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Redescription of *Strophopoda aprica* Van Duzee and the Description of Two New Genera and Five New Species from the Southwestern United States and Northern Mexico (Heteroptera: Miridae)

MICHAEL D. SCHWARTZ[1]

ABSTRACT

The obscure species *Strophopoda aprica* Van Duzee, 1921 is redescribed. *Calidroides*, n.gen., is erected to accommodate the type species *C. schaffneri*, n.sp., from Arizona, Texas, and Mexico and *C. negro*, n.sp., from southern Mexico. *Chlamyopsallus*, n.gen., is described to accommodate the type species, *C. lycii*, n.sp., from the western portion of the Mojave Desert of southern California. Two new species of *Pseudopsallus* Van Duzee are described, *P. tiquiliae*, n.sp., from southern California and *P. greggii*, n.sp., from New Mexico and southwestern Texas. Systematic relationships in the Phylini and *Pseudopsallus* are discussed and digital habitus illustrations, illustrations of male genitalia, scanning micrographs of diagnostic features, and new distributional records are provided.

INTRODUCTION

Kelton (1965) reinstated *Strophopoda* Van Duzee, 1916a from synonymy with *Chlamydatus* Curtis, 1833. He maintained that the male genitalia of the two genera were similar, but noted that the head shape, detached pulvillus, shape of the ostiolar peritreme, and white cuneal apex of the type species, *S. aprica* Van Duzee, 1921, were unlike those of any species of *Chlamydatus*. Our study of North American *Chlamydatus* (Schuh and Schwartz, 2005) supports Kelton's assertion that *Strophopoda* and *Chlamydatus* are separate genera. Herein I document that the male genitalia of the two genera are unique and provide a revised diagnosis of *Strophopoda*.

[1] Research Scientist, Division of Invertebrate Zoology, American Museum of Natural History; contact address: Systematic Entomology, ECORC, Agriculture and Agri-Food Canada, Ottawa, Ontario K1A 0C6, Canada.

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Additionally, evidence is presented to support the erection of two new North American phyline genera. One genus will accommodate two new species originally thought to be congeneric with *S. aprica* and another will accommodate a new species with a habitus superficially similar to species of *Chlamydatus* and *Megalopsallus* Knight, 1927.

Stonedahl and Schwartz (1986, 1988) revised *Pseudopsallus* Van Duzee and described several new species in the genus. Two taxa that cannot be accommodated in any known species from the desert southwest are herein described as new for specimens found in the holdings of several institutions. The generic diagnosis of *Pseudopsallus* must be reformulated in response to the inclusion of the new species.

Complete descriptions, color digital habitus figures, illustrations of the male genitalia, and detailed distributional information for all the included taxa are provided. Terminology and abbreviations for the male genitalia of the *Pseudopsallus* species follow those given in Stonedahl and Schwartz (1986). Species measurements (in millimeters) are given as the mean and range (in parentheses) for 10 specimens of each sex, taken from across the distributional range, unless otherwise indicated. All scanning electron micrographs are of males, except for *Chlamyopsallus lycii*, for which the female is provided. Localities for the specimens used in the dorsal habitus photographs are noted in the ''specimens examined'' and ''paratypes'' sections of the species treatments.

STROPHOPODA VAN DUZEE

Strophopoda Van Duzee, 1916a: 216 (n.gen.).

TYPE SPECIES: *Strophopoda aprica* Van Duzee, 1921 by original designation.

REVISED DIAGNOSIS: Distinguished from other Phylini by small, elongate, body; predominately black coloration, body surface moderately shining (fig. 1), and vestiture of stiff, black bristlelike simple setae (fig. 3C). Macropterous; clypeus protruding, with distinct basal furrow (fig. 3B); vertex with obsolete transverse basal carina (fig. 3A), vertex width not sexually dimorphic; eyes relatively small, not bulging, posterior margin straight, narrowly separated from anterior margin of pronotum; antennae with slight sexually dimorphism, diameter of segment 2 slightly greater in male than female, segment 2 slightly shorter than width of head across eyes; pronotum with lateral margin nearly straight; evaporative surface of metathoracic scent gland reduced, ostiolar peritreme flattened and situated on ventral surface (fig. 3E); claws small, curved, base prominent, pulvillus large, apically detached from ventral margin of claw, parempodia setiform (fig. 3D). MALE GENITALIA (figs. 2, 3F): vesica composed of single untwisted strap, region distal to secondary gonopore a single strap with length equal to one-quarter entire length of vesica; secondary gonopore relatively large, distal margin broadly rounded, without area of attenuation, proximally with large, striate gonopore sclerite; phallotheca without distinctive features; left paramere conventionally phyline; right paramere with attenuate apex.

DISCUSSION: Carvalho (1955) synonymized *Strophopoda* with *Chlamydatus*. Kelton (1965) restored *Strophopoda*, correctly noting the features detailed in the revised diagnosis above. Specifically, the head with a produced clypeus, obsolete transverse basal carina of the vertex, and relatively small eyes; the large apically detached pulvillus; the reduced evaporative surface and flattened ostiolar peritreme of the metathoracic scent gland; and the white cuneal apex are not found in any species of *Chlamydatus*. However, I do not agree that the vesica of *Chlamydatus* and *Strophopoda* are similar (Kelton, 1965). The unique gonopore sclerite, extensive apical membrane, and straight nonspinose vesical strap distal to the secondary gonopore will distinguish Strophopoda from other North American phyline genera.

Strophopoda aprica Van Duzee
Figures 1–3

Strophopoda aprica Van Duzee, 1921: 132 (n.sp.).

DIAGNOSIS: Recognized by the small parallel-sided body, black coloration, moderately shining surface, and bristlelike black vestiture (figs. 1, 3C). Differs from other small black Phylini by the conspicuous discrete pale yellowish white markings on antennal

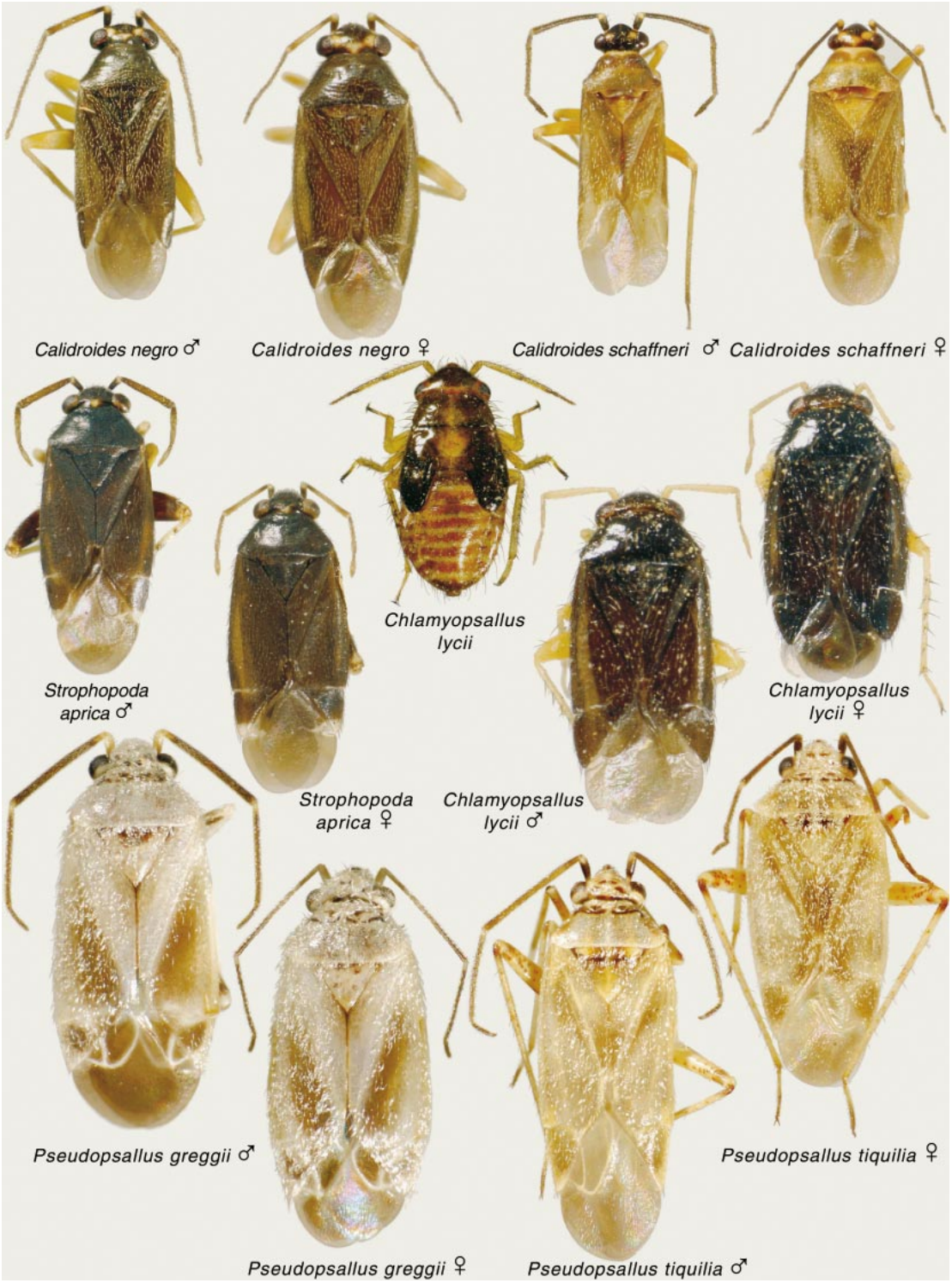


Fig. 1. Habitus views of *Calidroides*, *Chlamyopsallus*, *Pseudopsallus*, and *Strophopoda* spp.

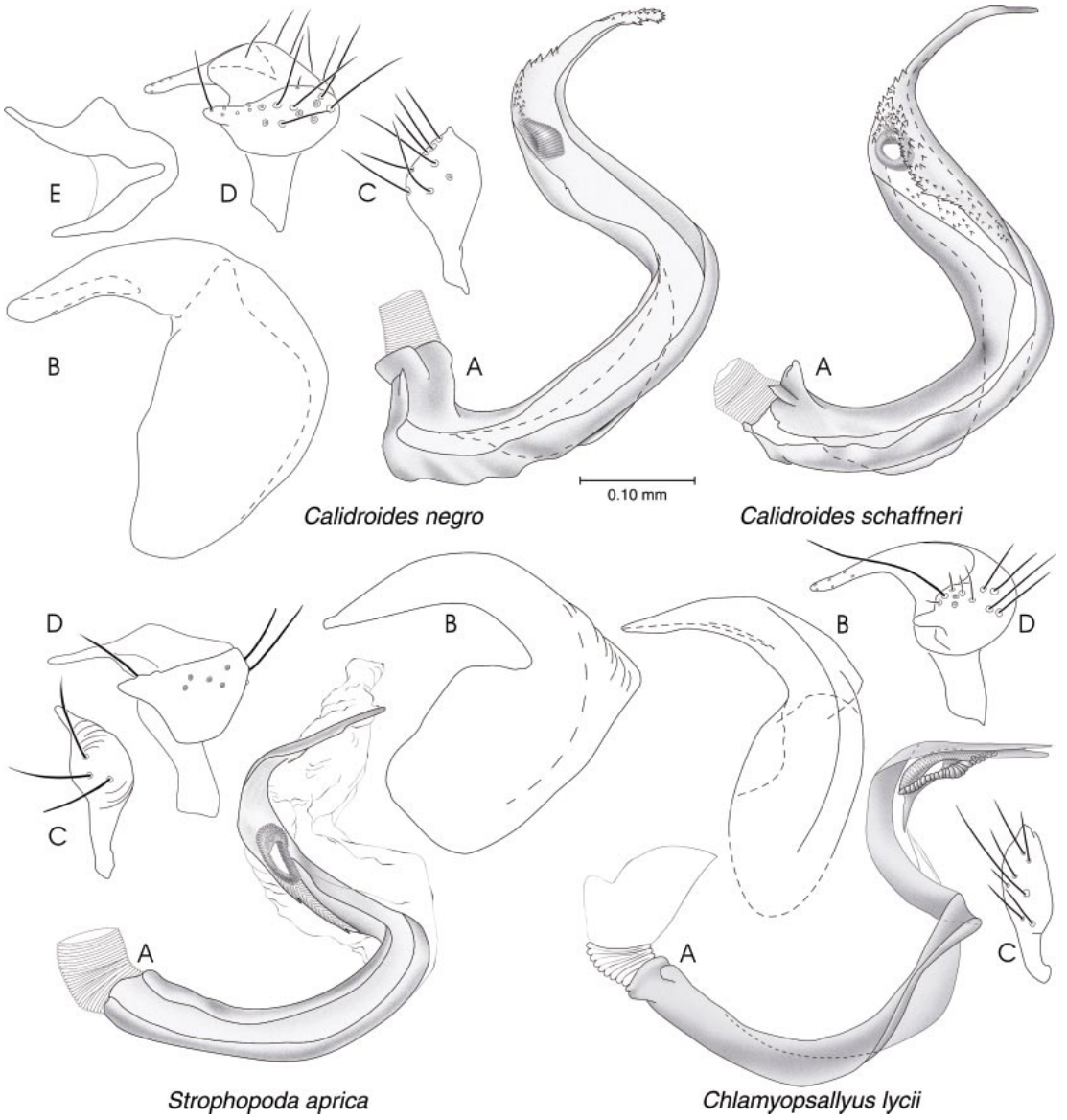


Fig. 2. Male genitalia of *Calidroides*, *Chlamyopsallus*, and *Strophopoda* spp. **A.** vesica. **B.** phallotheca. **C.** right paramere. **D.** left paramere, lateral view. **E.** left paramere, dorsal view. Scale = 0.10 mm.

segment 1, vertex (fig. 1), corium, cuneus, membrane vein, femora, and tibiae; the small claws with large detached pulvillus (fig. 3D); the flattened ostiolar peritreme (fig. 3E); and the male genitalia with a single strap, large striate gonopore sclerite, and conspicuous apical membrane (fig. 2).

