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## North American *Phytocoris*: Eleven New Species from Texas (Heteroptera: Miridae)

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### ABSTRACT

Eleven new species of *Phytocoris* are described from Texas. Illustrations of the male genitalic structures are provided for all species and habitus views are presented for *P. biumbonatus* and *P.*

*belfragei*. The relationship of each species to other North American taxa is discussed, particularly with regard to species-group classifications of earlier authors.

### INTRODUCTION

The southwestern United States is a region of high ecological and biotic diversity, characterized in large part by open upland habitats separated by expanses of lowland desert and shrub/steppe. The isolation of many small to moderate size mountain ranges in this region has resulted in high levels of local and regional endemism in numerous groups of relatively nonvagile, host-specific insects such as the Miridae (Schuh and Schwartz, 1988; Stonedahl, 1988, 1990; Stonedahl and Schwartz, 1986, 1988). Bailey (1978) recognized 10 distinct ecological regions, or provinces, in the southwestern United States stretching from the chaparral and grassland

communities of western and central California to the semidesert zone of southwestern Texas. Perhaps the best studied insect fauna of these "ecoregions" is found in the Mexican Highland Shrub Steppe Province of southeastern Arizona, which incorporates some of the most species-rich montane communities in the western United States (e.g., Chiricahua Mts., Santa Rita Mts.). In my revision of North American *Phytocoris* (Stonedahl, 1988), southeastern Arizona was by far the most species-rich area, containing 76 of the 199 known western species, 22 of which are endemic to the region.

East of the Mexican Highland Shrub Steppe

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Province in southern New Mexico and southwestern Texas is an arid semidesert zone that Bailey (1978) termed the Chihuahuan Desert Province. Like southeastern Arizona, this region is characterized by numerous small to moderate size mountain ranges separated by expanses of arid lowland. Thirty-eight species are recorded from this region in my revision of western North American *Phytocoris* (Stonedahl, 1988): five are endemic to the region (*P. alamogordo* Stonedahl, *P. cienega* Stonedahl, *P. mesillae* Knight, *P. presidio* Stonedahl, *P. schaffneri* Stonedahl); three are widely distributed in the eastern United States (*P. brevisculus* Reuter, *P. olseni* Knight, *P. quercicola* Knight); 30 species have distributions including parts of Arizona, Colorado, Utah, and/or northern New Mexico.

I recently had the opportunity to study a large collection of *Phytocoris* from Texas, which had been added to the Texas A&M collections since my revision of the genus in 1988. From this material I was able to identify 15 additional species from the Chihuahuan Desert Province: eight previously described species with distributions including other parts of the American southwest (*P. eureka* Bliven, *P. fraterculus* Van Duzee, *P. heidemanni* Reuter, *P. kiowa* Stonedahl, *P. schuhi* Stonedahl, *P. tenuis* Van Duzee, *P. umbrosus* Knight, *P. yollabollae* Bliven); six new species endemic to the region (*P. avius*, *P. ravidus*, *P. rosillos*, *P. guadalupe*, *P. pallidilineatus*, *P. tumidifrons*); and one new species, *P. biumbonatus*, widely distributed in Texas east of the Pecos River. This brings the total number of species known from southern New Mexico and southwestern Texas to 53, 11 of which are endemic to the region. For the genus *Phytocoris*, this level of regional endemism (21%) is surpassed only in southeastern Arizona, where endemism runs at 29%. Only four of the 53 species (*P. biumbonatus*, *P. brevisculus*, *P. olseni*, *P. quercicola*) recorded from the Chihuahuan Desert Province occur widely east of the Pecos River, although seven additional species are occasionally found as far east as the upland areas west and north of San Antonio (*P. baboquivari* Stonedahl, *P. carnosulus* Van Duzee, *P. consors* Van Duzee, *P. inops* Uhler, *P. juniperanus* Knight, *P. maricopae* Stonedahl, *P. vanduzeei* Reuter).

This paper presents morphological and distributional data for 11 previously undescribed species of *Phytocoris* from Texas. Six of these species, as listed above, are currently known only from isolated mountain ranges west of the Pecos River in the southwestern corner of the state; *P. belfragei* and *P. kerrvillensis* are restricted to upland areas north of San Antonio; *P. falcatus* is known only from Jim Wells County in the southern subcoastal part of the state; *P. denticulatus* is known only from Wood County in the northeastern corner of the state; and *P. biumbonatus* is widely distributed in western and central Texas and also occurs in the state of Tamaulipas, Mexico.

