.95°N, 88.166°W], 22-Sep-1959, J. Bechyne, 1♂ (UCR_ENT 00037902), 1♀ (UCR_ENT 00037903) (ISNB). **San Salvador**: “San Salvador, Lomas Verdes”, [13.708°N, 89.203°W], 1964, J. C. Vega Jr., 2♀ (UCR_ENT 00032308, UCR_ENT 00032309) (TAMU). “Cerro S. Jacinto”, [13.670°N, 89.158°W], 17-Sep-1959, J. Bechyne, 1♀ (UCR_ENT 00037913) (ISNB). “San Salvador”, [13.708°N, 89.203°W], 27-Jun-1958, L. J. Bottimer, 1♀ (UCR_ENT 00020464) (CNC). **Unknown**: “La Ceiba”, 16-Jul-1925, K. A. Salman, 1♀ (UCR_ENT 00008943) (USNM). unknown, 01-Jan-1950, Alfredo, Martinez, & Cuestas, 2♀ (UCR_ENT 00010030, UCR_ENT 00010031) (AMNH), 1♂ (UCR_ENT 00032651) (UCB). **GUATEMALA: Escuintla**: “Finca El Zapote, Zapote”, [14.383°N, 90.866°W], 18-Jul-1948, R. D. Mitchell, 1♀ (UCR_ENT 00011122) (FMNH). “6.3 mi NE Escuintla”, [14.254°N, 90.915°W], 30-Jul-1966, University of Kansas Mexico Expedition, 2♀ (UCR_ENT 00035237, UCR_ENT 00035238) (KU). “Escuintla”, [14.305°N, 90.785°W], 22-May-1923, E. G. Smyth, 1♀ (UCR_ENT 00005761) (CAS); no date provided, Crawford, 10♂ (UCR_ENT 00019266-UCR_ENT 00019275), 4♀ (UCR_ENT 00019276-UCR_ENT 00019279) (CAS). “Nueva Concepcion”, [14.2°N, 91.3°W], 17-Aug-1963, D. A. Cavagnaro & M. E. Irwin, 1♂ (UCR_ENT 00005760) (CAS); 17-Aug-1963, D. Q. Cavagnaro & M. E. Irwin, 1♀ (UCR_ENT 00043432) (UCD). **Suchitepequez**: “Finca El Cipres”, [14.629°N, 90.494°W], Jun-1926, J. R. Slevin, 1♂ (UCR_ENT 00032652), 2♀ (UCR_ENT 00032655, UCR_ENT 00032659) (UCB). **HONDURAS: El Paraíso**: “El Tablon”, [13.883°N, 86.85°W], 18-Aug-1988, Unknown, 1♂ (UCR_ENT 00009587), 1♀ (UCR_ENT 00009588) (USNM). **Francisco Morazan**: “30 km ESE Tegucigalpa, Zamorano”, [13.977°N, 86.948°W], 8-Sep-1980, Pineda, 1♀ (UCR_ENT 00011724) (FSCA); 8-Sep-1980, F. Pineda, 1♀ (UCR_ENT 00011726) (FSCA); 8-Jan-1980, N. Pavon, 1♀ (UCR_ENT 00011725) (FSCA); 3-Sep-1980, P. Pereira, 1♀ (UCR_ENT 00011727) (FSCA); 25-Sep-1980, “S. Ruiz, H. Piveda”, 1♀ (UCR_ENT 00011728) (FSCA). “37 km E Tegucigalpa”, [14.081°N, 86.863°W], 30-May-1982, R. W. Jones, 1♀ (UCR_ENT 00032178) (TAMU). “E.A.P. 30 km SE Tegucigalpa”, [13.890°N, 87.009°W, Aug-1985, Ronaldo Sequeira, 2♀ (UCR_ENT 00032316, UCR_ENT 00032317) (TAMU). “Tegucigalpa”, [14.1°N, 87.216°W], 1952, George Frey, 1♂ (UCR_ENT 00017083) (AMNH). **Unknown**: “Escuela Agricola Panamericana, El Zamorano”, [14°N, 87°W], Sep-1953, N. L. H. Krauss, 1♀ (UCR_ENT 00017084) (AMNH). **NICARAGUA: Granada**: “Domitila Res. Silvestre Priv., Sendero Las Mariposas”, [11.709°N, 85.953°E], 9-Jun-2005, C. B. Barr, 1♀ (AMNH_PBI 00218895) (UCR). “Domitila Reserve”, [11.701°N, 85.950°W], 9-Jun-2007–14-Jun-2007, O. Merkl, N. Balint & T. Nemeth, 2♂ (UCR_ENT 00012299, UCR_ENT 00012300), 4♀ (UCR_ENT 00012301-UCR_ENT 00012304) (HNHM). **Managua**: “Managua”, [12.150°N, 86.268°W], Aug-1958, H. & J. Bredo, 1♀ (UCR_ENT 00037912) (ISNB). **Matagalpa**: “11 of mi SE Ciudad Dariol”, [12.615°N, 86.007°W], 14-Jul-1974, C. W. & L. O’Brien & G. B. Marshall, 1♀ (UCR_ENT 00009592) (USNM).

Apiomerus venosus Stål, 1872

Total records reported: 660; total adult female: 357; total adult male: 303

Specimens Examined: **MEXICO: Chiapas: None or unknown Co.**: 16 km W Ocozocautla, Aguacero, [16.754°N, 93.514°W], 31-May-1990, B. Gill, 1♀ (UCR_ENT 00040646) (BDGC); 16 Jun 1900, D. B. Thomas, 2♀ (UCR_ENT 00040654, UCR_ENT 00040655) (BDGC). 17 mi SE Teopisca, Rt. 24, [16.357°N, 92.288°W], 3-Apr-1969–4-Jun-1969, J. E. H. Martin, 1♀ (UCR_ENT 00020510) (CNC). Agua Cero, 40 km W Tuxtla Gutierrez, [16.748°N, 93.492°W], 21-Jun-1987, Unknown, 1♀ (UCR_ENT 00031799) (TAMU), 1♂ (UCR_ENT 00040635) (BDGC). El Zapotal, 2 mi S. Tuxtla Gutierrez, [16.720°N, 93.116°W], 15-Jul-1956, D. D. Linsdale, 1♀ (UCR_ENT 00032914) (UCB); 11-Jul-1957, J. A. Chemsak & B. J. Rannels, 1♀ (UCR_ENT 00032922) (UCB); 10-Jul-1957, P. D. Hurd, 1♀ (UCR_ENT 00032923) (UCB). Lagos de Montebello, 25 mi E. La Trinitaria, [16.099°N, 91.680°W], 17-Aug-1966, D. E. Breedlove & J. Emmel, 1♀ (UCR_ENT 00019308) (CAS). Municipio Chiapa de Corzo, El Chorreadero, [16.7°N, 93°W], 16-Aug-1976, D. E. & J. A. Breedlove, 1♀ (UCR_ENT 00019310) (CAS). Municipio Venustiano Carranza, Aguacatenango, [16.334°N, 92.562°W], 26-Jun-1965, D. E. Breedlove, 1♀ (UCR_ENT 00019292) (CAS). Municipio de Angel Albino Corzo, above Finca Custepec, [16.166°N, 93.25°W], 11-Aug-1981, D. E. & P. M. Breedlove, 2♀ (UCR_ENT 00019305, UCR_ENT 00019306) (CAS); 24-Jun-1981, D. E. & P. M. Breedlove, 1♀ (UCR_ENT 00019307) (CAS). Municipio de Ixtapa, between Atzalan and El