REDESCRIPTION: *Male:* Small, parallel-sided, macropterous; total length 2.48 (2.38–2.59), length apex clypeus-cuneal fracture 1.62 (1.50–1.75), maximum width across hemelytra 1.01 (0.91–1.08). MEASUREMENTS: Head width 0.60 (0.58–0.61), vertex width 0.30 (0.29–0.33), antennal length segment 1: 0.18 (0.16–0.19), 2: 0.54 (0.48–0.56), 3: 0.36 (0.31–0.39), 4: 0.23 (0.21–

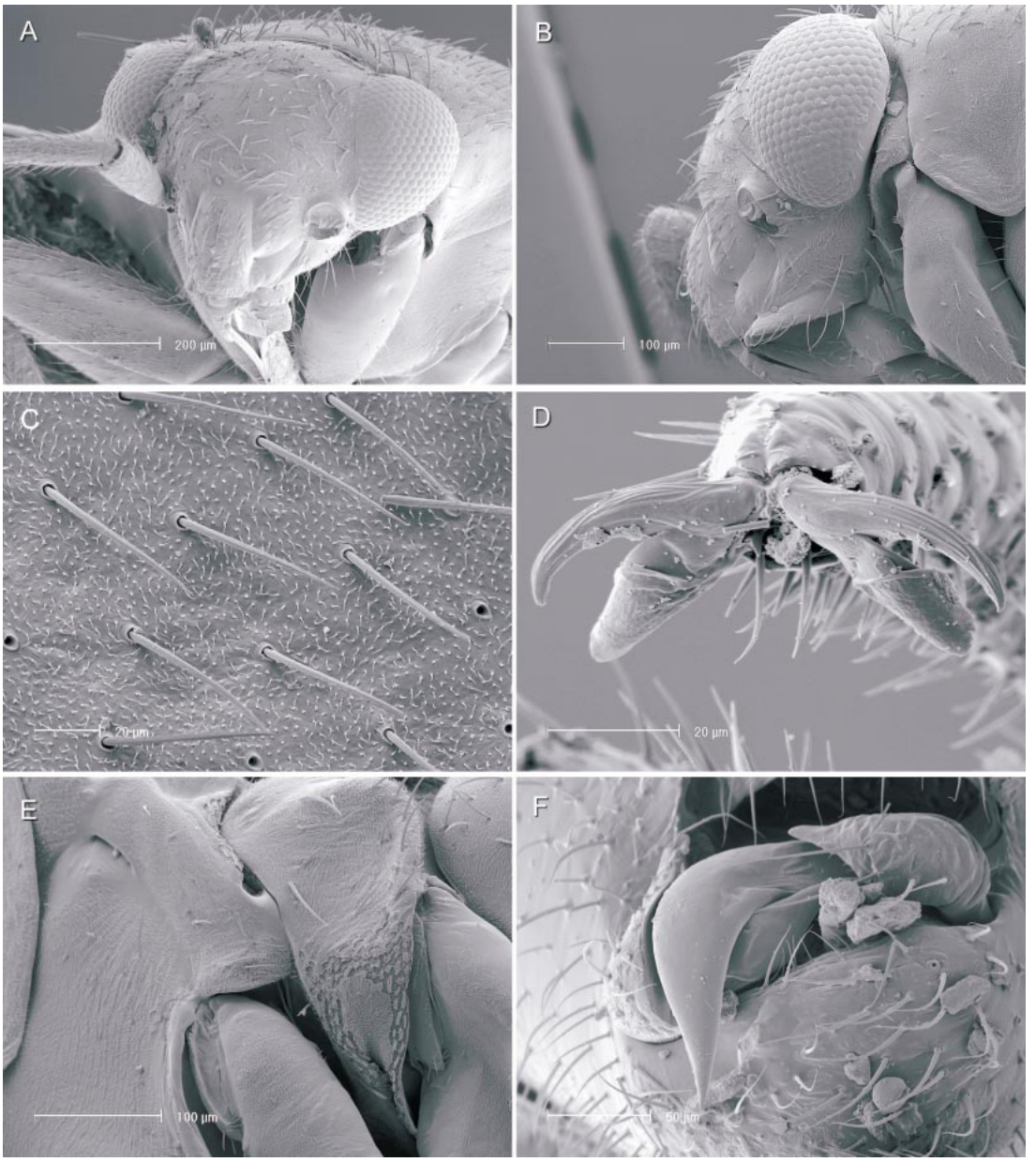


Fig. 3. Scanning electron micrographs of *Strophopoda aprica*, ♂, Oregon: Siskiyou. **A.** Head, anterior view. **B.** Head, lateral view. **C.** Setae on hemelytra. **D.** Pretarsus, apical view. **E.** Mesothoracic spiracle and metathoracic scent efferent system, lateral view. **F.** Genital segment, posterolateral view, showing right paramere and phallotheca in repose. Scales as indicated.

0.25), labium length 0.81 (0.79–0.84), pronotum width 0.83 (0.80–0.85), pronotum length 0.37 (0.35–0.39). COLORATION (fig. 1): black with pale yellowish white markings as follows: antennal segment 1 apically, medial spot on vertex, narrow line distally on corium, cuneus and adjacent membrane vein apically, femora distally, and tibiae except for large black spots at base of spines. SURFACE AND VESTITURE: Dor-

sum moderately shining, impunctate, with numerous moderately long, reclining, bristle-like black simple setae. STRUCTURE: Corial margins nearly parallel-sided; frons gently rounded, clypeus clearly visible from above; anteocular distance equal to twice diameter of antennal segment 1; head projecting below eye by twice diameter of antennal segment 1; labium reaching apex of hind coxae. GENITALIA: As in generic diagnosis (figs. 2, 3F).

Female: Conformation and coloration nearly identical to male; diameter of antennal segment 2 slightly less than in male. Total length 2.53 (2.33–2.63), length apex clypeus-cuneal fracture 1.70 (1.60–1.81); maximum width across hemelytra 1.09 (0.91–1.18), head width 0.60 (0.58–0.61); vertex width 0.30 (0.29–0.30), antennal length segment 1: 0.18 (0.16–0.23), 2: 0.50 (0.45–0.54), 3: 0.34 (0.31–0.39), 4: 0.23 (0.21–0.25), labium length 0.85 (0.81–0.88), pronotum width 0.86 (0.83–0.88); length 0.38 (0.36–0.39).

HOSTS: Collected on the following species of Asteraceae: *Artemisia cana* Pursh, silver sagebrush; *Blepharipappus scaber* Hook, rough eyelashweed; *Hazardia berberidis* Gray, [=*Haplopappus*]; and *H. squarrosa* (Hook. & Arn.) Greene, sawtooth goldenbush.

DISCUSSION: Van Duzee (1916a) described *Strophopoda* in a key to North American Miridae and validated the taxon by describing its only included species five years later (Van Duzee, 1921).

DISTRIBUTION: Southern Oregon south to northern Baja California.

SPECIMENS EXAMINED: MEXICO: **Baja California Norte:** 22 km W of Parque Sierra San Pedro Martir, 1150 m, April 25, 1985, R. T. Schuh, B. M. Massie, *Haplopappus berberidis* (Asteraceae), 22♂, 40♀ (AMNH, UNAM); 8 mi E of Tecate, Highway 2, May 29, 1980, Faulkner, Brown, 1♀ (SDNH). USA: **California:** *Amador Co.:* Plymouth, June 19, 1967, P. B. Schultz, 3♀ (UCD). *Mendocino Co.:* 2.5 air mi NW of Eel River Ranger Station, Mendocino National Forest, 4400 ft, June 13, 1972, J. Doyen, 7♂, 2♀ (UCB); Ukiah, June 8, 1932, R. L. Usinger, 1♂, 10♀ (UCB). *Monterey Co.:* Bryson, April 23, 1929, May 18, 1929, E. P. Van Duzee, 15♂, 15♀ (CAS). *Riverside Co.:* 6 mi SE of Corona, April 12, 1965, C. Slobodchikoff, 1♂ (UCB); Menifee Valley (hills on W end), 1800 ft, April 30, 1977, J. D. Pinto, 1♂ (UCR); NW of Murietta, road to Tenaja Fire Station, 1500 ft, May 13, 1978, J. D. Pinto, 5♂, 4♀ (UCR); Sandia Canyon, T7S R4W Sec 25, May 1, 1979, R. A. Sherman, 1♀ (UCR). *Sacramento Co.:* Folsom, May 14, 1970, Otsuji, Troughton, 1♂, 4♀ (CAFA); Orangevale, May 24, 1930, H. H. Keifer, 5♂, 4♀ (CAFA, LACM). *San Diego Co.:* 1 mi NE of Scissors Crossing, April 6, 1966, C. W. O'Brien, 22♂, 14♀ (UCB); Jacumba-Campo, June 11, 1915, H. Morrison, (Betulaceae), 1♂, 1♀ (USNM); no specific locality, April 11, 1913, June 3, 1913, E. P. Van Duzee, paratypes, 12♂, 12♀ (CAS); San Luis Rey River, 1 mi from coast, May 11, 1968, C. Beesley, 2♂ (UCR); Scissors Crossing, Valle de San Filipe, 2240–2800 ft, May 4, 1968, G. J. DeVol, 2♂, 2♀ (UCR). *San Luis Obispo Co.:* Arroyo Grande Creek SW of San Luis Obispo, 160 m, May 8, 1985, R. T. Schuh, B. M. Massie, *Hazardia squarrosa* (Asteraceae), 46♂, 50♀ (AMNH). *Santa Barbara Co.:* Santa Barbara, Mission Canyon, June 2, 1915, H. Morrison, 1♀ (USNM). *Siskiyou Co.:* 5 mi S of Macdoel, June 28, 1971, Joe Schuh, 4♂, 5♀ (AMNH). *Sonoma Co.:* 2 mi N of Sebastopol, May 22, 1966, L. and C. W. O'Brien, 28♂, 20♀ (UCB). *Stanislaus Co.:* Del Puerto Canyon at North Fork, Del Puerto Creek, 900–1200 ft, May 21, 1971, P. Lee, 1♀ (UCB). *Tulare Co.:* Badger, May 28, 1961, B. P. Bliven, 1♂ (CAS). *Marin Co.:* Rossville, June 3, 1930, C. C. Wilson, (Asteraceae), 1♀ (USNM). **Oregon:** *Jackson Co.:* 0.5 mi S of Siskiyou Summit on Old Rt 99, 4300 ft, *Blepharipappus scaber* (Asteraceae) (AMNH): June 27, 1979, M. D. Schwartz, Joe Schuh, R. T. Schuh; July 4, 1982, G. Stonedahl, T. J. Henry, 21♂, 75♀. 0.5 mi S of Siskiyou Summit on Old Rt 99, 4300 ft, June 27, 1979, J. D. Lattin, *Artemisia cana* (Asteraceae), 2♂, 22♀ (OSU); Siskiyou, June 14, 1959, L. A. Kelton, 42♂, 27♀ [fig. 1 adult dorsal habitus photographs] (CNC). *Klamath Co.:* 19 mi W of Klamath Falls, June 24, 1971, P. Oman, 1♂ (OSU); Bly Mt., June 14, 1958, Joe Schuh, 2♂ (OSU); near Pothole, July 25, 1958, Joe Schuh, *Haplopappus* sp. (Asteraceae), 1♂ (OSU). *Wasco Co.:* 3 mi N of

Simnasho Rd, July 2, 1968, J. D. Lattin, 1♂, 1♀ (OSU).