All but three of the species described here have affinities with taxa treated in my revision of western North American *Phytocoris* (Stonedahl, 1988). The affinities are presented in the following diagnoses. Two of the remaining species, *P. kerrvillensis* and *P. falcatus*, are related to eastern North American taxa included in "Group I" of Knight (1923, 1941). The relationship of *P. biumbonatus* to other North American species is unclear. A discussion regarding the paraphyly of Knight's "Group I" is provided in the species treatment for *P. kerrvillensis*.

All measurements are given in millimeters. Terms for the external morphology and male genitalia follow those of Stonedahl (1988). All holotypes from Texas A&M University have been placed on permanent loan in the collections of the Department of Entomology, American Museum of Natural History, New York.

#### ACKNOWLEDGMENTS

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Western Washington University, Bellingham (WWU); Randall T. Schuh, American Museum of Natural History, New York (AMNH); Michael D. Schwartz, Centre for Land and Biological Resources Research, Agriculture Canada, Ottawa (CNC); Alex Slater and Robert Brooks, Snow Entomological Museum, University of Kansas, Lawrence (KU).

Graham J. duHeaume, International Institute of Entomology, London, prepared the line drawings of the male genitalia and the habitus illustrations of *P. biumbonatus* and *P. belfragei*. Randall T. Schuh, Michael D. Schwartz, and Joseph C. Schaffner kindly reviewed an earlier version of the manuscript.

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*Phytocoris avius*, new species

Figures 1–4, 49

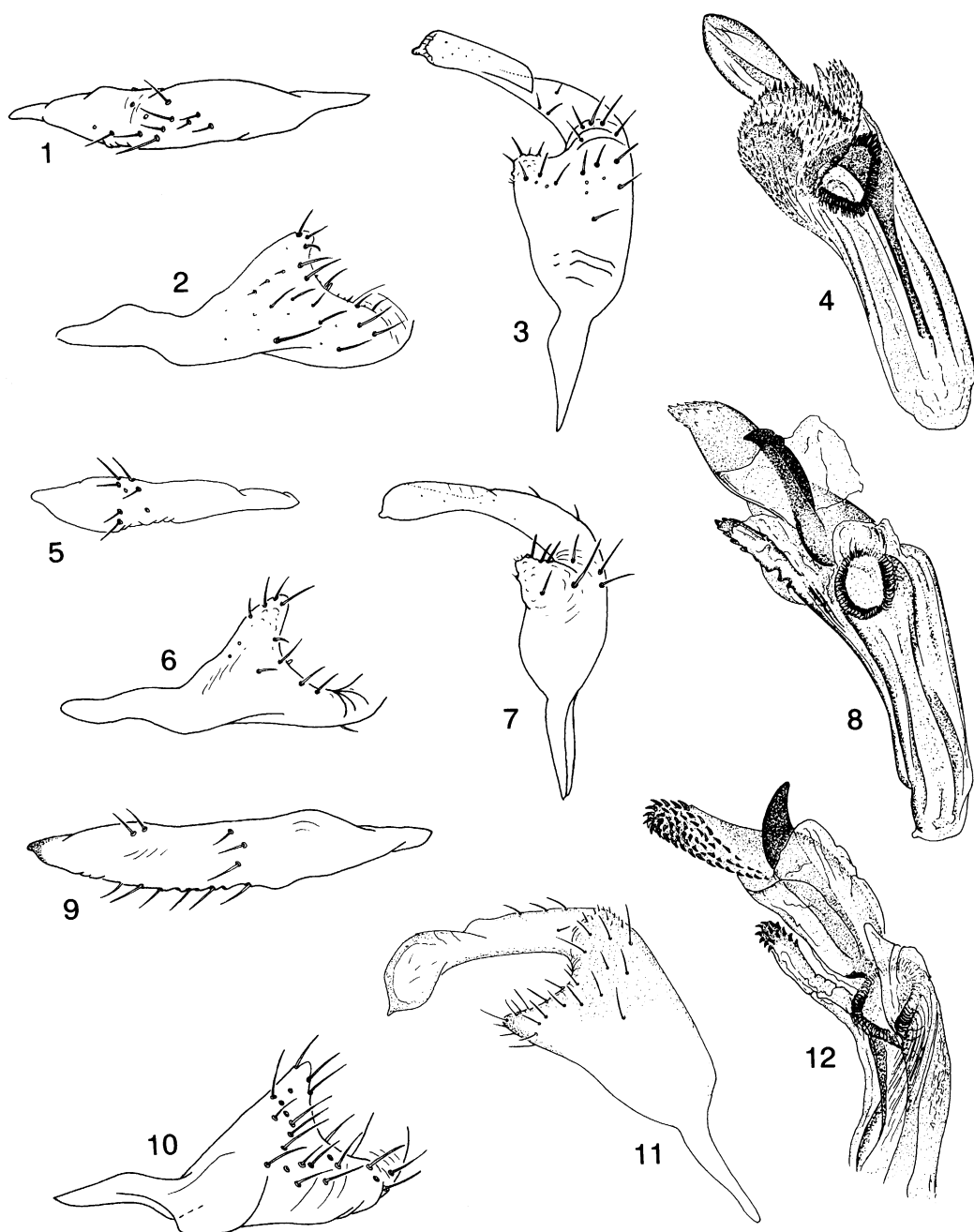
**DIAGNOSIS:** This species is recognized as belonging to the *rostratus* species-group (Stonedahl, 1988) by the following combination of characters: (1) subquadrate head with strongly produced frons and tylus base; (2) antennal segment I darkened ventrally; (3) dorsum with some narrow, dark, scalelike setae mixed with other types of vestiture; and (4) vesica with greatly reduced primary membranous sac and two sclerotized processes. *P. avius* is distinguished from other grayish brown species of the *rostratus* group by the more sparsely distributed, dark, scalelike setae on the dorsum and by the structure of the male genitalia, especially the large upright tubercles on the genital capsule above the paramere bases (fig. 49), the strongly produced, angulate sensory lobe of the left paramere (figs. 2, 3), and the form of the vesica and its sclerotized processes (fig. 4).