Palmar, [16.806°N, 92.902°W], 13-Aug-1981, D. E. & P. M. Breedlove and C. G. Whitefield, 1♂ (UCR_ENT 00019287), 4♀ (UCR_ENT 00019295-UCR_ENT 00019298) (CAS). Municipio de Ocosingo, second ridge NE of Las Margaritas, above La Soledad, [16.906°N, 92.093°W], 1-Jul-1981, D. E. & P. M. Breedlove, 2♀ (UCR_ENT 00019299, UCR_ENT 00019300) (CAS). Rosario Izapa, Volcan Tocana, [15.133°N, 92.1°W], May-1963, A. Martinez, 1♂ (UCR_ENT 00041188) (MACN). SE Cerro Tres Picos, Montane rain forest, [16.208°N, 93.6°W], 28-May-1972, D. E. Breedlove, 2♀ (UCR_ENT 00019294, UCR_ENT 00019301) (CAS). San Christobal, 27 mi. W, 1-Jul-1957, J. A. Chemsak, B. J. Rannells, 1♀ (UCR_ENT 00032889) (UCB). Sumidero Canyon, Tuxtla Gutierrez, [16.831°N, 93.093°W], 21-Jul-1963–22-Jul-1963, E. M. Fisher, 1♀ (UCR_ENT 00010944) (LACM); 30-Apr-1985, D. B. Thomas, 1♂ (UCR_ENT 00040633) (BDGC); 16-Oct-1988, D. B. & A. M. Thomas, 1♂ (UCR_ENT 00040638) (BDGC). Teopisca, 2 mi W, [16.532°N, 92.500°W], 4-Aug-1957, Unknown, 1♂ (UCR_ENT 00032887) (UCB). Teopisca, Hwy. 24, [16.532°N, 92.469°W], 24-May-1969, W. R. M. Mason, 1♂ (UCR_ENT 00020501) (CNC). 10 km W of Tuxtla Gutierrez, [16.749°N, 93.210°W], 23-Jun-1989, P. K. Lago & E. Zuccaro, 1♀ (UCR_ENT 00021484) (DAR). 10 km NE Comitán on road to Las Margaritas, [16.307°N, 92.057°W], 1-Jul-1981, D. E. & P. M. Breedlove, 1♂ (UCR_ENT 00019283), 3♀ (UCR_ENT 00019302-UCR_ENT 00019304) (CAS). 10 mi N of Chiapa de Corzo, [16.846°N, 93.007°W], 12-Jul-1955, R. E. Beer & party, 1♀ (UCR_ENT 00035314) (KU). 13 mi N of Arrivaca, 26-May-1983, C. W. & L. O'Brien & G. B. Marshall, 2♂ (UCR_ENT 00021450, UCR_ENT 00021451), 1♀ (UCR_ENT 00021452) (DAR). 13 mi SW of Cintalapa, [16.507°N, 93.900°W], 19-Aug-1963, H. V. Weems, Jr., 1♀ (UCR_ENT 00011635) (FSCA). 17 km N Tuxtla Gutierrez, [16.903°N, 93.116°W], 15-Aug-1962, J. M. Campbell, 1♀ (UCR_ENT 00020515) (CNC). 18 mi W Ocozocoautla, [16.754°N, 93.636°W], 26-Jun-1965, A. Raske, 1♂ (UCR_ENT 00032909) (UCB). 2 Km. S of Chicoasen, [16.942°N, 93.164°W], 18-Jun-1989, P. K. Lago & E. B. Lago, 2♀ (UCR_ENT 00021453, UCR_ENT 00021454) (DAR). 2 to 4 km W. of Soyalo on rd. to Chicoasen, [16.889°N, 92.951°W], 7-Sep-1974, D. E. & J. A. Breedlove, 2♀ (UCR_ENT 00005752, UCR_ENT 00005753) (CAS). 20 km N Acala on rd. along Rio Grimalva, [16.734°N, 92.806°W], 30-Jul-1981, D. E. & P. M. Breedlove, 1♂ (UCR_ENT 00019284) (CAS). 20 km N Tuxtla Gutierrez, [16.929°N, 93.116°W], Jul-1965, D. E. Breedlove, 1♂ (UCR_ENT 00019286) (CAS); 29-Oct-1965, D. E. Breedlove, 1♀ (UCR_ENT 00019293) (CAS). 20 km S Tuxtla, [19.318°N, 99.101°W], 2-Aug-1962, H. E. Milliron, 1♂ (UCR_ENT 00020484), 1♀ (UCR_ENT 00020465) (CNC). 20 mi W. Ocozocoautla, [16.754°N, 93.666°W], 26-Jun-1965, A. Raske, 1♀ (UCR_ENT 00032888) (UCB). 20-25 mi N of Huixtla, [15.466°N, 92.464°W], 1-Jun-1969, H. J. Teskey, 1♀ (UCR_ENT 00020505) (CNC). 21 km N on road from Tuxtla Gutierrez to Chicoasan, [16.935°N, 93.156°W], 14-Jul-1981, D. E. & P. M. Breedlove, 2♂ (UCR_ENT 00019281, UCR_ENT 00019282) (CAS). 29 mi SW of Cintalapa, [16.434°N, 94.028°W], 7-Jul-1971, Clark, Murray, Hart, & Schaffner, 1♀ (UCR_ENT 00035265) (KU). 3 km W of Cinco Cerros, [16.478°N, 94.011°W], 26-Jun-1987, W. F. Chamberlain, 1♀ (UCR_ENT 00031800) (TAMU). 4 mi SW Simojovel, [17.097°N, 92.751°W], 18-Mar-1953, R. C. Bechtel & E. I. Schlinger, 1♀ (UCR_ENT 00032921) (UCB). 4 mi. SE Soyalo, [16.848°N, 92.879°W], 4-Jul-1956, D. D. Linsdale, 1♀ (UCR_ENT 00032913) (UCB). 5 km S Chicoasen, [16.914°N, 93.163°W], 10-Jun-1989, D. Thomas & H. Howden, 1♀ (UCR_ENT 00040652) (BDGC). 5 km S Palenque, [17.464°N, 91.981°W], 25-Jun-1990, Mendoza, 1♂ (UCR_ENT 00040634) (BDGC). 6 mi E San Cristobal, [19.886°N, 100.377°W], 2-May-1969, J. E. H. Martin, 1♀ (UCR_ENT 00020513) (CNC). 