***Calidroides*, new genus**

TYPE SPECIES: *Calidroides schaffneri*, new species.

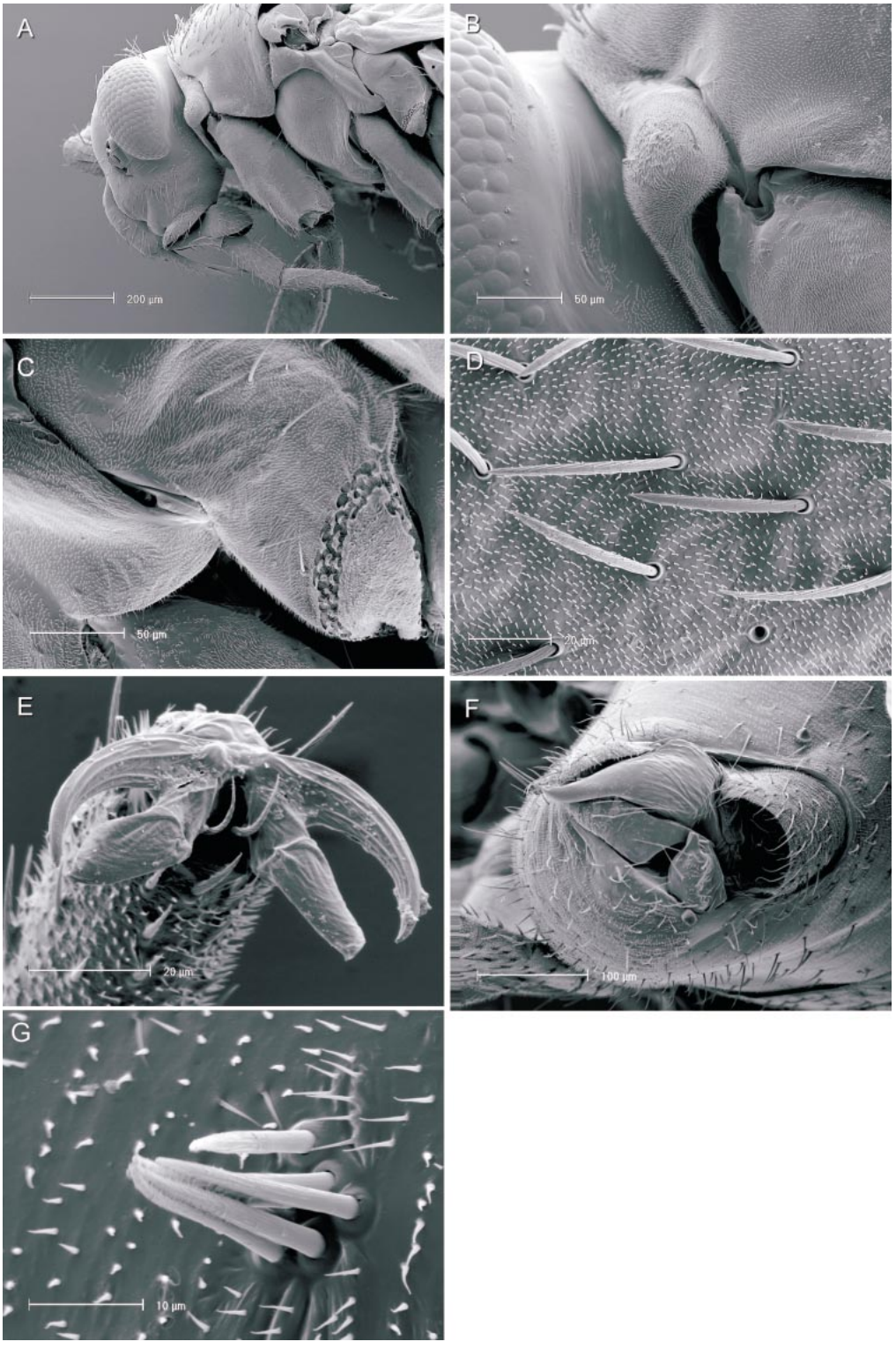
DIAGNOSIS: Within the Phylini recognized by the conspicuous pale, laterally produced knob on the propleuron anterior to the coxal cleft (fig. 4A, B); the black head with a conspicuous pale spot on the frons near each eye and sometimes with an additional medial spot; the generally unicolorous pale tibiae without dark spots (fig. 1); evaporative surface of metathoracic scent gland present only on posterior margin, ostiolar peritreme flattened and situated on lateral surface (fig. 4C); claws small, curved, base prominent, pulvillus large, apically detached from ventral margin of claw (fig. 4E); and male genitalia with a somewhat broad single vesical strap without a basal twist and abruptly attenuate distal to the secondary gonopore, strap sometimes with spinules adjacent to secondary gonopore and or apically, without gonopore sclerite (fig. 2). Of the small black phylines associated with angiosperms, most similar to *Chlamydatus* and *Strophopoda*. It is distinguished from the former by the form of the head, pretarsus, and vesica, and from the latter by the concolorous tibiae, longer antennal segments 2 and 3, and the structure of the vesica.

DESCRIPTION: *Male*: Small, moderately elongate, parallel-sided or tapered distally; range total length 2.08–2.50, range apex clypeus-cuneal fracture 1.45–1.68. COLORATION (fig. 1): dorsum either entirely black with a few conspicuous pale areas on head and antennae or dusky orange brown with black head and pale temporal spots; antennae black, segment 1 with a narrow white distal annulus, segment 2 sometimes broadly pale; legs pale yellow or pale orange, sometimes femora darkened basally, tibiae without black spots at base of spines, tarsi dark. SURFACE AND VESTITURE: Impunctate, smooth, moderately shining; vestiture composed of moderately densely distributed, recurved, shining, golden, simple setae of moderate length (fig. 4D). STRUCTURE: Head vertical, strongly projecting beyond anterior margin of eyes, frons tumid (fig. 4A), clypeus clearly visible from above; eyes small, separated from anterior margin of pronotum by distance equal to diameter of antennal segment 1; antennae of moderate length, segment 2 longer than width of head, slender, cylindrical; segment 3 subequal in length to segment 2; labium relatively stout, extending from apex to middle of middle coxae (fig. 4A); pronotum trapeziform in dorsal view, sometimes campanulate; laterally produced knob on the propleuron anterior to the coxal cleft (fig. 4A, B); evaporative surface of metathoracic scent gland reduced, present on posterior margin only, ostiolar peritreme slightly protruding and situated on lateral surface (fig. 4C); hemelytra parallel-sided or weakly converging posteriorly; claws small, curved, base prominent, pulvillus large, apically detached from ventral margin of claw; parempodia setiform (fig. 4E). GENITALIA (fig. 2): left side of genital segment with clump of five bristles (fig. 4F, G); vesica composed of single, untwisted, S-shaped strap, region proximal to secondary gonopore somewhat thickened and sometimes with spinules, region distal to secondary gonopore strongly attenuated with spinules near gonopore and with length equal to one quarter entire length of vesica, apex either narrow without spinules or somewhat thicker with spinules; secondary gonopore heavily sclerotized, relatively small, circular, distal margin broadly rounded, without area of attenuation, proximally without gonopore sclerite; phallotheca without distinctive features (fig. 4F); left paramere conventionally phyline, but with lateral protuberance in dorsal view (fig. 2D,E); right paramere somewhat rounded (fig. 2C).

Female: Body only slightly more ovate than in male; macropterous with apex of abdomen reaching to apex of cuneus in lateral view; coloration and vestiture similar to that of male; antennal segment 2 more slender and more strongly tapered toward base than in male.

ETYMOLOGY: Derived from the similarity (*-oides*) of the vesica, in profile, in the type species *schaffneri* to the avian sandpiper genus *Calidris* (especially *C. ferruginea*, the curlew sandpiper). Gender masculine.

DISCUSSION: The pretarsal structure of *Cal-*


A
200 µm
B
50 µm
C
50 µm
D
20 µm
E
20 µm
F
100 µm
G
10 µm

idroides is similar to that of *Strophopoda*, *Macrotylus* Fieber, 1858, and *Nicholia* Knight, 1929. The concolorous tibiae, longer antennal segments 2 and 3, and the structure of the vesica will readily distinguish the new genus from *Strophopoda*. *Macrotylus* is easily distinguished from *Calidroides* by the more bristlelike vestiture, the more produced clypeus, the strongly tumid frons, the slender labium, the absence of a blunt precoxal protuberance on the propleuron, a much longer J-shaped vesica, and the elongate right paramere. The anterior portion of the propleuron in *Nicholia* is more tumid than is found in other Phylini; however, this structure is never developed into a knoblike protuberance as in *Calidroides*. The former genus also has a much larger body size (about twice as long) than the new genus.

One female from near Totolapan, Oaxaca, Mexico (TAMU) with contrasting pale and dark coloration may represent an additional new species of *Calidroides*, but I decline naming it until males are available.

The only host recorded for this genus is *Allionia incarnata* L. (Nyctaginaceae) from Presidio County, Texas.

Calidroides negro, new species
Figures 1, 2

HOLOTYPE: Male: ''Mexico: Michoacan[,] 13 miles south of Nueva Italia, July 9, 1985[,] Jones, Schaffner.'' Deposited in the Universidad Nacional Autonoma de Mexico.

DIAGNOSIS: Recognized by the moderately shining black body, head with three pale spots (fig. 1), propleuron with a bright pale tubercle anterior of coxal cleft, legs pale orange yellow, and an apically blunt, spinose vesica.

DESCRIPTION: *Male*: Small, parallel-sided; total length 2.36 (2.18–2.40), length apex clypeus-cuneal fracture 1.62 (1.45–1.68), maximum width across hemelytra 0.80 (0.71–0.87). MEASUREMENTS: Head width 0.58 (0.55–0.60), vertex width 0.29 (0.28–0.31), antennal length segment 1: 0.21 (0.20–0.23), 2: 0.69 (0.61–0.73), 3: 0.58 (0.54–0.60), 4: 0.33 (0.26–0.38), labium length 0.71 (0.66–0.75), pronotum width 0.75 (0.70–0.81), pronotum length 0.39 (0.36–0.41). COLORATION (fig. 1): shining black; frons with pair of pale yellowish white spots near each eye and medially; anterior margin of buccula pale; apex of antennal segment 1 with pale annulus, sometimes middle of segment 2 dusky; labium orange yellow with apex black; tubercle on propleura anterior of coxal cleft conspicuously white; membrane dark smoky, veins black; legs pale orange yellow, coxae and base of hind femora dark brown to black, tibiae slightly darkened, with pale setae and black spines, tarsus and claws black. SURFACE AND VESTITURE: As in generic description. STRUCTURE: Pronotum trapeziform, in dorsal view; corial margins tapered distally; frons slightly tumid, clypeus clearly visible from above; anteocular distance equal to twice diameter of antennal segment 1; head projecting below eye by three times diameter of antennal segment 1; labium reaching apex of middle coxae. GENITALIA (fig. 2): vesical strap with spinules distal to secondary gonopore and on somewhat blunt apex.

Female: Very similar to male in coloration, but hemelytra somewhat wider. Total length 2.71 (2.57–3.00), length apex clypeus-cuneal fracture 1.97 (1.83–2.12); maximum width across hemelytra 1.12 (1.00–1.25), head width 0.63 (0.61–0.66); vertex width 0.34 (0.32–0.35), antennal length segment 1: 0.22 (0.21–0.25), 2: 0.63 (0.58–0.69), 3: 0.55 (0.49–0.61), 4: 0.33 (0.28–0.38), labium length 0.83 (0.78–0.88), pronotum width 0.94 (0.88–1.03); length 0.48 (0.45–0.53).