**DESCRIPTION:** *Male.* Length 5.40–5.81; greatest width across hemelytra 1.67–1.68; grayish brown general coloration; dorsal vestiture of semierect, dark, simple setae, recumbent silky setae, and narrow, dark, scalelike setae, the latter type mostly restricted to posterior lobe of pronotal disc and distomedial region of corium. **Head:** Width across eyes 0.87–0.91; width of vertex 0.42–0.46; yellowish brown with fuscous markings on vertex, apex of frons, base and middle of tylus, bor-

ders of antennal fossae, dorsal margins of mandibular plates, maxillary plates and bucculae, and behind eyes; frons strongly produced anteriorly, with 8 faint, dark striae; eyes occupying about two-thirds of head height in lateral view, not produced above level of vertex, length slightly less than width of vertex. **Antennae:** I, length 1.30–1.53, dark brown with large yellowish brown maculae dorsally and laterally; II, length 2.70–3.05, brown with narrow pale annulus basally; III & IV, dark brown, III with narrow pale annulus basally. **Labium:** Length 2.74–2.85, reaching to 6th or 7th abdominal segment. **Pronotum:** Mesal length 0.79–0.84; posterior width 1.35–1.45; pale grayish yellow ground color; collar with broad fuscous patch either side of middle; calli and anterolateral angles of disc marked with fuscous; posterior submargin of disc with wavy fuscous line and 4 weakly elevated, setiferous points; posterior margin narrowly pale; propleura fuscous, apical third pale. **Scutellum:** Broadly darkened dorsally either side of gradually widening (toward apex) pale median line; anterolateral angles broadly yellowish brown. **Hemelytra:** Pale gray with limited fuscous markings mostly on basal third of clavus, outer margin, and posterolateral angle of corium, along claval, radial, and costal veins, and at apex of cuneus; membrane densely conspurcate, veins brown, becoming pale distally. **Legs:** Femora pale yellow with brown to fuscous, reticulate markings; dorsodistal surface of femora more extensively darkened and marked with pale spots; tibiae pale with brown to fuscous markings; foretibiae with 4 dark annuli including narrow band at base; tibial bands broken by pale spots dorsally; tarsi dark brown. **Genitalia:** Figures 1–4, 49.

*Female.* Length 5.09–5.55; greatest width across hemelytra 1.63–1.67; similar to male in color, vestiture, and structure except scutellum more extensively darkened, leaving only apex and anterolateral angles narrowly pale, and corium more extensively darkened along inner margin. **Head:** Width across eyes 0.88–0.92; width of vertex 0.44–0.47. **Antennae:** I, length 1.30–1.53; II, length 2.66–3.03. **Labium:** Length 2.77–3.06, reaching to 6th or 7th abdominal segment. **Pronotum:** Mesal length 0.75–0.80; posterior width 1.31–1.39.