65 km S. of Tuxtla Gutierrez along rd. to Nueva Concordia, [16.161°N, 93.116°W], 12-Sep-1974, D. E. & J. A. Breedlove, 2♀ (UCR_ENT 00005754, UCR_ENT 00005755) (CAS). Cascada El Aguacero about 20 km W. of Ocozocoautla, [16.754°N, 93.516°W], 24-Aug-1974, D. E. & J. A. Breedlove, 1♂ (UCR_ENT 00005749) (CAS). Chiapa de Corzo, [16.7°N, 93°W], 25-Jun-1965, C. Slobodchikoff, 1♀ (UCR_ENT 00032912) (UCB). Chiapas, [16.5°N, 91.75°W], no date provided, L. Hotzen, 1♀ (UCR_ENT 00032915) (UCB). Chicoasen, [16.966°N, 93.1°W], 30-Jul-1988, D. B. & A. M. Thomas, 1♀ (UCR_ENT 00040653) (BDGC). Cinco Cerros, 19-Jun-1989, S. Testa, P. K. Lago, 1♀ (UCR_ENT 00021459) (DAR); 31-May-1990, B. D. Gill, 1♂ (UCR_ENT 00040644), 1♀ (UCR_ENT 00040648) (BDGC). Cumbre de Arriaga, [16.233°N, 93.9°W], 18-Jun-1972, Unknown, 2♀ (UCR_ENT 00034383, UCR_ENT 00034384) (UMSP). El Aguacero, [16.757°N, 93.524°W], 24-Jun-1989, S. Testa & E. B. Lago, 1♂ (UCR_ENT 00021449) (DAR); 20-Jun-1989, P. K. & E. B. Lago, 1♀ (UCR_ENT 00021486) (DAR); 29-Jul-1988, D. B. & A. M. Thomas, 1♂ (UCR_ENT 00040629) (BDGC); 5-Jun-1990, B. Gill, 1♂ (UCR_ENT 00040640) (BDGC); Sep-1985, D. B. Thomas, 1♀ (UCR_ENT 00040656) (BDGC). El Sumidero, [16.75°N, 93.066°W], 16-Jun-1990, M. C. Thomas, 1♂ (UCR_ENT 00011625) (FSCA); 7-Jun-1969, J. E. H. Martin, 1♂ (UCR_ENT 00020486) (CNC); 18-Jun-1987, D. B. Thomas, 1♂ (UCR_ENT 00040636) (BDGC); 20-Oct-1986, D. Thomas & E. Fisher, 2♀ (UCR_ENT 00040649, UCR_ENT 00040650) (BDGC). Hwy 90 24 km E of San Cristobal, 26-May-1987, D. A. Rider, E. G., & T. J. Riley, 1♂ (UCR_ENT 00021467) (DAR). La Sepultura, [16.301°N, 93.720°W], 26-Jun-1988, D. B. & A. M. Thomas, 1♀ (UCR_ENT 00040657) (BDGC). Montane rain forest above Finca Custepec, [15.716°N, 92.966°W], 24-Jun-1981, D. E. & P. M. Breedlove, 1♂ (UCR_ENT 00019285) (CAS). Montebello National Park, [14.896°N, 92.281°W], 1-Jun-1965, J. E. H. Martin, 1♂ (UCR_

ENT 00020487) (CNC); 1-Aug-1969, J. E. H. Martin, 1♂ (UCR_ENT 00020488) (CNC); 1-Jun-1969, J. E. H. Martin, 2♂ (UCR_ENT 00020489, UCR_ENT 00020490), 1♀ (UCR_ENT 00020509) (CNC); 13-Jun-1969, H. J. Teskey, 1♀ (UCR_ENT 00020502) (CNC); 17-May-1969, H. J. Teskey, 2♀ (UCR_ENT 00020503, UCR_ENT 00020504) (CNC). Ocozocoautla, [16.754°N, 93.364°W], 22-Aug-1972, Carolyn Mullinex, 1♀ (UCR_ENT 00005756) (CAS). Parque Nacional El Sumidero, [16.831°N, 93.093°W], 23-Jun-1990, W. B. Warner, 1♂ (UCR_ENT 00011626) (FSCA). Pq. Nac. Sumidero, [16.831°N, 93.093°W], 13-Jun-1990, B. D. Gill, 3♂ (UCR_ENT 00040630-UCR_ENT 00040632), 5♀ (UCR_ENT 00040658-UCR_ENT 00040662) (BDGC); 29-May-1990, B. D. Gill, 2♂ (UCR_ENT 00040641, UCR_ENT 00040642) (BDGC); 7-Jun-1990, H. & A. Howden, 1♂ (UCR_ENT 00040643) (BDGC); 1-Jun-1990, B. D. Gill, 1♂ (UCR_ENT 00040645) (BDGC). Pueblo Nuevo, [15.209°N, 92.580°W], 20-Mar-1958, R. C. Bechtel & E. I. Schlinger, 2♂ (UCR_ENT 00032885, UCR_ENT 00032886) (UCB). Ruinas Chinkultic, [16.771°N, 93.090°W], 3-Jun-1990, B. D. Gill, 1♀ (UCR_ENT 00040647) (BDGC). Sumidero, [16.8333°N, 93.0833°W], 8-Jul-1955, P. & C. Vaurie, 2♂ (UCR_ENT 00017079, UCR_ENT 00017080), 1♀ (UCR_ENT 00017094) (AMNH). Sumidero National Park, [16.831°N, 93.093°W], 15-Jun-1989, P. K. Lago & S. Testa, 5♂ (UCR_ENT 00021468-UCR_ENT 00021472), 10♀ (UCR_ENT 00021455-UCR_ENT 00021458, UCR_ENT 00021473-UCR_ENT 00021477, UCR_ENT 00021485) (DAR); 21-Jun-1989, E. Zuccaro & P. K. Lago, 4♀ (UCR_ENT 00021478-UCR_ENT 00021481) (DAR); 17-Jun-1989, P. K. Lago & S. Testa, 2♀ (UCR_ENT 00021482, UCR_ENT 00021483) (DAR); 17-Jun-1989, H. Howden, D. Thomas & B. Ratcliffe, 1♂ (UCR_ENT 00040637), 1♀ (UCR_ENT 00040663) (BDGC). Teopisca, [16.516°N, 92.483°W], 27-May-1990, B. D. Gill, 1♀ (UCR_ENT 00040651) (BDGC). km 49 Tuxtla Gtz. Villa Flores, [16.75°N, 93.116°W], 12-Jul-1988, A. Cadena & L. Cervantes, 1♀ (UCR_ENT 00025457) (IBUNAM). “Municipio de Berriozabal. Dry flats near Berriozabal, [16.8°N, 93.266°W], 23-Aug-1981, D. E. & P. M. Breedlove & C. G. Whitefield, 1♀ (UCR_ENT 00019309) (CAS). unknown, no date provided, L. Hotzen, 1♀ (UCR_ENT 00008911) (USNM). **Tuxtla Gutierrez Municipality Co.:** 14 mi N. Tuxtla Gutierrez, [16.953°N, 93.116°W], 11-Jul-1952, E. E. Gilbert & C. D. MacNeil, 1♀ (UCR_ENT 00032919) (UCB). 19 mi SE Tuxtla Gutierrez, [16.555°N, 92.913°W], 23-Jul-1963, W. A. Foster, 1♀ (UCR_ENT 00032892) (UCB). **Colima: Manzanillo Co.:** Playa de Oro rd, 10 mi NW Manzanillo, [19.154°N, 104.424°W], 29-Aug-1970–30-Aug-1970, M. S. & J. S. Wasbauer, 1♀ (UCR_ENT 00043434) (UCD). **None or unknown Co.:** 10 mi S Tonila, [19.266°N, 103.602°W], 17-Jul-1953, C. & P. Vaurie, 1♂ (UCR_ENT 00017047) (AMNH). 10 mi W of Colima, [19.326°N, 103.845°W], 1-Aug-1954, M. Cazier, W. Gertsch, & Bradts, 2♀ (UCR_ENT 00017069, UCR_ENT 00017070) (AMNH). 