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Fig. 4. Scanning electron micrographs of *Calidroides schaffneri*, ♂, Nayarit: Acaponeta. **A.** Head and thorax, lateral view. **B.** Detail of propleuron with knob anterior to coxal cleft, lateral view. **C.** Mesothoracic spiracle and metathoracic scent efferent system, lateral view. Pretarsus, apicoventral view. **D.** Setae on hemelytra. **E.** Pretarsus, apical view. **F.** Genital segment, posterodorsal view, showing right paramere and phallotheca in repose. **G.** Detail of tuft of bristles ventral to left paramere on genital segment, left lateral view. Scales as indicated.

ETYMOLOGY: Negro, meaning black, in Spanish, for the overall dark coloration.

HOST: Unknown.

DISTRIBUTION: Southern montane Mexico.

PARATYPES: MEXICO: **Jalisco:** Cihuatlan, 17 mi SW of, July 22, 1966, P. M. and P. K. Wagner, 1♀ (TAMU). **Michoacan:** Nueva Italia: 3 mi N of, July 8, 1985, Jones and Schaffner, 4♂, 20♀ [fig. 1 adult dorsal habitus photographs] (AMNH, TAMU); 9 mi S of, July 30, 1988, Ferreira and Schaffner, 1♀ (TAMU); 13 mi S of, July 9, 1985, Jones and Schaffner, 9♂, 16♀ (TAMU, UNAM); 17.3 mi S of, July 30, 1988, Ferreira, Schaffner, 5♀ (TAMU); 28.5 mi S of, July 9, 1985, Jones and Schaffner, 3♀ (TAMU); 30 mi S of, August 8, 1978, Plitt and Schaffner, 7♂, 12♀ (TAMU, USNM). **Oaxaca:** El Talaje, July 29, 1969, L. A. Kelton, 1♂, 1♀ (CNC); Jalapa del Marquez, August 4, 1980, Schaffner, Weaver, and Friendlander, 1♂ (TAMU); Tehuantepec, 6 mi W of, July 17, 1987, Kovarik and Schaffner, 1♂ (TAMU). **Puebla:** Izúcar de Metamoros, August 26, 1969, L. A. Kelton, 6♂, 4♀ (CNC).

Calidroides schaffneri, new species
Figures 1, 2, 4

HOLOTYPE: Male: ''Washington, Texas[,] Washington County[,] September 6, 1967[,] J.C. Schaffner''. Deposited in the Texas A&M University Insect Collection.

DIAGNOSIS: Distinguished from *C. negro* by the following features: dusky orange brown coloration (fig. 1); campanulate pronotum in dorsal view; usually more narrow head and vertex; shorter antennal segments; shorter labium; and pointed unarmed apex of vesica (fig. 2).

DESCRIPTION: *Male*: Small, parallel-sided; total length 2.25 (2.08–2.40), length apex clypeus-cuneal fracture 1.59 (1.51–1.66), maximum width across hemelytra 0.85 (0.83–0.91). MEASUREMENTS: Head width 0.54 (0.53–0.56), vertex width 0.27 (0.26–0.29), antennal length segment 1: 0.20 (0.19–0.23), 2: 0.62 (0.56–0.66), 3: 0.54 (0.48–0.58), 4: 0.26 (0.24–0.28), labium length 0.58 (0.50–0.63), pronotum width 0.76 (0.71–0.80), pronotum length 0.38 (0.38–0.39). COLORATION (fig. 1): Head shining black, frons with pair of pale spots near each eye, carina at antennal insertion and buccula pale; apex of antennal segments 1 to 3 with pale annulus, labium orange brown, apex black; pronotum dark, dusky orange brown with broadly dark brown calli and propleuron, anterior margin and protuberant knob anterior of coxal cleft orange white; scutellum dusky brown, with pale diamond-shaped spot medially; hemelytra dusky orange brown with indistinct darker brown areas, cuneus somewhat more orange than corium; membrane smoky, veins pale; legs orange brown with coxae, femora diffusely darkened subapically, tibiae dark brown basally, with pale setae and black spines, tarsus and claws black. SURFACE AND VESTITURE: As in generic description (fig. 4D). STRUCTURE: Pronotum campanulate in dorsal view; corial margins parallel; frons slightly tumid, clypeus clearly visible from above; anteocular distance equal to twice diameter of antennal segment 1; head projecting below eye by three times diameter of antennal segment 1; labium extending to middle of middle coxae. GENITALIA (figs. 2, 4F): vesical strap with spines proximal and distal to secondary gonopore, apex decurved, without spines.

Female: Very similar to male in coloration, except vertex pale medially as well as adjacent to eyes; body somewhat ovoid. Total length 2.42 (2.25–2.58), length apex clypeus-cuneal fracture 1.82 (1.73–1.91); maximum width across hemelytra 1.06 (0.95–1.17), head width 0.58 (0.55–0.60); vertex width 0.31 (0.30–0.33), antennal length segment 1: 0.20 (0.19–0.20), 2: 0.62 (0.58–0.66), 3: 0.51 (0.48–0.58), 4: 0.25 (0.24–0.28), labium length 0.65 (0.61–0.68), pronotum width 0.90 (0.84–0.94); length 0.44 (0.39–0.48).

ETYMOLOGY: Named for Joseph C. Schaffner, collector of the holotype and most of the paratypes. Over his long career at the Department of Entomology, Texas A&M University, Joe has personally amassed undoubtably the best collection of Mexican and Texan plant bugs. This is one of many new species of Miridae that have been ''discovered'' because of his efforts.

HOST: *Allionia incarnata* L. (Nyctaginaceae), trailing allionia, four-o'clock, or windmills is the only known host.

DISTRIBUTION: Southern Arizona and Texas as well as the western and eastern states of central Mexico.

PARATYPES: MEXICO: **Jalisco:** Guadalajara, 17 mi N of, July 6, 1984, J. B. Woolley, 2♂, 6♀ (TAMU); La Quemada, 20 mi N of, July 24, 1954, M. Cazier, W. Gertsch, Bradts, 1♀ (AMNH); Plan de Barrancas, 5 mi W of, July 25, 1966, P. M. and P. K. Wagner, 3♂, 3♀ (TAMU). **Michoacan:** Nueva Italia, 17.3 mi S of, July 30, 1988, Ferreira, Schaffner, 10♂, 9♀ (TAMU). **Nayarit:** Acaponeta, August 7, 1964, L. A. Kelton, 21♂, 14♀ (CNC); San Blas, August 7, 1964, L. A. Kelton, 3♂, 1♀. **Tamaulipas:** Altas Cumbres, 12 mi W of Ciudad Victoria, June 18, 1986, R. Jones, 1♂ (TAMU). USA: **Arizona:** *Pima Co.:* Robles Jct., 1.5 mi S of, July 28, 1977, J. D. Pinto, 1♀ (UCR); Sabino C[a]n[yon], July 7, 1950, L. D. Beamer, 1♂ (KU); Santa Rita IBP Destr. Site, August 26, 1970, D-Vac, ACGR, 2♀ (UAZ); Sonoita, 11.5 mi NW of, Santa Rita Mts, 31°47′12″N, 110°44′38″W, 5190 ft, August 24, 2000, J. C. Schaffner, 1♂ (TAMU); Tucson, 16 mi S of, August 11, 1924, E. P. Van Duzee, 1♀ (CAS). **Texas:** *Presidio Co.:* Presidio, 13 mi N of, September 30, 1966, C. L. Cole, *Allionia incarnata* L. (Nyctaginaceae), 5♂, 15♀ (TAMU); Presidio, August 8, 1938, H.G. Johnston, 1♀ (TAMU). *Washington Co.:* Washington, September 6, 1967, J. C. Schaffner, 34♂, 69♀ [fig. 1, adult dorsal habitus photographs] (AMNH, TAMU, UNAM, USNM).

Chlamyopsallus, new genus

TYPE SPECIES: *Chlamyopsallus lycii*, new species.

DIAGNOSIS: Recognized by the small, highly polished, shining black body with pale yellow appendages (fig. 1); long, suberect, bristlelike, black dorsal setae (fig. 5G,H); black tibial spines; apical black bristles on the fore coxae and hind femora; apically black tarsal segment 3; length of antennal segment 2 less than width of head; conspicuous sexual dimorphism with the male elongate and the female ovate (fig. 1); the relatively short, apically bifurcate vesical strap barely extending beyond the distal margin of secondary gonopore, and the broad secondary gonopore (fig. 2). Similar in size and or coloration to some species of *Chlamydatus* and *Megalopsallus*. *Chlamyopsallus* differs from all *Chlamydatus* spp. by the black, bristlelike dorsal vestiture and the shorter portion of the vesical strap distal to the secondary gonopore. All *Megalopsallus* spp. have a mixed vestiture of weakly flattened, lanceolate, silvery or white setae and reclining simple setae, the length of the antennal segment 2 is usually longer than the head width; in most species the apex of the vesical strap is not bifurcate. Those species of *Megalopsallus* with apically bifurcate vesical straps (*M. ellae* Schuh and Schwartz, *M. ephedrae* Knight, *M. froeschneri* Schuh, and *M. pallipes* Knight) do not have the uniformly dark coloration found in *Chlamyopsallus*.

DESCRIPTION: *Male*: Small, moderately elongate, moderately flattened, macropterous; range total length 2.74–2.90, range apex clypeus-cuneal fracture 1.75–2.00. COLORATION (fig. 1): dorsum entirely black; antennae, labium, except segment 4, and legs pale yellow; antennal segments 3 and 4 dusky yellow; labial segment 4, apical half of third tarsal segment and claws black; tibiae with minute black spots at bases of spines; hemelytral membrane strongly infuscate. SURFACE AND VESTITURE: Impunctate, smooth, highly polished, and shining; vestiture composed long, suberect, black setae (fig. 5G,H). STRUCTURE: Head transverse, conforming to anterior margin of pronotum (fig. 5A,B); posterior margin of vertex with low, broadly rounded carina, width of carina broadest medially; anteocular portion of head slightly longer than eye width (fig. 5A,B), clypeus not visible from above; frons gently curved; eyes small, head projecting below eyes by one-quarter head height, ventral margin of antennal fossa slightly below ventral margin of eye; length of antennal segment 2 less than width of head, length roughly equal to width of vertex plus width of one eye; diameter of segment 2 widest subapically, equal to diameter of segment 1; diameter of segments 3 and 4 narrower than that of segment 2; labium short, reaching to middle of middle coxae; pronotum trapeziform in dorsal view; mesothoracic spiracle and metathoracic scent gland as in figure 5C; hem-