**ETYMOLOGY:** From the Latin *avius* (out of



Figs. 1-12. Male genitalia. 1-4. *Phytocoris avius*. 1. Right paramere, lateral view. 2. Base of left paramere, lateral view. 3. Left paramere, dorsal view. 4. Vesica. 5-8. *Phytocoris ravidus*. 5. Right paramere, lateral view. 6. Base of left paramere, lateral view. 7. Left paramere, dorsal view. 8. Vesica. 9-12. *Phytocoris rosillos*. 9. Right paramere, lateral view. 10. Base of left paramere, lateral view. 11. Left paramere, dorsolateral view. 12. Vesica.

the way, untrodden), referring to the isolated habitat of the species.

**HOLOTYPE:** *Male*. USA, Texas, Culberson Co., Guadalupe Mountains National Park, Pine Springs Cpgd., 1792 m, 12–14.IX.1988, R. Anderson (TA&M; donated to AMNH).

**PARATYPES:** USA: Texas: Brewster Co.: 1 male, Big Bend National Park, Green Gulch, 5700 ft, 25.VII.1968, at “black light,” J. E. Hafernik (TA&M). Culberson Co.: 2 males and 4 females, same data as holotype (TA&M).

**ADDITIONAL SPECIMENS:** USA: Texas: Brewster Co.: Big Bend National Park: 1 female, Green Gulch, 5700 ft, 14.VIII.1968, at “black light,” J. E. Hafernik (TA&M); 1 female, K-Bar Ranch, 1000 m, 5–7.IX.1988, R. Anderson (TA&M).

***Phytocoris ravidus*, new species**

Figures 5–8, 50

**DIAGNOSIS:** This species is very similar to *P. avius*, but is readily distinguished by the shorter first antennal segment, narrower vertex, and structure of the male genitalia, especially the weakly produced tubercles on the genital capsule dorsad of the paramere bases (fig. 50), and the left paramere with stronger sensory lobe (fig. 6) and more broadly expanded distal region of shaft (fig. 7).

**DESCRIPTION:** *Male*. Length 4.90–5.09; greatest width across hemelytra 1.50–1.55; grayish brown general coloration; dorsal vestiture as described for *P. avius*. **Head:** Width across eyes 0.82–0.85; width of vertex 0.38–0.40; color as described for *P. avius* except dark markings on lower half of head reddish brown and striae on frons very faint or obsolete; eyes occupying about three-fourths of head height in lateral view; length of eye slightly greater than width of vertex. **Antennae:** I, length 0.99–1.18, dark brown with white maculae dorsally and laterally; II, length 2.24–2.56, dark brown with pale annulus basally, paler brown medially but without distinct median annulus; III & IV, dark brown. **Labium:** Length 2.52–2.60, reaching to 6th or 7th abdominal segment. **Pronotum:** Mesal length 0.73–0.80; posterior width 1.24–1.35; color as described for *P. avius* except markings on calli brownish red. **Scutellum:** Color

as described for *P. avius* except more broadly darkening laterally leaving only anterolateral angles and median stripe at apex pale. **Hemelytra:** Color as described for *P. avius* except more extensively marked with fuscous along inner margin of corium. **Legs:** Femora white or pale yellow with brown or reddish brown markings mostly restricted to distal half of segment; dorsodistal surface of femora more extensively darkened and marked with pale spots; tibiae and tarsi as described for *P. avius*. **Genitalia:** Figures 5–8, 50.

*Female*. Unknown.

**ETYMOLOGY:** From the Latin *ravidus* (somewhat gray, grayish), referring to the general coloration of the bug.

**HOLOTYPE:** *Male*. USA, Texas, Culberson Co., Guadalupe Mountains National Park, 3–4.IX.1986, East, Haack & Kovarik (TA&M; donated to AMNH).

**PARATYPE:** 1 male, USA, Texas, Brewster Co., Big Bend National Park, Green Gulch, 11.X.1966 (USNM).

***Phytocoris rosillos*, new species**

Figures 9–12, 51

**DIAGNOSIS:** Similar to *P. avius* and *P. ravidus*, but distinguished by the the more extensively darkened hemelytra, especially along claval vein and inner margin of corium, and the distinct vesica of the male genitalia (fig. 12). *P. rosillos* is further distinguished from *P. ravidus* by the longer first antennal segment and broader head and vertex, and from *P. avius* by the smaller less erect genital tubercles (fig. 51) and narrower sensory lobe of the left paramere (fig. 10).