4 Km SE Jiliotupa Arroyo el Salado, [19.053°N, 103.723°W], 21-Jul-2006, S. Zaragoza, 1♀ (UCR_ENT 00025631) (IBUNAM). Armeria, [18.933°N, 103.966°W], 21-Jul-1953, C. & P. Vaurie, 1♀ (UCR_ENT 00017068) (AMNH). Colima Vulcano, no date provided, L. Conrad, 1♂ (UCR_ENT 00017046) (AMNH). Volcan [de] Colima, [19.057°N, 104.290°W], no date provided, L. Conrad, 1♂ (UCR_ENT 00008910) (USNM); 1918, J. Laue, 1♀ (UCR_ENT 00035310) (KU). **Distrito Federal: None or unknown Co.:** Guadalupe Hidalgo, [19.478°N, 99.095°W], 1-Jul-1932, Unknown, 1♂ (UCR_ENT 00032906), 2♀ (UCR_ENT 00032930, UCR_ENT 00032931) (UCB). **Guerrero: None or unknown Co.:** 3.6 km S of Zumpango del Rio, Hwy 95, [17.619°N, 99.524°W], 7-Jul-1992, G. H. Nelson, 1♀ (UCR_ENT 00011637) (FSCA). Atoyac de Alvares, 33 km Atoyac- El Paraiso, [17.296°N, 100.268°W], 19-Jul-2005, L. Cervantes, R. Marino, & J. Calonico, 1♀ (UCR_ENT 00025647) (IBUNAM). 1.5 mi W of Mochitlan, [17.485°N, 99.309°W], 6-Aug-1962, University of Kansas Mexico Expedition, 6♂ (UCR_ENT 00035294-UCR_ENT 00035299), 6♀ (UCR_ENT 00035281-UCR_ENT 00035286) (KU). 10 km E of Tixtla, [17.566°N, 99.305°W], 16-Jul-1983, J. Chemsak & A. & M. Michelbacher, 1♂ (UCR_ENT 00032755), 4♀ (UCR_ENT 00032758-UCR_ENT 00032761) (UCB). 10.3 mi S of Iguala, [17.700°N, 100.366°W], 23-Jul-1981, Bogar, Schaffner, & Friedlander, 1♀ (UCR_ENT 00031785) (TAMU). 12 mi S Iguala, [18.185°N, 99.538°W], 29-Jul-1956, W. J. Gertsch, 1♀ (UCR_ENT 00017095) (AMNH). 13 km NW of Iguala, [17.931°N, 100.451°W], 12-Sep-1982, J. A. Powell & J. A. Chemsak, 3♀ (UCR_ENT 00032895-UCR_ENT 00032897) (UCB). 18 mi W Iguala, [17.849°N, 100.641°W], 19-Aug-1981, J. Chemsak & A. & M. Michelbacher, 2♀ (UCR_ENT 00032903, UCR_ENT 00032904) (UCB). 2.1 mi NE of Cacahuamilpa, [18.744°N, 99.535°W], 4-Jul-1987, Kovarik & Schaffner, 1♂ (UCR_ENT 00032337) (TAMU). 2.1 mi NW of Cacahuamilpa, [18.674°N, 99.560°W], 27-Jul-1983, Kovarik, Harrison, & Schaffner, 2♂ (UCR_ENT 00031780, UCR_ENT 00031781), 1♀ (UCR_ENT 00031798) (TAMU); 11-Aug-1978, Plitt & Schaffner, 1♀ (UCR_ENT 00031795) (TAMU). 2.5 mi E of Petaquillas, [17.485°N, 99.419°W], 1-Aug-1963, Naumann & Willis, 8♂ (UCR_ENT 00035254-UCR_ENT 00035261), 9♀ (UCR_ENT 00035267-UCR_ENT 00035275) (KU). 22 mi N of Chilpancingo, [17.967°N, 99.587°W], 24-Aug-1958, H. F. Howden, 1♂ (UCR_ENT 00020485) (CNC). 3 mi E of Petaquillas, [17.476°N, 99.424°W], 31-Jul-1969, Gordon Gordh, 1♀ (UCR_ENT 00035288) (KU). 32 km W of Iguala, [17.845°N, 100.671°W], 20-Jul-1983, J. Chemsak & A. & M. Michelbacher, 1♂ (UCR_ENT 00032884), 1♀ (UCR_ENT 00032890) (UCB). 38 km W of Iguala, [17.844°N, 100.728°W], 23-Jul-1983, J. Chemsak & A. & M. Michelbacher, 3♂ (UCR_ENT 00032764-UCR_ENT 00032766), 1♀ (UCR_ENT

00032771) (UCB). 4 mi W of Chilpancingo, [17.569°N, 99.565°W], 15-Jul-1984, Carroll, Schaffner, & Friedlander, 1♀ (UCR_ENT 00031796) (TAMU). 40.7 mi N of Zumpango del Rio, [18.244°N, 99.524°W], 2-Aug-1962, University of Kansas Mexico Expedition, 1♀ (UCR_ENT 00035289) (KU). 5 mi S & 2 mi E of Chilpancingo, [17.477°N, 99.467°W], 7-Aug-1962, M. G. Naumann, 4♀ (UCR_ENT 00035329-UCR_ENT 00035332) (KU). 5 mi S & 2.5 mi E of Chilpancingo, [17.497°N, 99.470°W], 1-Aug-1963, Naumann & Willis, 5♂ (UCR_ENT 00035242-UCR_ENT 00035246), 3♀ (UCR_ENT 00035333-UCR_ENT 00035335) (KU); 6-Aug-1962, University of Kansas Mexico Expedition, 1♂ (UCR_ENT 00035301) (KU); 4-Aug-1962, University of Kansas Mexico Expedition, 7♀ (UCR_ENT 00035320-UCR_ENT 00035326) (KU). 6 km S of Petaquillas, [17.431°N, 99.457°W], 28-Jul-1983, J. Chemsak & A. & M. Michelbacher, 3♀ (UCR_ENT 00032772-UCR_ENT 00032773, UCR_ENT 00032893) (UCB). 6 mi E of Xochipala, [17.793°N, 99.542°W], 13-Jul-1985, Jones & Schaffner, 1♀ (UCR_ENT 00031784) (TAMU). 6 mi NE of Tixtla de Guerrero, [17.645°N, 99.368°W], 16-Jul-1984, Carroll, Schaffner, & Friedlander, 2♂ (UCR_ENT 00031782, UCR_ENT 00031783), 1♀ (UCR_ENT 00031797) (TAMU). 6.2 mi SW of Xochipala, [17.752°N, 99.683°W], 6-Jul-1987, Kovarik & Schaffner, 1♀ (UCR_ENT 00031790) (TAMU). 