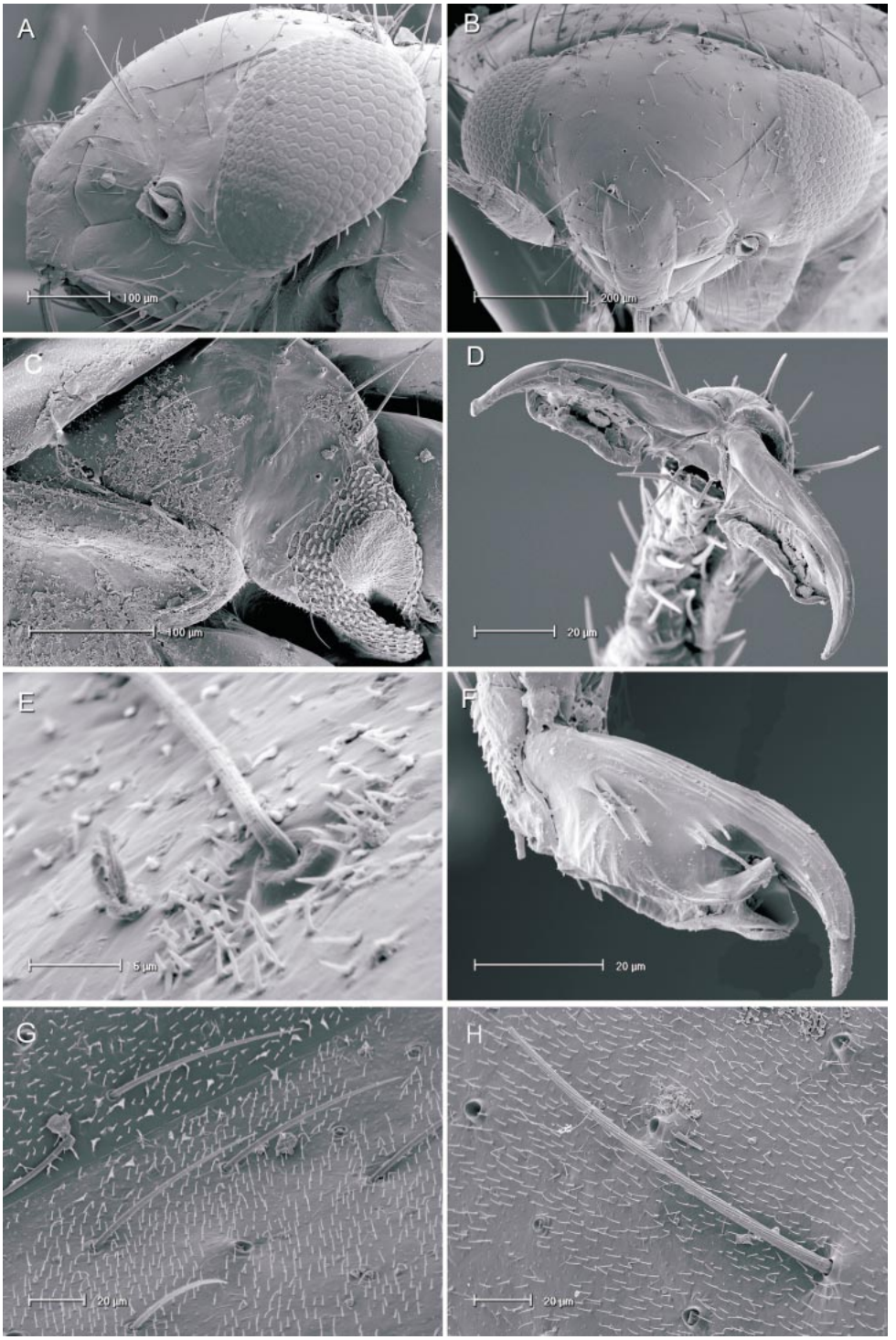


Fig. 5. Scanning electron micrographs of *Chlamyopsallus lycii* ♀, California: Palmdale. **A.** Head, anterior view. **B.** Head, lateral view. **C.** Mesothoracic spiracle and metathoracic scent efferent system, lateral view. **D.** Pretarsus, apical view. **E.** Detail of femoral trichobothria. **F.** Pretarsus, lateral view. **G.** Setae either side of claval suture. **H.** Seta on corium. Scales as indicated.

elytra margins subparallel, cuneal fracture moderately incised, cuneus slightly deflected at fracture; anterior edge of coxae with black bristles, tibial spines long, black; claws of moderate size, gently curved at point level with apex of pulvillus; pulvillus large, adnate to ventral margin for almost entire length; parempodia setiform (fig. 5D,F); hind femoral trichobothria as in figure 5E; abdomen small, tapering toward relatively small genital segment, the latter occupying about one-third length of abdomen and reaching to middle of cuneus in lateral view. GENITALIA: Vesica (fig. 2) slender, delicate, composed of single, sinuously curving strap with bifurcate apex, region distal to secondary gonopore short, less than one-half length of secondary gonopore; secondary gonopore situated subapically on strap; secondary gonopore relatively large, with aperture sculpturing extending distally and base with short, nonspinose sclerite; phallotheca without distinctive features; left paramere conventionally phyline; right paramere small, ovate.

Female: Body strongly ovate; macropterous with apex of abdomen reaching to apex of membrane in lateral view; coloration and vestiture similar to male; antennal segment 2 weakly sexually dimorphic, more slender and more strongly tapered toward base than in male.

ETYMOLOGY: Derived from a combination of the generic names *Chlamydatus* and *Megalopsallus* to acknowledge the similarity of habitus in the new genus to these more diverse and more widely distributed phyline taxa. Gender masculine.

DISCUSSION: As noted in the generic diagnosis *Chlamyopsallus* shares features with both *Chlamydatus* and *Megalopsallus*. Placing *C. lycii* in either one of those genera would broaden those diagnoses to the point of making them meaningless. *Chlamyopsallus* lacks the scalelike setae found in taxa of similar general appearance, for example, *M. humeralis*, and has suberect, black bristlelike setae not found in any species of *Chlamydatus*. Also as noted in the proceeding diagnosis of *Chlamyopsallus*, the vesica when examined carefully are distinct from the other two genera.

***Chlamyopsallus lycii*,** new species
Figures 1, 2, 5

HOLOTYPE: Male: ''USA: California: *Los Angeles Co.*, SE of jct Pearblossom Hwy (Rt 18) and 263rd St 3300N 1035 m, N 34° 30.087′ W 117° 40.128′, 19.v.2000, M.D. Schwartz, ex *Lycium cooperi* A. Gray (Solanaceae).'' Deposited in the American Museum of Natural History.

DIAGNOSIS: Recognized by the features presented in the generic diagnosis.

DESCRIPTION: *Male*: As in generic description except as follows: MEASUREMENTS ($N = 9♂$): Total length 2.83 (2.74–2.95), length apex clypeus-cuneal fracture 1.86 (1.75–2.00), maximum width across hemelytra 1.19 (1.09–1.30); head width 0.71 (0.69–0.73), vertex width 0.37 (0.36–0.38), anteocular length 0.19 (0.19–0.20), eye width 0.16 (0.15–0.17), eye height 0.31 (0.29–0.33); antennal length segment 1: 0.17 (0.16–0.18), 2: 0.57 (0.53–0.61), 3: 0.33 (0.30–0.38), 4: 0.26 (0.25–0.27); labium length 0.79 (0.77–0.81); pronotum width 1.00 (0.95–1.04), pronotum length 0.44 (0.43–0.46). COLORATION (fig. 1): Sometimes ventral portion of head and basal plate dusky yellow; apical portion of hind femora slightly darker than remainder of segment.

Female: As in male. MEASUREMENTS: Total length 2.52 (2.31–2.70), length apex clypeus-cuneal fracture 1.88 (1.75–2.00), maximum width across hemelytra 1.23 (1.17–1.38); head width 0.73 (0.71–0.76), vertex width 0.41 (0.40–0.43), anteocular length 0.21 (0.18–0.22), eye width 0.16 (0.15–0.16), eye height 0.31 (0.29–0.33); antennal length segment 1: 0.17 (0.16–0.18), 2: 0.51 (0.47–0.55), 3: 0.32 (0.30–0.35), 4: 0.25 (0.23–0.27); labium length 0.81 (0.78–0.84); pronotum width 0.97 (0.92–1.05), pronotum length 0.45 (0.41–0.49).

Fifth-instar nymph: MEASUREMENTS ($N = 5$): Total length 1.98 (1.75–2.18), maximum width across wing pads 0.96 (0.93–1.00); head width 0.65 (0.61–0.69), vertex width 0.40 (0.39–0.41), anteocular length 0.25 (0.24–0.27), eye width 0.12 (0.12–0.13), eye height 0.27 (0.25–0.28); antennal length segment 1: 0.18 (0.17–0.19), 2: 0.38 (0.35–0.43), 3: 0.29 (0.26–0.36), 4: 0.25 (0.24–0.26); labium length 0.75 (0.73–0.76);

pronotum width 0.71 (0.68–0.73), pronotum length 0.32 (0.31–0.33). COLORATION (fig. 1): Dark orange brown on head, pronotum, mesoscutum, scutellum, and wing pads; pale yellowish brown on maxillary and mandibular plates, ventral aspect of clypeus, posterior margin of vertex, and variable width dorsomedial region of thorax; abdomen with alternating bands of reddish brown and pale yellowish white, basal and apical segments brown; appendages pale brownish yellow; distal half of terminal tarsomere, claws, and fourth labial segment dark brown to black (fig. 1). SURFACE AND VESTITURE: Impunctate, smooth, shining; vestiture composed of moderately densely distributed, long, suberect, black bristlelike setae (fig. 1); tibiae with long black spines with diffuse black bases. STRUCTURE: Labium reaching middle coxa; wing pads reaching abdominal tergum 4, mediodorsal scent gland opening on suture between tergum 3 and 4.

ETYMOLOGY: Named for the genus of its host plant, *Lycium* Linnaeus (Solanaceae).

HOST: *Lycium cooperi* A. Gray (Solanaceae), box thorn, Cooper wolfberry, or peach thorn.

DISTRIBUTION: Western portion of the Mojave desert of southern California where the host plant is found in creosote bush scrub and Joshua tree woodland habitats.

PARATYPES: USA: **California:** *Los Angeles Co.:* Palmdale, June 18, 1932, A. T. McClay 1♂, 1♀ (UCB); Rt 18 at W 263 St, 1033 m, 34°29.905′N 117°40.146′W, May 17, 2004, Schuh, Cassis, Schwartz, Weirauch, Wyniger, Forero [PBI CAL04-L3], ex *Lycium cooperi* A. Gray (Solanaceae), det. A. Sanders UCR 140601, [PBI CAL04-H25], 85♂, 117♀, 10 fifth-instar nymphs [fig. 1, immature dorsal habitus photograph] (AMNH, CAS, TAMU, UCB, UCR, USNM); same label data as holotype, 8♂, 20♀ [fig. 1 adult dorsal habitus photographs] (AMNH). *Riverside Co.:* Desert Springs, June 23, 1955, Timberlake, ex *L. cooperi*, 2♂, 3♀ (UCR). *Kern Co.:* W of Mojave on Oak Creek Road, 1055 m, 35°2.309′N 118°16.842′W, May 21, 2004, Schuh, Cassis, Schwartz, Weirauch, Wyniger, Forero [PBI CAL04-L14], ex *L. cooperi*, det. A. Sanders, UCR 140654 [PBI CAL04-H91], 54♂, 52♀, 1 fifth instar nymph (AMNH, CAS, TAMU, UCB, UCR, USNM). *San Bernardino Co.:* Phelan, Rt 138 at Phelan Road, 1310 m, 34°25.518′N 117°37.045′W, May 16, 2004, Schuh, Cassis, Schwartz, Weirauch, Wyniger, Forero [PBI CAL04-L2], ex *L. cooperi*, det. A. Sanders UCR 140650, [PBI CAL04-H24], 6 fifth instar nymphs (AMNH).

DISCUSSION: The new species was collected on the host with specimens of *Megalopsallus brendae* Schuh and *M. humeralis* (Van Duzee) at several of the localities noted above.

PSEUDOPSALLUS VAN DUZEE

Pseudopsallus Van Duzee, 1916b: 224 (n.gen.).

REVISED DIAGNOSIS: Stonedahl and Schwartz (1986, 1988) distinguished the genus from other Orthotylini based on the dorsal vestiture and male genitalic structure. The inclusion of *greggii* and *tiquiliae* in *Pseudopsallus* requires the following modifications to the generic diagnosis: tergal processes sometimes absent from anterodorsal margin of genital aperture (*daleae* and *tiquiliae*); basal sclerotized portion of the ductus seminis rarely without a pair of spiculae surrounding the left and right sides on the dorsal surface (*tiquiliae*); and right ventral spicula of the vesica rarely minute (*greggii*).

DISCUSSION: A medial interior flange and associated troughlike surface ventral to the flange of the right paramere is shared by species of *Pseudopsallus* and *Presidomiris* Stonedahl and Schwartz, 1988 (see Stonedahl and Schwartz 1988: 17). However the gray general coloration with dark fuscous to black markings on the head and pronotum with dark suffusion on the hemelytra (fig. 1) will distinguish *greggii* and *tiquiliae* from species of *Presidiomiris*, which are consistently unmarked and have orange yellow to yellow green overall coloration. The small body size and strongly produced anteocular portion of the head of the two new species are unique for *Pseudopsallus*, but the prepoderance of characters, especially the body coloration and overall features of the male genitalia, are persuasive enough to place them in the genus.

The new species are generally similar to *P. angularis* (Uhler, 1894) and *P. daleae* (Knight, 1968) in the pale gray to pale brown overall coloration with distinct black to fuscous markings on the head, pronotum, venter, and legs (fig. 1). Although *P. tulare* Stonedahl and Schwartz, 1986 has the ground coloration pale greenish yellow, it has dark markings similar to the other four species. Portions of the male genitalia, specifically the prominent distal hump of the medial interior flange on the right paramere (fig. 7F–H) and deflexed left tergal process adjoining the genital aperture (fig. 7A, B) of *greggii* are similar to those of *angularis* (Stonedahl and Schwartz 1986: figs. 67, 68, 70, 71) and *tulare*. The absence of tergal processes (fig. 9A) and the small dorsal lobe of the left paramere (fig. 9E) in *tiquiliae* are also features seen in *daleae* (Stonedahl and Schwartz 1988: figs. 44, 47, 48).