**DESCRIPTION:** *Holotype male*. Length 5.93; greatest width across hemelytra 1.75; dark grayish brown general coloration; dorsal vestiture as described for *P. avius*. **Head:** Width across eyes 0.91; width of vertex 0.44; color as described for *P. avius* except striae on frons well defined, dark brown; eyes occupying about three-fourths of head height in lateral view, not produced above level of vertex; length of eye about equal to width of vertex. **Antennae:** Color as described for *P. avius* except maculae on segment I white; length of segment I 1.42, II 2.76. **Labium:** Length 3.07, reaching to 7th abdominal segment. **Prono-**

**tum:** Mesal length 0.84; posterior width 1.46; color as described for *P. avius* except darkened basal region of propleura with pale mark anteriorly. **Scutellum:** Mostly fuscous dorsally; anterolateral angles broadly pale; apex with distinct pale stripe reaching nearly to middle of disc. **Hemelytra:** Pale gray ground color; embolium and cuneus somewhat paler; extensively suffused with fuscous, especially along claval vein and broadly along much of inner margin of corium; cuneus and clavus bordering commissure remaining mostly pale; membrane densely conspurcate, veins pale except radius darkened. **Legs:** Femora white with fuscous markings mostly restricted to distal third of segment; metafemora more extensively reticulated with dark brown and with larger fuscous patches on dorsodistal surface, these broken by pale spots; tibial coloration as described for *P. avius*; tarsi brown. **Genitalia:** Figures 9–12, 51.

*Female.* Unknown.

**ETYMOLOGY:** Named for its occurrence in the Rosillos Mountains of southwestern Texas; a noun in apposition.

**DISCUSSION:** *P. rosillos*, *P. ravidus*, and *P. avius* form a subgroup within the *rostratus* species-group recognized by the limited distribution of dark, scalelike setae on the dorsum, the strongly produced, angulate sensory lobe of the left paramere (figs. 2, 6, 10), and the structure of the male vesica, particularly the small, nonribbed right sclerotized process and the strongly developed, spinose left basal lobe (figs. 4, 8, 12). In my key to species of the *rostratus* group (Stonedahl, 1988: 187), the new taxa treated here run to a complex of six species (couplets 17–21) recognized by having the left sclerotized process of the vesica sometimes weakly sclerotized distally, but without a membranous region or sac apically. The nonspinose right basal lobe of the vesica places the new species closest to *P. lineatus* Reuter and *P. ejuncidus* Stonedahl in couplet 21, from which they are easily distinguished by the characters given above and the more strongly developed genital tubercles (figs. 49–51).

**HOLOTYPE:** Male. USA, Texas, Brewster Co., Big Bend National Park, Rosillos Mts., 22.III–8.IV.1991, R. Wharton (TA&M; donated to AMNH).

***Phytocoris biumbonatus*, new species**

Figures 13–17, 52

**DIAGNOSIS:** Distinguished from other North American species by the following combination of characters: antennal segment I uniformly darkened ventrally, length less than or equal to width of head for males and slightly greater than head width for females; antennal segment II with pale annulus medially; corium with tuft of stout dark setae posteromedially in addition to those on apex of clavus, posterolateral angle of corium, and along inner anterior margin and apex of cuneus; distal two-thirds of metafemora mostly fuscous on anterior and dorsal surfaces, rarely marked with pale spots (fig. 13); male genital capsule with two large tubercles above base of left paramere (fig. 52); and male vesica as in figure 17.

**DESCRIPTION:** *Male.* Length 3.80–4.86; greatest width across hemelytra 1.42–1.71; dark brown general coloration; dorsal vestiture of semierect, dark, simple setae and recumbent, silky setae, also with some narrow, dark, scalelike setae, mostly on posterior lobe of pronotal disc and darkened distal areas of corium. **Head:** Width across eyes 0.77–0.90; width of vertex 0.36–0.40; dirty white or pale yellow with continuous fuscous band between antennal fossae (crossing dorsal margin of mandibular plates and apex of frons), brownish red to fuscous band across middle of tylus continuing onto basal margin of maxillary plates, and fuscous stripe behind each eye continuing across coxal cleft; head otherwise pale ventrad of antennal fossae; frons moderately convex with faint brown markings laterally but lacking distinct striae; vertex faintly marked with brown or brownish red; eyes occupying about two-thirds of head height in lateral view. **Antennae:** I, length 0.70–0.91, fuscous with large white maculae dorsally; II, length 1.58–1.93, brown with pale annulus at middle and base, usually also with one to several faint pale spots on darkened basal half of segment; III & IV, dark brown, III with pale annulus basally. **Labium:** Length 1.95–2.19, reaching to apices of metacoxae or slightly beyond. **Pronotum:** Mesal length 0.60–0.78; posterior width 1.22–1.53; collar white or pale yellow, suffused with fuscous