7 mi S Chilpancingo, [17.448°N, 99.5°W], 20-Jul-1956, W. J. Gertsch, 1♀ (UCR_ENT 00017097) (AMNH). Acahuizotla, [17.383°N, 99.45°W], 22-Jun-1982, E. Barrera, 1♂ (UCR_ENT 00025468) (IBUNAM); 6-Jul-2005, H. Brailovsky & E. Barrera, 1♂ (UCR_ENT 00025640) (IBUNAM). Acapulco, [16.85°N, 99.916°W], 7-Aug-1936, C. H. Seevers, 1♂ (UCR_ENT 00011121) (FMNH). Chilpancingo, [17.55°N, 99.5°W], 28-Aug-1993, H. Brailovsky & E. Barrera, 1♀ (UCR_ENT 00025473) (IBUNAM); 17-Jul-1983, J. Chemsak & A. & M. Michelbacher, 12♂ (UCR_ENT 00032715-UCR_ENT 00032726), 7♀ (UCR_ENT 00032727-UCR_ENT 00032733) (UCB); 18-Jul-1983, J. Chemsak & A. & M. Michelbacher, 15♂ (UCR_ENT 00032734-UCR_ENT 00032746, UCR_ENT 00032882, UCR_ENT 00032883), 10♀ (UCR_ENT 00032747-UCR_ENT 00032754, UCR_ENT 00032762, UCR_ENT 00032763) (UCB). El Ocotito, [17.25°N, 99.566°W], 20-Jul-1962, H. E. Milliron, 2♂ (UCR_ENT 00020482, UCR_ENT 00020483), 2♀ (UCR_ENT 00020466, UCR_ENT 00020467) (CNC). Hoajojutla, [18.571°N, 99.583°W], 5-Jul-2005, H. Brailovsky & E. Barrera, 1♀ (UCR_ENT 00025630) (IBUNAM). Iguala, [18.35°N, 99.533°W], 21-Jul-1962, H. E. Milliron, 1♀ (UCR_ENT 00020516) (CNC). Iguala, [18.365°N, 99.550°W], 5-Jul-1979, H. Brailovsky, 1♀ (UCR_ENT 00025626) (IBUNAM). Petaquillas, [17.489°N, 99.455°W], 16-Jul-1983, J. Chemsak & A. & M. Michelbacher, 8♂ (UCR_ENT 00032868-UCR_ENT 00032875), 3♀ (UCR_ENT 00032899-UCR_ENT 00032901) (UCB); 27-Jul-1983, J. Chemsak & A. & M. Michelbacher, 2♂ (UCR_ENT 00032876, UCR_ENT 00032877), 2♀ (UCR_ENT 00032898, UCR_ENT 00032902) (UCB). Teloloapan, [18.35°N, 99.85°W], 18-Jul-1962, H. E. Milliron, 7♂ (UCR_ENT 00020491-UCR_ENT 00020497), 2♀ (UCR_ENT 00020511, UCR_ENT 00020512) (CNC). Zihuatanejo km 123 altamirano, [18.055°N, 100.969°W], 21-Jul-2005, L. Cervantes & R. Marino, 1♂ (UCR_ENT 00025679), 1♀ (UCR_ENT 00025680) (IBUNAM). Zumpango del Rio, [17.65°N, 99.5°W], 15-Aug-1960, W. Cutts, 1♀ (UCR_ENT 00020517) (CNC). **Jalisco: None or unknown Co.:** 28 mi East of Guadalajara, Mex, [20.672°N, 102.910°W], 15-Aug-1962, F. M. Hull, 1♀ (UCR_ENT 00020508) (CNC). 4 mi S El Tuito, Hwy 200, [20.259°N, 105.324°W], 10-Aug-1982, C. W. & L. O'Brien & G. Wibmer, 1♂ (UCR_ENT 00017082), 2♀ (UCR_ENT 00017085, UCR_ENT 00017086) (AMNH). Estacion de Biologia, Chamela, [19.488°N, 105.044°W], 13-Jul-1991, G. Ortega & C. Mayorga, 6♂ (UCR_ENT 00025451-UCR_ENT 00025454, UCR_ENT 00025644, UCR_ENT 00025645), 1♀ (UCR_ENT 00025462) (IBUNAM); 28-Jul-1980–30-Jul-1980, A. Pescador, 1♂ (UCR_ENT 00025456) (IBUNAM); 9-Jul-1990, G. Ortega & C. Mayorga, 1♀ (UCR_ENT 00025458) (IBUNAM); 6-Jul-1990, G. Ortega & C. Mayorga, 1♀ (UCR_ENT 00025459) (IBUNAM); 7-Jul-1990, G. Ortega & C. Mayorga, 1♀ (UCR_ENT 00025460) (IBUNAM); 25-Aug-1990, C. Mayorga, A. Cadena, & J. Martinez, 1♂ (UCR_ENT 00025639) (IBUNAM); 28-Jun-2006, L. Cervantes & D. Brzoska, 2♂ (UCR_ENT 00025641, UCR_ENT 00025642) (IBUNAM); 9-Aug-1975, H. Brailovsky, 1♂ (UCR_ENT 00025646) (IBUNAM); 8-Jul-1985–16-Jul-1985, J. Chemsak, H. Katsura, & A. & E. Michelbacher, 21♂ (UCR_ENT 00032813-UCR_ENT 00032833), 8♀ (UCR_ENT 00032851-UCR_ENT 00032858) (UCB); 20-Jul-1984–27-Jul-1984, Chemsak & Doyen, 3♂ (UCR_ENT 00032834-UCR_ENT 00032836), 1♀ (UCR_ENT 00032849) (UCB); 20-Jul-1984–27-Jul-1984, J. A. Chemsak, 2♂ (UCR_ENT 00032843, UCR_ENT 00032844), 2♀ (UCR_ENT 00032845, UCR_ENT 00032846) (UCB); 20-Jul-1984–27-Jul-1984, J. T. Doyen, 3♀ (UCR_ENT 00032767-UCR_ENT 00032769) (UCB); 23-Jul-1990–31-Jul-1990, Chemsak, 4♂ (UCR_ENT 00032837-UCR_ENT 00032840), 2♀ (UCR_ENT 00032847, UCR_ENT 00032848) (UCB); 28-Jul-1984–2-Aug-1984, J. A. Chemsak, 3♀ (UCR_ENT 00032770, UCR_ENT 00032850, UCR_ENT 00032862) (UCB); 14-Jul-1992–22-Jul-1992, J. A. Chemsak, 3♂ (UCR_ENT 00032859-UCR_ENT 00032861), 2♀ (UCR_ENT 00032863, UCR_ENT 00032864) (UCB). Estacion de Biologia, Chamela, 8 km S of Chamela, [19.488°N, 105.044°W], 19-Jul-1985, Stanley C. Williams, 3♂ (UCR_ENT 00019318-UCR_ENT 00019320), 4♀ (UCR_ENT 00019323-UCR_ENT 00019326) (CAS); 17-Jul-1985, Stanley C. Williams, 1♂ (UCR_ENT 00019321), 2♀ (UCR_ENT 00019327, UCR_ENT 00019328) (CAS); 21-Jul-1985, Stanley C. Williams, 1♀ (UCR_ENT 00019322) (CAS). Mpio. La

Huerta, Chamela Biol. Sta., [19.533°N, 105.066°W], 29-Jul-1996, Wm. Godwin, 1♂ (UCR_ENT 00032310) (TAMU); 26-Jul-1996, Wm. Godwin, 4♂ (UCR_ENT 00032311-UCR_ENT 00032314) (TAMU); 27-Jul-1996, W. Godwin, 1♀ (UCR_ENT 00032319) (TAMU). 11 mi N Autlan, [19.927°N, 104.366°W], 6-Jul-1984, Carroll, Schaffner, & Friedlander, 1♀ (UCR_ENT 00031794) (TAMU). 