The scalelike setae of *greggii* (fig. 6C) and *tiquiliae* (fig. 8C) are similar in structure to those of the other species of *Pseudopsallus* (Stonedahl and Schwartz 1986: figs. 11–25, 1988: fig. 34A–C). All members of the genus have scalelike setae that are strongly flattened, moderately to broadly lanceolate, apically truncate or acuminate, and with converging or parallel ridges. Such setae were defined as type 2 by Stonedahl and Schwartz (1986).

The pretarsus of the new species have strongly curved claws that are distinctly broadened basally, small pulvilli, and typically orthotyline lamellate and apically convergent parempodia (figs. 6D, 8D). The structure of the mesothoracic spiracle and metepisternal scent efferent system in the new species (figs. 6E, 8E) are unremarkable except for the relatively reduced evaporative area of the mesothoracic spiracle when compared with other North American Orthotylini (e.g., Schwartz and Scudder 2003: figs. 4E, 6D, 9C, 11B, 13B).

The incorporation of *greggii* and *tiquiliae* into the cladistically derived phylogeny presented in Stonedahl and Schwartz (1986, 1988) is beyond the scope of this present paper, which is intended only to provide documentation for newly discovered taxa.

The inclusion of two more taxa raises the number of species in *Pseudopsallus* to 25. In the key to *Pseudopsallus* species by Stonedahl and Schwartz (1986), *greggii* and *tiquiliae* will key to couplet 3 with *angularis* as well as *daleae* and *tulare* (see Stonedahl and Schwartz 1988: 15). The following addition to that key will distinguish these five species:

1. Clypeus entirely black, sometimes female with bilaterally paired and medial fuscous stripes; anteocular portion of head strongly produced (figs. 6A, B, 8A, B); body size less than 3.80 2
— Clypeus entirely pale or with pale ground color and bilaterally paired and medial fuscous to black stripes; anteocular portion of head short or moderately produced (similar to Stonedahl and Schwartz 1986: figs. 5, 6, 8); body size greater than 4.00 3
2. Antennal segment 1 black; male without tergal processes on dorsal aperture of genital segment . . . . . *tiquiliae*, new species
— Antennal segment 1 pale with a black basal annulus; male with tergal process on left dorsal margin of genital segment aperture . . . . . *greggii*, new species
3. Dark marking on head limited to small bilateral pair on vertex near eyes; dorsal vestiture with pale simple setae; male without tergal processes on dorsal aperture of genital segment . . . . . *daleae* (Knight)
— Dark marking on head extensive, with bilateral stripes or blotches on frons, vertex, maxillary plate, and clypeus; dorsal vestiture with black simple setae 4
4. Body length 4.66–5.03♂, 5.02–5.60♀; pale greenish yellow general coloration with limited infuscation on pronotal disk and hemelytra; anteocular portion of head produced; male genitalia distinctive (see Stonedahl and Schwartz 1988: 15, 16, figs. 50–55) . . *tulare* Stonedahl and Schwartz
— Body length 5.30–6.30♂, 5.50–6.20♀; brownish yellow or brownish gray general coloration with extensive infuscation on hemelytra; anteocular portion of head not produced; male genitalia distinctive (see Stonedahl and Schwartz 1986: 13, figs. 65–71) . . . . . *angularis* (Uhler)

The new species utilize host plants of the genus *Tiquilia* Persoon [~*Coldenia* Linnaeus] or coldenia and crinklemat and are thus the only members of *Pseudopsallus* to be associated with the Boraginaceae. The known hosts of the other species of this endemic North American plant bug genus are from the

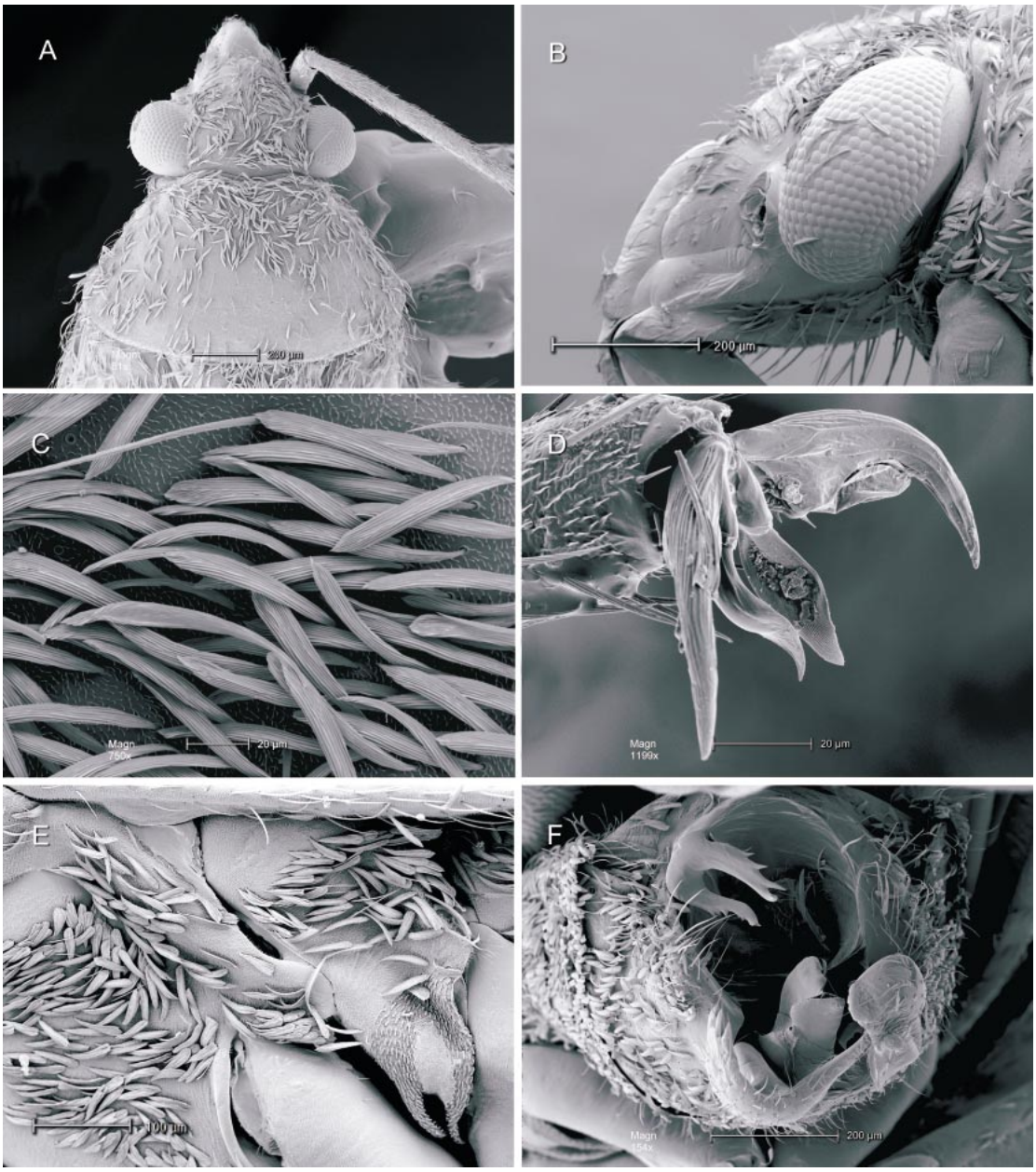


Fig. 6. Scanning electron micrographs of *Pseudopsallus greggii* ♂, Texas: Big Bend National Park **A.** Head and pronotum, dorsal view. **B.** Head, lateral view. **C.** Setae of corium, dorsal view. **D.** Pretarsus, lateral view. **E.** Mesothoracic spiracle and metathoracic scent efferent system, lateral view. **F.** Genital segment, caudal view. Scales as indicated.

Asteraceae (eight spp.), Fabaceae (one sp.), Hydrophyllaceae (two spp.), Lamiaceae (one sp.), Nyctaginaceae (two spp.), and Onagraceae (six spp.) (Stonedahl and Schwartz 1986, 1988).

Pseudopsallus greggii, new species
Figures 1, 6, 7

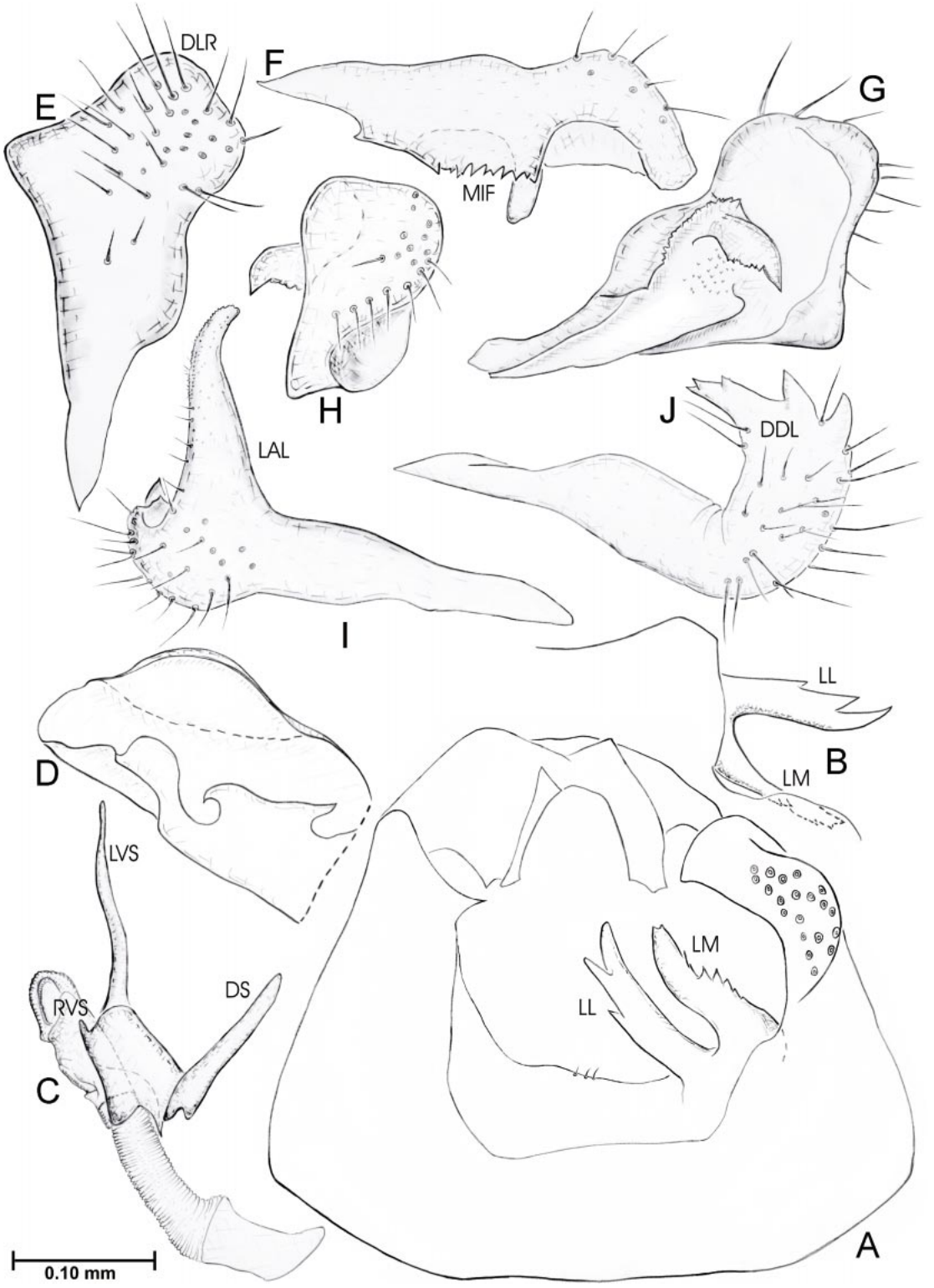
HOLOTYPE: Male: ''USA: Texas: *Brewster Co.*[,] Big Bend National Pk.[,] Rosilla Mts.,

29°34′33″; 103°15′40″[,] August 5, 1991[,] J. C. Schaffner[;] Taken on *Tiquilia greggii* (T. & G.) Richardson [Boraginaceae,] det A. M. Powell ′91[;] Natl. Park. Serv.[,] Big Bend N. P.[,] Accession #650 [blue label].'' Deposited in the Texas A&M University Insect Collection.