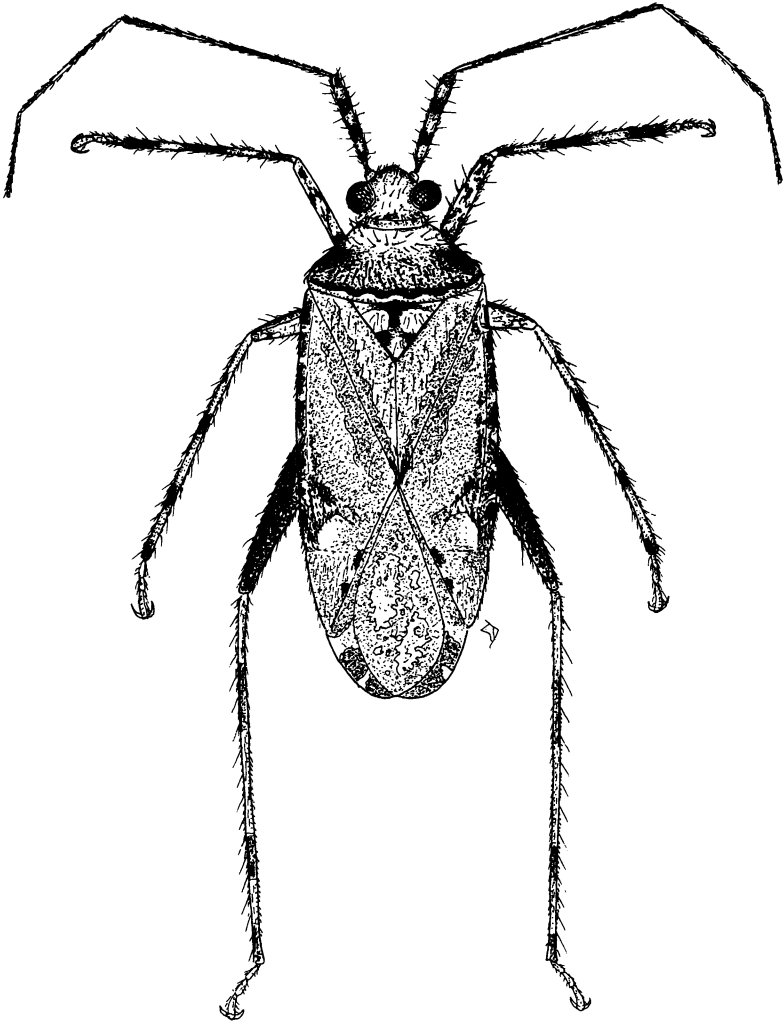


Fig. 13. *Phytocoris biumbonatus*, dorsal habitus, male.

dorsally, sometimes lightly tinged with red either side of middle; anterior lobe of disc pale yellow; calli usually with several faint red to brown marks; posterior lobe of disc brownish gray, usually marked with fuscous laterally behind calli; posterior submargin of disc with wavy fuscous line and 6 weakly elevated, setiferous points; posterior margin of disc narrowly white; propleura dark brown, apical third pale. **Scutellum:** Dirty white or pale yellow with oblique fuscous mark either side before apex, sometimes reaching to near middle of disc; anterior margin with fuscous mark medially, usually produced posteriorly

as dark line, sometimes nearly joining dark lateral marks. **Hemelytra:** Brownish gray ground color, moderately to extensively darkened with fuscous especially along outer margin of corium and on cuneus—darkest specimens with only distomedial region of corium and scattered spots on embolium pale, but typical coloration leaving inner half of clavus and middle of corium more broadly pale; cuneus usually extensively darkened, anterolateral angle always pale. **Legs:** Femora dirty white or pale yellow with reddish brown to fuscous markings mostly arranged in linear series on distal two-thirds of segment; me-

tafemora usually more extensively darkened, especially dorsally, and marked with pale spots; foretibiae with 4 dark annuli including narrow band at base; mesotibiae with 4 or 5 narrower, faint dark annuli; metatibiae with fuscous markings, especially dorsally, but without distinct annuli; tarsal segments I & III dark brown, II yellowish brown. **Genitalia:** Figures 14–17.