28 km NE Melaque, [19.403°N, 104.514°W], 8-Jul-1987, Chemsak, 2♂ (UCR_ENT 00032841, UCR_ENT 00032842) (UCB). Chamela, [19.488°N, 105.044°W], Jul-1984, Martinez, 3♂ (UCR_ENT 00041063-UCR_ENT 00041065) (MACN); Aug-1977, Martinez, 1♂ (UCR_ENT 00041066) (MACN). Cuitzmala, [19.366°N, 104.983°W], 21-Aug-1988, G. R. Ballmer, 2♀ (UCR_ENT 00004871, UCR_ENT 00004872) (UCR). Quemalo, [21.55°N, 87.983°W], 11-Jul-1988, E. Ramirez, 1♂ (UCR_ENT 00025467) (IBUNAM). Vulkan Colima, [19.516°N, 103.633°W], 1918, John Laue, 1♂ (UCR_ENT 00017048) (AMNH), 4♀ (UCR_ENT 00042365-UCR_ENT 00042368) (ZSM); 20-Jun-1918, John Laue, 3♀ (UCR_ENT 00042369-UCR_ENT 00042371) (ZSM). **Mexico: None or unknown Co.:** Acahuizotla Guerrero, [17.383°N, 99.45°W], 22-Jun-1982, E. Barrera, 1♀ (UCR_ENT 00025463) (IBUNAM). Chichihualco Guerrero, [17.683°N, 99.65°W], 6-Jul-1979, H. Brailovsky, 1♂ (UCR_ENT 00025446), 1♀ (UCR_ENT 00025442) (IBUNAM). Real de Arriba, [19°N, 99.983°W], Jul-1932, R. L. Usinger, 1♂ (UCR_ENT 00032911) (UCB). Valle de Bravo, [19.183°N, 100.133°W], 12-Aug-1969, H. Brailovsky, 1♂ (UCR_ENT 00025447) (IBUNAM); 21-Jul-1970, Unknown, 1♀ (UCR_ENT 00032925) (UCB). **Temascaltepec Co.:** Los Bejucos, [18.75°N, 100.433°W], 3-Jul-1933, H. E. Hinton & R. L. Usinger, 3♀ (UCR_ENT 00032916-UCR_ENT 00032918) (UCB); 2-Jul-1933, H. E. Hinton & R. L. Usinger, 1♀ (UCR_ENT 00032928) (UCB). **Michoacan: None or unknown Co.:** El Sabino, Uruapan, [19.416°N, 102.066°W], 20-Jul-1936, H. D. Thomas, 1♀ (UCR_ENT 00035308) (KU). 2 mi S of Tzitzio, [19.556°N, 100.923°W], 29-Jul-1962, University of Kansas Mexico Expedition, 1♀ (UCR_ENT 00035316) (KU). Apatzingan, [19.079°N, 102.354°W], 6-Aug-1941, H. Hoogstraal, 1♂ (UCR_ENT 00011117) (FMNH); 12-Aug-1941, H. Hoogstraal, 2♀ (UCR_ENT 00011118, UCR_ENT 00011119) (FMNH). San Jose Purua, [18.639°N, 100.891°W], Jun-1965, N. L. H. Krauss, 1♂ (UCR_ENT 00008909) (USNM), 1♂ (UCR_ENT 00017050) (AMNH); 2-Aug-1956, A. Lewis, 2♀ (UCR_ENT 00010941, UCR_ENT 00010942) (LACM). Tuxpan to San Jose Purua, [19.566°N, 100.466°W], 22-Jun-1963, Scullen & Bollinger, 1♂ (UCR_ENT 00035303), 1♀ (UCR_ENT 00035280) (KU). Ziracuaretiro, [19.416°N, 101.916°W], 17-Jul-1983, E. Barrera, 1♂ (UCR_ENT 00025438) (IBUNAM). **Morelos: None or unknown Co.:** Tepalcingo, El Limon, [18.542°N, 98.966°W], 25-Jul-2006, V. H. Toledo & A. M. Corona, 1♀ (UCR_ENT 00025627) (IBUNAM). 35 mi S of Cuernavaca, [18.520°N, 99.192°W], 4-Jul-1954, C. D. Michener & party, 1♂ (UCR_ENT 00035302), 1♀ (UCR_ENT 00035313) (KU). 4 mi E of Cuernavaca, [18.933°N, 99.170°W], 20-Jun-1959, H. E. Evans, 1♀ (UCR_ENT 00021255) (CUIC). 4.4 mi E of Cuernavaca, [18.916°N, 99.182°W], 27-Jul-1976–29-Jul-1976, Peigler, Gruetzmacher, R. & M. Murray, & Schaffner, 5♂ (UCR_ENT 00032332-UCR_ENT 00032336), 3♀ (UCR_ENT 00031791-UCR_ENT 00031793) (TAMU). 5 m E of Cuernavaca, [18.934°N, 99.155°W], 16-Jul-1963, F. D. Parker & L. A. Stange, 1♂ (UCR_ENT 00043402), 2♀ (UCR_ENT 00043405, UCR_ENT 00043406) (UCD). 6.7 mi S of Yautepec, [18.794°N, 99.101°W], 29-Jul-1963, Naumann & Willis, 2♂ (UCR_ENT 00035292, UCR_ENT 00035293) (KU). 7 mi SW of Yautepec, [18.811°N, 99.142°W], 2-Jul-1961, University of Kansas Mexico Expedition, 1♀ (UCR_ENT 00035312) (KU). 7.3 mi S of Yautepec, [18.777°N, 99.066°W], 3-Jul-1961, L. B. Carney, 1♂ (UCR_ENT 00035252) (KU). 7.3 mi SSW of Yautepec, [18.781°N, 99.109°W], 2-Jul-1961, University of Kansas Mexico Expedition, 5♂ (UCR_ENT 00035247-UCR_ENT 00035251), 1♀ (UCR_ENT 00035266) (KU). 9 km W of Cuernavaca, [18.933°N, 99.316°W, 23-Jun-1948, F. Werner & W. Nutting, 1♀ (UCR_ENT 00035328) (KU). Cocoyoc, [18.866°N, 98.983°W], 27-Jul-1956, Vincent D. Roth, 1♂ (UCR_ENT 00017045) (AMNH). Cuautla, [18.822°N, 98.941°W], 3-Jul–3-Aug, W. L. Tower, 1♂ (UCR_ENT 00017081), 6♀ (UCR_ENT 00017089-UCR_ENT 00017093, UCR_ENT 00017098) (AMNH); 5-Jun-1961, F. Pacheco M., 1♀ (UCR_ENT 00036190) (MZSP). Cuernavaca, [18.916°N, 99.25°W], no date provided, Crawford, 5♂ (UCR_ENT 00019260-UCR_ENT 00019264), 2♀ (UCR_ENT 00019259, UCR_ENT 00019265) (CAS); no date provided, Wickham, 2♀ (UCR_ENT 00019288, UCR_ENT 00019289) (CAS); June, Barrett, 2♀ (UCR_ENT 00019290, UCR_ENT 00019291) (CAS); 31-Jul-1988, J. L. Colin, 2♀ (UCR_ENT 00025433, UCR_ENT 00025441) (IBUNAM); 17-Aug-1958, Wm. W. Gibson, 1♀ (UCR_ENT 00032932) (UCB). Cuernavaca, [18.925°N, 99.226°W], 7-Jul-1900, C. C. Deam, 1♀ (UCR_ENT 00008912) (USNM); 11-Sep-1957, H. A. Scullen, 3♂ (UCR_ENT 00035239-UCR_ENT 00035241) (KU). Cuernavaca, [18.997°N, 99.231°W], 31-Jul-1988, J. L. Colin, 2♂ (UCR_ENT 00025431, UCR_ENT 00025432) (IBUNAM). Cuernavaca, [18.934°N, 99.231°W], no date provided, Barrett, 2♂ (UCR_ENT 00005750, UCR_ENT 00005751) (CAS), 1♂ (UCR_ENT 00035300) (KU); no date provided, Unknown, 2♂ (UCR_ENT 00035290, UCR_ENT 00035291) (KU); Aug-1951, F. M. Hull, 1♂ (UCR_ENT 00020499) (CNC); 20-Aug-1929–23-Aug-1929, G. Lassman, 1♂ (UCR_ENT 00021247) (CUIC); Sep-1900, E. P. Van Duzee, 1♂ (UCR_ENT 00021248) (CUIC); 1-Aug-1921–6-Aug-1921, H. G. Barber, 5♂ (UCR_ENT 00021249-UCR_ENT 00021253), 1♀ (UCR_ENT 00021254) (CUIC); 16-Jun-1898, E. D. Ball, 1♂ (UCR_ENT 00035253), 1♀ (UCR_ENT 00035327) (KU). km 8.3