DIAGNOSIS: Along with *tiquiliae*, recognized among the species of *Pseudopsallus* by the relatively short body length and strongly produced anteocular portion of the head; *greggii* is also distinguished by its pale antennal segment 1, conspicuous black subapical patch on dorsal surface of the femora, black labium, wider vertex (0.35–0.37♂, 0.39–0.44♀; *tiquiliae* 0.30–0.33♂, 0.33–0.40♀), more produced anteocular portion of the head (0.30–0.34♂, 0.34–0.41♀; *tiquiliae* 0.26–0.30♂, 0.29–0.36♀), and longer labium (1.85–2.30♂, 1.93–2.48♀; *tiquiliae* 1.50–1.85♂, 1.66–1.95♀).

DESCRIPTION: *Male*: Small, subparallel-sided. MEASUREMENTS: Total length 3.34 (2.95–3.80), length apex clypeus-cuneal fracture 2.35 (2.18–2.60), maximum width across hemelytra 1.29 (1.14–1.43); head width 0.71 (0.68–0.74), vertex width 0.35 (0.35–0.37), anteocular length 0.32 (0.30–0.34), eye width 0.17 (0.15–0.18), eye height 0.36 (0.34–0.38); antennal length segment 1: 0.21 (0.20–0.23), 2: 1.09 (0.98–1.24), 3: 0.81 (0.65–0.88), 4: 0.36 (0.31–0.39); labium length 2.13 (1.85–2.30), reaching insertion of left paramere; pronotum width 1.06 (0.96–1.16), pronotum length 0.57 (0.53–0.63). COLORATION (fig. 1): creamy gray; head with clypeus dark fuscous to black, dark markings on anterior portion of maxillary plate, extreme anterior margin of mandibular plate, two variable pairs of small bilateral marks on frons and one pair of spots on temporal areas, collum infuscate; antennal segment 2–4 dark fuscous to black; labial segment 1 black on ventral margin, segments 2–4 black; black mark on dorsal margin of metepisternum; calli with diffuse fuscous to black markings, pronotal disk sometimes with diffuse orange brown spots; mesoscutum black, scutellum brown basomedially; portions of endocorium, paracuneus, and cuneus variably infuscate; membrane strongly infuscate, veins creamy white; abdomen with variable dark fuscous markings on ventral margin and laterally on subdorsal margin; tumid setose region on left side of genital aperture; parameres deeply fuscous; black spots on legs, femora with obvious black area subapically; tibiae black basally and distally; tarsi black. SURFACE AND VESTITURE: Subshining, smooth, dorsal vestiture of mixed, widely scattered, slightly expanded, silvery, scalelike setae (fig. 6C) and moderately densely distributed, pale, reclining simple setae; tibiae with pale reclining setae, dark brown spines, and parallel rows of minute black spicules. STRUCTURE: Head triangular in dorsal view, length from apex of clypeus to vertex 91% of head width across eyes; frons gently rounded; clypeus obvious in dorsal view; anteocular distance in lateral view equal to 3.5× diameter of antennal segment 1, anteocular distance 13% greater than distance posterior to antennal fossae in dorsal view; eye height in lateral view equal to 93% of head height; pronotum subquadrate in dorsal view; corial margins subparallel. GENITALIA: *Genital segment:* aperture with one pair of subequal length, flattened left tergal processes, LM with three to four prominent apical serrations, LL with serrate lateral margin (figs. 6F, 7A, B); left surface of segment, between tergal processes and paramere insertion, tumid with stouter setae than on remainder of genital segment.(figs. 6F, 7A). *Left paramere:* DLL equally broad basally and medially, with four or five apical spines, basalmost spines somewhat recurved (figs. 6F, 7J); LAL gradually attenuate, apex rounded, slightly recurved, lateral surface with spinules (figs. 6F, 7I). *Right paramere:* MIF marginally serrate, with prominent, ventrally serrate, tubercle distally; troughlike region ventral to MIF with spinules (fig. 7F, G); DLR broadly truncate, smooth (fig. 7E); lateral surface slightly concave ventrally (figs. 6F, 7H). *Phallotheca:* aperture sinuate, right side with notch and concavity (fig. 7D). *Vesica:* DS prominent, smooth, slightly attenuate; RVS minute, situated ventrally; LVS long, smooth, strongly attenuate (fig. 7C).

Female: Macropterous. Similar to male in color, vestiture, and structure, except for smaller eyes, wider vertex, slightly shorter hemelytra, and sometimes pale clypeus with dark bilateral paired and medial stripe. MEASUREMENTS: Total length 3.23 (2.95–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3.45), length apex clypeus-cuneal fracture 2.45 (2.20–2.63), maximum width across hemelytra 1.30 (1.17–1.43); head width 0.72 (0.70–0.75), vertex width 0.40 (0.39–0.44), anteocular length 0.38 (0.34–0.41), eye width 0.15 (0.14–0.16), eye height 0.35 (0.33–0.36); antennal length segment 1: 0.22 (0.20–0.23), 2: 1.11 (0.97–1.20), 3: 0.83 (0.68–0.91), 4: 0.37 (0.31–0.41); labium length 2.31 (1.93–2.48), reaching ninth abdominal sternite; pronotum width 1.04 (0.94–1.11), pronotum length 0.54 (0.49–0.60).

ETYMOLOGY: Named for the occurrence of all specimens on the host species *Tiquilia greggii*.

HOST: *Tiquilia greggii* (Torrey and A. Gray) A. T. Richardson, plume coldenia.

DISTRIBUTION: Southern New Mexico to southwestern Texas.

PARATYPES: USA: **New Mexico:** *Eddy Co.:* Campsite, 32°21.4′N 103°46.9′W, D. R. Delorme, H. L. Carroll, ex light, 1♂ (TAMU); Hope, July 22, 1967, L. A. Kelton, 1♂ (CNC). *Hidalgo Co.:* Granite Gap, 1 mi N of, August 30, 1974, J. D. Pinto 1♂, 1♀ (UCR). *Otero Co.:* Mountain Park, June 27, 1940, D. E. Hardy, 1♂ (KU); White Sands, June 27, 1940, R. H. Beamer, D. E. Hardy, 3♂, 1♀ (KU). **Texas:** *Brewster Co.:* same label data as holotype, 26♂, 22♀ [fig. 1 adult dorsal habitus photographs] (TAMU); Big Bend Ranch S. N. A., 1.8 mi N of McGuire's Tanks, August 7, 1991, J. C. Schaffner, 3♂, 1♀ (TAMU); Cottonwood Campground, Big Bend National Park, September 27–28, 1986, J. T. Doyen, ex black and white light, 2♂ (UCB); Rosillos Mts. Lodge, Big Bend Natl. Pk., September 21, 1990, Zolnerowich and Cecora, ex black light, Z90/074, 4♂ (TAMU). *Hudepeth Co.:* 0.5 mi E of Indio Mountain Reserve Station, 30°46′24″N 105°00′48″W, 4100 ft, April 12, 2002, Diaz and Gillogly, ex MV light, 2♂ (TAMU). *Presidio Co.:* Presidio: October 5, 1929, S. E. Jones, 5♂ (TAMU); August 12, 1968, J. E. Hafernik, ex black light, 1♂ (TAMU); 10 mi N of, August 18, 1965, J. C. Schaffner, 29♂, 10♀ (TAMU). 13 mi N of, (AMNH, CNC, USNM, TAMU): 14 July 1968, M. L. Allender, 2♂, 6♀. C. L. Cole, ex *Tiquilia greggii* det. A. M. Powell 1992: July 14, 1966, 4♂, 10♀; July 26, 1966, 3♂, 7♀; August 8, 1966, 1♀; September 13, 1966, 14♂, 24♀; September 30, 1966, 3♀. Shafter, 2 mi N of, J. E. Hafernik: July 2, 1968, 5♂, 2♀ (TAMU); July 30, 1968, ex *Tiquilia greggii* det. A. M. Powell 1992, 7♂, 5♀ (TAMU); August 9, 1968, 4♀ (TAMU). *Val Verde Co.:* Seminole Canyon St. Pk, April 15, 1989, J. Heraty, 1♂ (TAMU). *Webb Co.:* Laredo, 27 mi S of, June 28, 1979, J. D. Pinto 1♀ (UCR); Mines Rd at San Ambrosia Creek, May 2, 1994, W. Godwin, ex black light, 2♂ (TAMU).

Pseudopsallus tiquiliae, new species
Figures 1, 8, 9

HOLOTYPE: Male: ''USA: California: *Imperial Co.,* 5.4 mi NW Ocotillo on rt S2, April 23, 1980, Schwartz & Russell, *Tiquilia palmeri* (A. Gray) A. Rich[ards.] (Boraginaceae).'' Deposited in the American Museum of Natural History.

DIAGNOSIS: Distinguished from *greggii*, the only other small species of *Pseudopsallus* with a strongly produced anteocular portion of the head, by the black antennal segment 1, small dark fuscous spots on the dorsoapical surface of the femora, smaller fuscous labium, more narrow vertex, and shorter anteocular portion of the head (measurement comparison in preceding species treatment).

DESCRIPTION: *Male*: Small, parallel-sided. MEASUREMENTS: Total length 3.38

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Fig. 7. Male genitalia of *Pseudopsallus greggii*, Texas: Truckhaven. **A.** Genital segment, dorsal view. **B.** Left tergal process, lateral view. **C.** Vesica, right lateral view. **D.** phallotheca, right lateral view. **E–H.** Right paramere. **E.** Lateral view. **F.** Dorsal view. **G.** Medial view. **H.** Apical view. **I–J.** Left paramere. **I.** Ventral view. **J.** Lateral view. DLL, dorsal lobe of left paramere; DLR, dorsal lobe of right paramere; DS, dorsal spiculum of vesica; LAL, lateral lobe of left paramere; LL, left lateral tergal process; LM, left medial tergal process; LVS, left ventral spiculum of vesica; MIF, medial interior flange of right paramere; RVS, right spiculum of vesica. Scale = 0.10 mm.

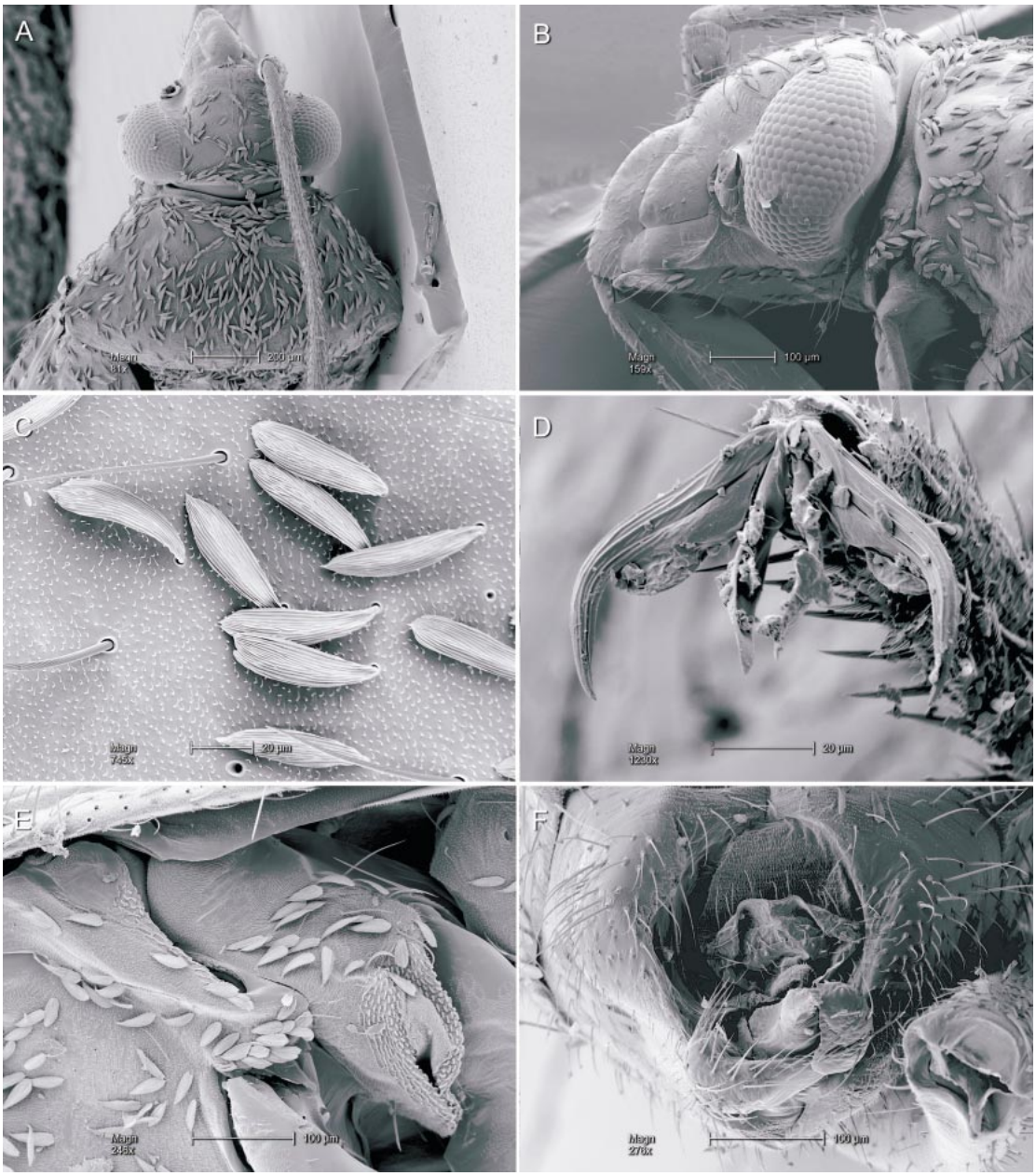

Fig. 8. Scanning electron micrographs of *Pseudopsallus tiquiliae* ♂♀, California: Mt Signal. **A.** Head and pronotum, dorsal view. **B.** Head, lateral view. **C.** Setae of corium, dorsal view. **D.** Pretarsus, apical view. **E.** Mesothoracic spiracle and metathoracic scent efferent system, lateral view. **F.** Genital segment, caudal view. Scales as indicated.