**Female.** Length 4.48–5.17; greatest width across hemelytra 1.64–1.82; similar to male in color, vestiture, and structure except head with broader vertex and longer antennae and labium. **Head:** Width across eyes 0.81–0.91; width of vertex 0.40–0.44. **Antennae:** I, length 0.88–1.06; II, length 1.91–2.15. **Labium:** Length 2.12–2.30, reaching slightly beyond apices of metacoxae. **Pronotum:** Mesal length 0.67–0.80; posterior width 1.35–1.52.

**ETYMOLOGY:** From the Latin *bi* (two) and *umbo* (boss, rounded protuberance), referring to the pair of rounded tubercles on the male genital capsule.

**DISCUSSION:** The relationship of *P. biumbonatus* to other species of North American *Phytocoris* is not clear. Externally, this species resembles *P. brevisculus* Reuter of the *juniperanus* group, and keys with some difficulty to this species in Stonedahl (1988). However, the dorsal vestiture with limited, dark scalelike setae and the greatly reduced primary membranous sac and two sclerotized processes of the male vesica suggest a closer relationship with species of the *rostratus* species-group (Stonedahl, 1988), particularly *P. avius*, *P. ravidus*, and *P. rosillos* described herein. The darkened ventral region of antennal segment I also is consistent with *rostratus* group species.

**HOLOTYPE:** Male. USA, Texas, Frio Co., 2 mi N Pearsall, 8.V.1976, J. C. Schaffner (TA&M; donated to AMNH).

**PARATYPES:** USA: New Mexico: 1 male, Quemado, 10.V.1987, W. F. Chamberlain (TA&M). Texas: Burnet Co.: Inks Lake State Park: 2 males, 9.V.1970, at light, J. C. Schaffner (TA&M); 1 male, 1.VI.1970, H. R. Burke (TA&M); 1 male, 3 females, 7.V.1989, R. Anderson (TA&M). Cameron Co.: 1 male, Brownsville, 1–3.VIII.1963, H. & A. Howden (CNC). Dimmit Co.: 1 male, Texas Exp. Sta., 7.VI.1933, light trap, H. J. Reinhard (TA&M); 2 females, 27.IV.1933 &

10.IV.1935, S. E. Jones (TA&M). Duval Co.: 1 male, 1 mi SW San Diego, 10.IV.1973, W. E. Clark (TA&M). Edwards Co.: 1 male, Rocksprings, 9.VII.1936, R. H. Beamer (KU). Frio Co.: 1 male, 5 females, same data as holotype (TA&M); 1 male, 1 female, 6.V.1976, G. V. Manley (TA&M); 2 females, 2 mi S Moore, 8.V.1976, Schaffner (TA&M); 2 males, 1 female, Moore area, 15.V.1976, G. V. Manley (TA&M); 2 males, 23–26.IV.1976 and 2 females, 3.V.1976, 10 mi N Pearsall, G. V. Manley (TA&M). Hidalgo Co.: 1 female, Bentsen-Rio Grande Valley St. Pk., 7.IV.1991, at UV & MV light, T. Carlow & E. Riley (TA&M); 1 female, Edinburg, 27.IV.1943, J. S. Martin (WWU). Jim Wells Co.: 2 females, La Copita Res. Sta., 8 mi W Ben Bolt, 20–21.V.1987, J. C. Schaffner (TA&M); 1 female, 1 mi N Premont, 10.IV.1973, W. E. Clark (TA&M). Llano Co.: 1 female, 2 mi S Buchanan Dam, 28.V.1973, Gaumer & Clark (TA&M). Palo Pinto Co.: 1 male, 14.VII.1928, R. H. Beamer (KU). Starr Co.: 3 males, 2 females, Santa Margarita Ranch, 9.IV.1994, at UV light, E. G. Riley (TA&M). Tom Green Co.: 3 females, San Angelo, O.C. Fisher Lake, 17.V.1975, M. C. Gruetzmacher (TA&M); 1 female, San Angelo, 27–29.V.1976, at light, M. C. Gruetzmacher (TA&M); 1 male, Veribest, 4.VII.1975, M. C. Gruetzmacher (TA&M). Uvalde Co.: 1 female, Concan, 6.VII.1936, R. H. Beamer (KU); 1 male, 7 mi N Sabinal, 1.V.1983, J. C. Schaffner (TA&M); 3 males, 2 females, 7 mi S Uvalde, 24.IV.1978, T. J. Henry & R. T. Schuh (AMNH). Val Verde Co.: 2 males, 15 mi W Del Rio, 27.V.1976, G. V. Manley (TA&M); 1 female, 15 mi E Juno, 27.V.1976, G. V. Manley (TA&M).