Car Cuernavaca-Tepoztlan, 24-Jul-1988, J. L. Colin, 1♂ (UCR_ENT 00025434) (IBUNAM). Oaxtepec, [18.907°N, 98.970°W], 15-Jul-1958, A. Barrnom, 1♂ (UCR_ENT 00020500) (CNC). Tepalcingo al S de el Limon, [18.521°N, 98.946°W], 25-Jul-2006–27-Jul-2006, V. H. Toledo & A. M. Corona, 1♂ (UCR_ENT 00025619) (IBUNAM). Tepoztlan, [18.985°N, 99.1°W], 11-Aug-1938, L. J. Lipovsky, 1♂ (UCR_ENT 00035264), 1♀ (UCR_ENT 00035287) (KU). Xochicalco, [18.796°N, 99.298°W], 16-Aug-2003, W. Sohn & H. Brailovsky, 2♂ (UCR_ENT 00025617, UCR_ENT 00025618) (IBUNAM). Yautepec, [18.883°N, 99.066°W], 31-Jul-1963, F. D. Parker & L. A. Stange, 2♀ (UCR_ENT 00043403, UCR_ENT 00043404) (UCD); 31-Jul-1963, E. J. Montgomery, 1♀ (UCR_ENT 00043407) (UCD). **Nayarit: *None or unknown Co.***: 8 mi N of Tepic, [21.621°N, 104.894°W], 25-Jul-1954, M. Cazier, W. Gertsch, & Bradts, 1♀ (UCR_ENT 00016290) (AMNH). Tepic, [21.5°N, 104.9°W], July, Schumann, 1♀ (UCR_ENT 00010295) (AMNH). ***None or unknown Co.***: unknown, no date provided, Procopp, 2♀ (UCR_ENT 00012174, UCR_ENT 00012175) (HNHM); no date provided, A. Magistra, 1♀ (UCR_ENT 00041693) (ZMAN). **Oaxaca: *None or unknown Co.***: 2 mi N Candelaria, Loxicha, [16.212°N, 95.95°W], 17-Jul-1985, Jones & Schaffner, 1♂ (UCR_ENT 00032331) (TAMU). 20 mi S of Oaxaca, nr Yagul ruins, [16.959°N, 96.449°W], 12-Jul-1981, Bogar, Schaffner, & Friedlander, 1♀ (UCR_ENT 00031787) (TAMU). 8 mi SW of Oaxaca, Monte Alban ruins, [17.062°N, 96.773°W], 23-Aug-1963, H. V. Weems, Jr., 2♂ (UCR_ENT 00011627, UCR_ENT 00011628), 1♀ (UCR_ENT 00011636) (FSCA). Hwy 175, 6 mi. NW Miahuatlan, [16.381°N, 96.661°W], 1-Jun-1983, C. W. & L. O'Brien & G. Wibmer, 1♀ (UCR_ENT 00025834) (USNM). Hwy. 175, 21 mi. N. Pochutla, [15.955°N, 96.475°W], 1-Jun-1983, C. & L. O'Brien & G. B. Marshall, 1♂ (UCR_ENT 00025833) (USNM). Monte Alban Ruins, 7 mi W. Oaxaca, [17.037°N, 96.764°W], 17-Aug-1977, C. E. Griswold & T. C. Meikle, 1♀ (UCR_ENT 00032926) (UCB). Tehuantepec, 56 mi NW, [16.888°N, 95.842°W], 27-Jul-1963, W. A. Foster, 1♂ (UCR_ENT 00032910) (UCB); 27-Jul-1963, J. Doyen, 1♀ (UCR_ENT 00032929) (UCB). 10.6 mi NE Telixlahuaca, [17.402°N, 96.775°W], 8-Aug-1980, Schaffner, Weaver, & Friedlander, 1♀ (UCR_ENT 00031789) (TAMU). 11.2 mi S of Matatlan, [16.733°N, 96.297°W], 12-Jul-1981, Bogar, Schaffner, & Friedlander, 1♀ (UCR_ENT 00031788) (TAMU). 2 km Desviacion a Pluma Hidalgo Carr. San Jose Pacifico-Pochutla, 8-Jun-2004, E. Barrera & R. Marino, 1♂ (UCR_ENT 00025620), 2♀ (UCR_ENT 00025632, UCR_ENT 00025633) (IBUNAM). 2.1 mi NW of [San Pedro] Totolapan, [16.688°N, 96.322°W], 11-Jul-1981–17-Jul-1981, Bogar, Schaffner, & Friedlander, 1♀ (UCR_ENT 00031786) (TAMU). 20 mi E of El Camaron, [16.545°N, 95.805°W], 21-Jul-1956, J. W. MacSwain, 1♀ (UCR_ENT 00032891) (UCB). 21 km E of Mitla, [16.949°N, 96.252°W], 17-Aug-1988, Doyen, 1♀ (UCR_ENT 00032894) (UCB). 3.9 mi NE San Gabriel Mixtepec, [16.829°N, 96.829°W], 16-Jul-1985, Jones & Schaffner, 1♀ (UCR_ENT 00032318) (TAMU). 38 mi SE of Oaxaca, [16.676°N, 96.313°W], 19-Aug-1963, Scullen & Bollinger, 1♂ (UCR_ENT 00035305) (KU). 5 mi S El Camaron, [15.806°N, 96.997°W], 21-Jul-1979, E. P. Case & D. B. Thomas, 1♂ (UCR_ENT 00040639) (BDGC). 5.2 mi. North Putla, [17.102°N, 97.927°W], 3-Aug-1976, Peigler, Gruetzmacher, R. & M. Murray, & Schaffner, 1♂ (UCR_ENT 00032315) (TAMU). 6 mi SE of Oaxaca, [16.97163°N, 96.668°W], 6-Jul-1963, L. E. Caltagirone, 1♂ (UCR_ENT 00032908) (UCB). 64 mi W. Tehuantepec, [16.317°N, 96.206°W], 21-Jul-1952, E. E. Gilbert & C. D. MacNeil, 1♀ (UCR_ENT 00032920) (UCB). 66 mi NW of Tehuantepec, [16.995°N, 95.949°W], 31-Aug-1957, H. A. Scullen, 1♂ (UCR_ENT 00035263) (KU). 