(2.90–3.85), length apex clypeus-cuneal fracture 2.31 (2.10–2.60), maximum width across hemelytra 1.20 (1.10–1.34); head width 0.65 (0.59–0.69), vertex width 0.32 (0.30–0.33), anteocular length 0.28 (0.26–0.30), eye width 0.15 (0.13–0.18), eye height 0.31 (0.28–0.33); antennal length segment 1: 0.22 (0.21–0.23), 2: 0.99 (0.86–1.14), 3: 0.72

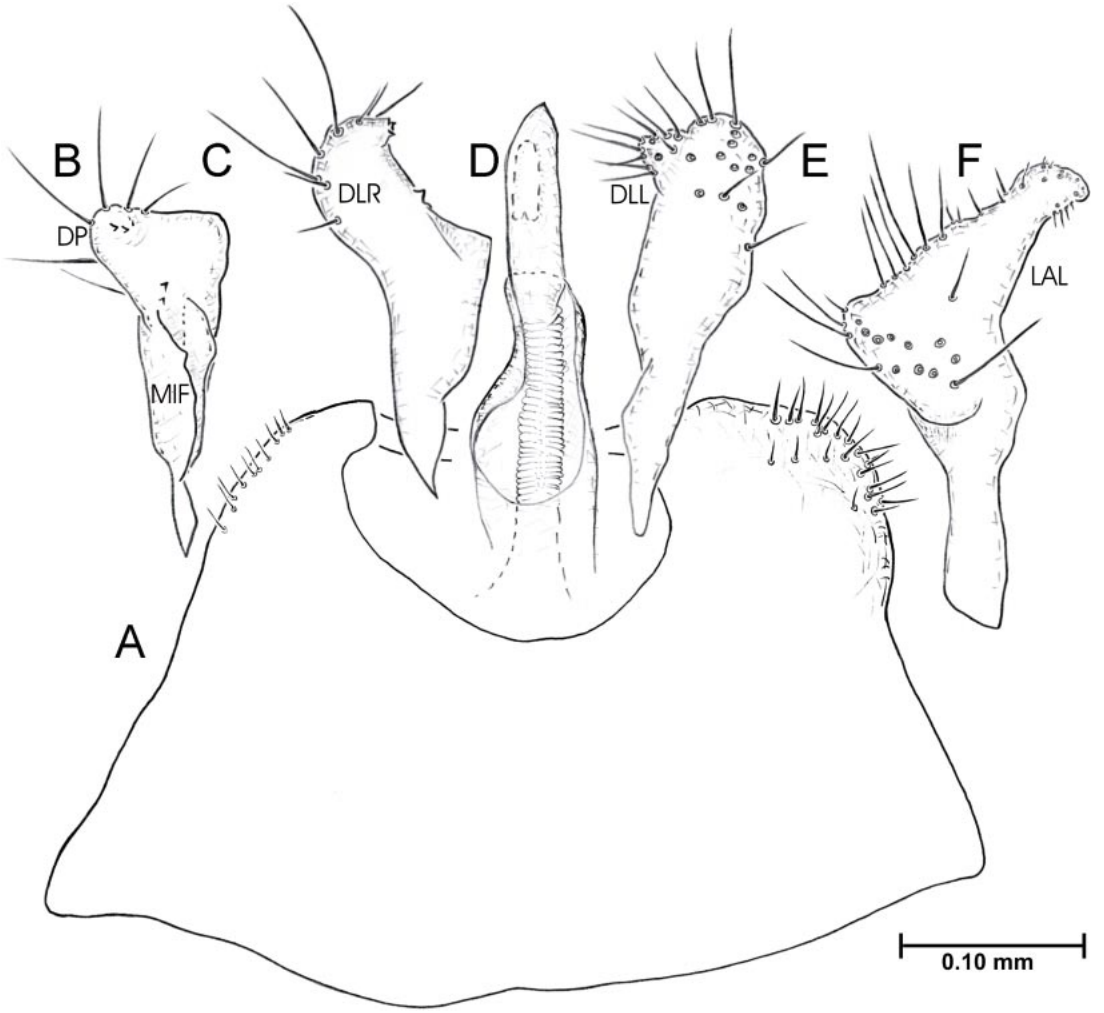

Fig. 9. Male genitalia of *Pseudopsallus tiquiliae*, California: Truckhaven. **A.** Genital segment, dorsal view. **B–C.** Right paramere. **B.** Medial view. **C.** Dorsal view. **D.** Vesica and phallotheca, dorsal view. **E–F.** Left paramere. **E.** Lateral view. **F.** Ventral view. DLL, dorsal lobe of left paramere; DLR, dorsal lobe of right paramere; DP, distal portion of dorsal lobe of right paramere; LAL, lateral lobe of left paramere; MIF, medial interior flange of right paramere. Scale = 0.10 mm.

(0.63–0.83), 4: 0.28 (0.24–0.35); labium length 1.68 (1.50–1.85), reaching middle of genital segment; pronotum width 1.00 (0.86–1.08), pronotum length 0.46 (0.41–0.50). COLORATION (fig. 1): yellowish white; head with variable dark fuscous markings anterior of antennal fossa, four pairs of marks laterally on frons and temporal areas, collum entirely dark; antenna dark fuscous to black; labial segments 3 and 4 fuscous; pronotum with black anterior margin, dark fuscous calli, brownish gray infuscation on propleuron and disk; mesoscutum and scutellum with large, paired bilateral dark fuscous marks; hemelytra brownish gray infuscation with pale yellowish white sutures and veins; cuneus dark fuscous with pale apex; membrane faintly infuscate, veins pale yellowish white; abdomen dark fuscous with variable yellowish brown mottling; tumid setose region on left side of genital aperture; legs with dark brown coxae; femora and tibiae yellowish

brown with small scattered dark fuscous spots; tarsi dark fuscous. SURFACE AND VESTITURE: Subshining, smooth, dorsal vestiture of mixed scattered, broad, silvery, scalelike setae (fig. 8C) and moderately densely distributed, pale, reclining simple setae; tibiae with pale reclining setae, dark brown spines, and parallel rows of minute black spicules. STRUCTURE: Head triangular in dorsal view, length from apex of clypeus to vertex 90% of head width across eyes; frons gently rounded; clypeus obvious in dorsal view; anteocular distance in lateral view equal to 4× diameter of antennal segment 1, anteocular distance 15% greater than distance posterior of antennal fossae in dorsal view; eye height in lateral view equal to 82% of head height; pronotum subtriangular in dorsal view; corial margins parallel. GENITALIA: *Genital segment:* aperture without tergal processes (figs. 8F, 9A); left surface of segment, between midline and paramere insertion, tumid with stouter setae then on remainder of genital segment (figs. 8F, 9A). *Left paramere:* DLL small, length shorter than one-half width of paramere, apex somewhat pointed (figs. 8F, 9E); LAL broad basally, slightly attenuate, apex rounded (figs. 8F, 9F). *Right paramere:* MIF margin smooth, with two spinules distally, troughlike region ventral to MIF smooth (fig. 9C); DLR produced dorsal to MIF, DP slightly produced with several apical spinules (figs. 8F, 9B). *Phallotheca:* cylindrical with ovate aperture (fig. 9D). *Vesica:* apparently without spicules; ductus with aperture directed ventrally (fig. 9D).

Female: Macropterous. Similar to male in color, vestiture, and structure, except for smaller eyes, wider vertex, and slightly shorter hemelytra. MEASUREMENTS: Total length 2.97 (2.55–3.33), length apex clypeus-cuneal fracture 2.21 (1.89–2.45), maximum width across hemelytra 1.20 (1.02–1.30); head width 0.68 (0.62–0.73), vertex width 0.36 (0.33–0.40), anteocular length 0.33 (0.29–0.36), eye width 0.15 (0.15–0.17), eye height 0.31 (0.29–0.34); antennal length segment 1: 0.21 (0.19–0.23), 2: 0.89 (0.75–1.01), 3: 0.67 (0.56–0.78), 4: 0.26 (0.23–0.28); labium length 1.81 (1.66–1.95), reaching eighth abdominal sternite; pronotum width 1.00 (0.84–1.09), pronotum length 0.46 (0.40–0.53).

ETYMOLOGY: Named for its occurrence on species of *Tiquilia* Persoon (Boraginaceae) or coldenia and crinklemat.

HOST: *T. palmeri* (A. Gray) A. T. Richardson, Palmer's crinklemat.

DISTRIBUTION: The Mojave desert in southeastern California east to western Arizona.

PARATYPES: USA: **Arizona:** *La Paz Co.:* Budweiser Spring, Kofa Mountains, March 20, 1980, J. T. and D. A. Polhemus, 15♂, 12♀ (JTP). **California:** *Imperial Co.:* Glamis, 2 mi W of, July 25, 1960, R. C. Dickson [?, handwritten], ex *Coldenia palmeri*, 1♀ (UCR); Mt. Signal, at base of, 12 mi W of Calexico, March 30, 1974, J. D. Pinto, ex *Coldenia palmeri*, 5♂, 5♀ (UCR); same label data as holotype, 6♂, 25♀ [fig. 1 adult dorsal habitus photographs] (AMNH, USNM); Plaster City, 2.5 mi N of, May 1, 1952, Timberlake, ex *Coldenia palmeri*, 8♂, 8♀ (UCR); Truckhaven, April 15, 1949, Timberlake, ex *Coldenia palmeri*, 2♂, 1♀ (UCR). *Inyo Co.:* Wyman Canyon, White Mtns, July 9, 1976, S. and S. Frommer, ex light, 1♂ (UCR). *Riverside Co.:* Box Canyon, April 27, 1952, Timberlake, ex *Coldenia palmeri*, 1♂ (UCR). Mecca, ex *Coldenia palmeri* (UCR): 3 mi E of, April 27, 1952, Timberlake, 11♂, 3♀; Box Canyon Wash, 5 mi E of, June 6, 1979, J. D. Pinto, 4♂, 8♀; 5 mi E of, October 5, 1976, J. D. Pinto, 4♂, 7♀. Snow Creek, White Water, 1500 ft, April 6, 1955, W. R. Richards, 1♀ (CNC); Thousand Palms, April 3, 1955, W. R. Richards, 5♂, 19♀ (CNC).

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Institutional abbreviations, institutional names, and names of curators or other responsible individuals are presented in the following list:

AMNH	American Museum of Natural History, New York
CNC	Canadian National Collection of Insects, Agriculture Canada, Ottawa
KU	University of Kansas, Snow Entomological Museum, Lawrence, Alex Slater, Zachary Falin
TAMU	Texas A&M University, College Station, Edward G. Riley, Joseph C. Schaffner

UAZ University of Arizona, Tucson, the late Floyd Werner, Carl Olson
UCB University of California, Berkeley, John Chemsak, Cheryl Barr
UCR University of California, Riverside, Saul Frommer, John D. Pinto, Douglas Yanega
UNAM Universidad Nacional Autonoma de Mexico, Harry Brailovsky
USNM United States National Museum of Natural History, Washington, D.C., Thomas J. Henry, the late Richard C. Froeschner

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