7 mi. N of Juchatengo, 10-Aug-1970, E. Fisher & P. Sullivan, 1♀ (UCR_ENT 00010940) (LACM). Calpulalpan de Mendez, [17.765°N, 97.411°W], 22-Jul-2006, B. Pino, 1♂ (UCR_ENT 00025621) (IBUNAM). Chacalapa, [16.807°N, 98.457°W], 2-Jun-1987, E. Barrera, 1♂ (UCR_ENT 00025643) (IBUNAM). El Laurel, [17.091°N, 96.765°W], 7-Jul-1970, R. E. Beer & party, 1♂ (UCR_ENT 00035306), 1♀ (UCR_ENT 00035309) (KU). km 117 Car. Oax Pio Angel, [19.9°N, 102.583°W], 30-May-1987, E. Barrera, 1♀ (UCR_ENT 00025439) (IBUNAM). km 15 Carr. Izucar de Matamoros Huajuapán de Leon, [18.531°N, 98.416°W], 28-Jun-1996, H. Brailovsky & E. Barrera, 1♂ (UCR_ENT 00025622) (IBUNAM). km 41 Carr. Pto Escondido Sola de Vega, 4-Jul-1990, E. Barrera & A. Cadena, 1♂ (UCR_ENT 00025625) (IBUNAM). km. 50 Carr. Mitla el Camaron, 12-Jul-2000, A. Ibarra, C. Mayorga, & E. Barrera, 1♀ (UCR_ENT 00025629) (IBUNAM). km. 6 Carr. Oaxaca Guelatao, [17.110°N, 96.598°W], 29-Jun-1996, H. Brailovsky & E. Barrera, 1♀ (UCR_ENT 00025628) (IBUNAM). La Pluma Hidalgo, [15.925°N, 96.420°W], 21-Jul-1993, P. J. Landolt, 6♂ (UCR_ENT 00011629-UCR_ENT 00011634) (FSCA). Mitla, [16.916°N, 96.4°W], 27-Jul-1962, H. E. Milliron, 1♀ (UCR_ENT 00020514) (CNC). Monte Alban, [17.037°N, 96.764°W], 21-Aug-1963, Scullen & Bollinger, 1♂ (UCR_ENT 00035304) (KU). Monte Alban, [17.051°N, 96.763°W], 30-Jun-1955, P. & C. Vaurie, 5♂ (UCR_ENT 00017051-UCR_ENT 00017055), 12♀ (UCR_ENT 00017056-UCR_ENT 00017067) (AMNH). Monte Alban, [17.033°N, 96.767°W], 28-Jun-1970, Unknown, 1♂ (UCR_ENT 00010939), 1♀ (UCR_ENT 00010943) (LACM); 10-Jul-1959, V. Reaves, 1♀ (UCR_ENT 00011120) (FMNH); 13-Aug-1970, G. N. Ross, 2♀ (UCR_ENT 00011638, UCR_ENT 00011639) (FSCA); 16-Jun-1984, M. Garcia, 5♂ (UCR_ENT 00025443-UCR_ENT 00025445, UCR_ENT 00025623, UCR_ENT 00025624), 2♀ (UCR_ENT 00025448, UCR_ENT 00025450) (IBUNAM); 16-Nov-1984, M. Garcia, 1♀ (UCR_ENT 00025449) (IBUNAM); 15-Jul-1955, R. E. Beer & party, 1♂ (UCR_ENT 00035262), 1♀ (UCR_ENT 00035279) (KU);

15-Jul-1955, University of Kansas Mexico Expedition, 3♀ (UCR_ENT 00035276-UCR_ENT 00035278) (KU); 7-Jul-1956, R. E. Beer & party, 3♀ (UCR_ENT 00035317-UCR_ENT 00035319) (KU). Oaxaca, [17.0°N, 96.7°W], 7-Jul-1949, E. G. Smyth, 1♀ (UCR_ENT 00010945) (LACM); 4-Jul-1955, P. & C. Vaurie, 1♀ (UCR_ENT 00017096) (AMNH); 8-Jul-1952, E. E. Gilbert & C. D. MacNeil, 4♂ (UCR_ENT 00032878-UCR_ENT 00032881) (UCB); 1809, Camille van Volxem, 1♂ (UCR_ENT 00037866) (ISNB). Pochutla, [18.333°N, 101.683°W], 3-Jun-1987, L. Cervantes, 3♂ (UCR_ENT 00025435-UCR_ENT 00025437) (IBUNAM); 3-Jun-1987, E. Barrera, 1♀ (UCR_ENT 00025440) (IBUNAM). Portillo del Rayo, [15.933°N, 96.383°W], 1-Jun-1985, E. Marino, 1♂ (UCR_ENT 00025464), 2♀ (UCR_ENT 00025469, UCR_ENT 00025470) (IBUNAM); 30-May-1987, L. Cervantes, 1♂ (UCR_ENT 00025465) (IBUNAM); 30-May-1987, E. Barrera, 1♂ (UCR_ENT 00025466) (IBUNAM); 30-May-1987, F. Arias, 1♀ (UCR_ENT 00025471) (IBUNAM); 31-May-1987, L. Cervantes, 1♀ (UCR_ENT 00025472) (IBUNAM). San Juan Guegoyache, 15-Jul-2000, C. Mayorga & E. Barrera, 1♂ (UCR_ENT 00025616) (IBUNAM). Tlacolula, [16.95°N, 96.483°W], 16-Jul-1955, P. & C. Vaurie, 1♂ (UCR_ENT 00017049), 1♀ (UCR_ENT 00017072) (AMNH); 2-Aug-1959, P. & C. Vaurie, 1♀ (UCR_ENT 00017071) (AMNH). Yagul ruins, [16.957°N, 96.449°W], 14-Jul-2009, D. Forero & G. Zhang, 1♀ (UCR_ENT 00003193) (UCR). **Puebla: None or unknown Co.:** 2 mi N of Izucar de Matamoros, [18.622°N, 98.470°W], 18-Aug-1969, University of Kansas Mexico Expedition, 1♀ (UCR_ENT 00035311) (KU). 22 km NW of Acatlan, [18.438°N, 98.293°W], 9-Aug-1988, Doyen & Stockwell, 1♂ (UCR_ENT 00032756), 1♀ (UCR_ENT 00032757) (UCB). 4.3 mi SE of Las Peas, [17.002°N, 96.687°W], 20-Aug-1969, University of Kansas Mexico Expedition, 1♀ (UCR_ENT 00035315) (KU). Matamoros, [18.6°N, 92.466°W], 19-Jul-1942, A. Hoffmann, 1♂ (UCR_ENT 00032905) (UCB); 19-Jul-1942, L. Vazquez, 1♀ (UCR_ENT 00032924) (UCB); 13-Sep-1942, F. Islas, 1♂ (UCR_ENT 00032907) (UCB); 28-Jul-1942, F. Islas, 1♀ (UCR_ENT 00032933) (UCB). Puebla, [19.05°N, 98.2°W], 3-Aug, W. L. Tower, 2♀ (UCR_ENT 00017087, UCR_ENT 00017088) (AMNH). **Sinaloa: None or unknown Co.:** 6.5 mi E of Potrerillos, [23.034°N, 105.843°W], 21-Aug-1964, E. L. Schlinger, 1♀ (UCR_ENT 00001092) (UCR). **Tamaulipas: None or unknown Co.:** El Pichon, [22.666°N, 97.983°W], 23-Jun-1963, J. Doyen, 1♀ (UCR_ENT 00032609) (UCB); 25-Jun-1963, J. Doyen, 1♂ (UCR_ENT 00032865) (UCB). **Tlaxcala: None or unknown Co.:** 45 mi N. Acatlan, [19.657°N, 98.228°W], 30-Jul-1963, J. Doyen, 1♀ (UCR_ENT 00032927) (UCB). **UNKNOWN: Unknown: Unknown Co.:** Unknown, no date provided, E. D. Ball, 1♀ (UCR_ENT 00035307) (KU).