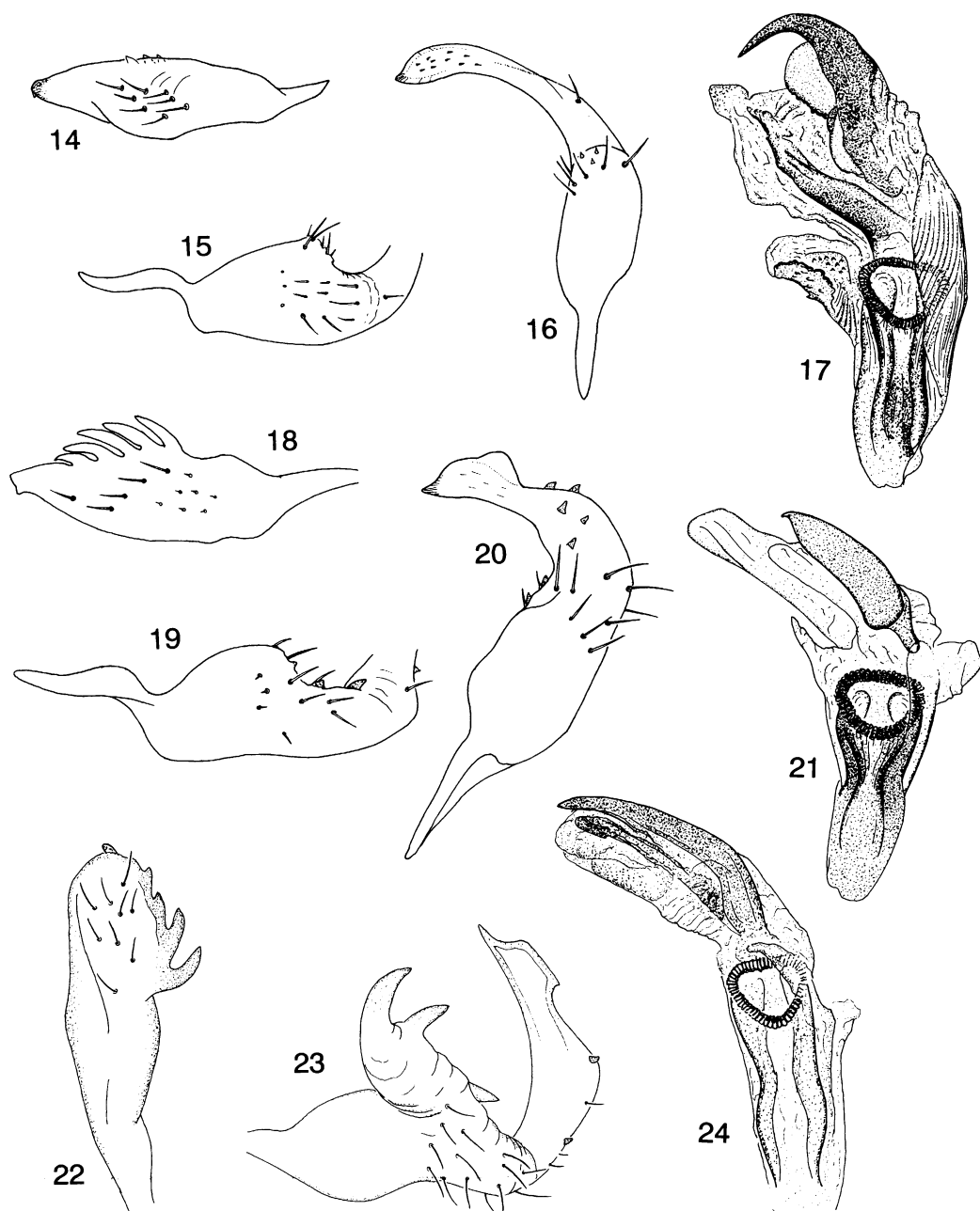
**ADDITIONAL SPECIMENS:** MEXICO: Tamaulipas: 1 female, 17.1 mi NE Jaumare, 10.X.1973, Gaumer & Clark (TA&M); 1 male, 3 mi N Jimenez, 15.VI.1953 (KU); 1 male, 15 mi N Ciudad Victoria, 6.VI.1961 (KU); 1 female, 12 mi SE Victoria, 20.IX.1974, G. Bohart & W. Hanson (USU).

*Phytocoris kerrvillensis*, new species

Figures 18–21, 53

**DIAGNOSIS:** Externally, this species resembles *P. davis* Knight and *P. albifacies* Knight, but does not key easily to either of these spe-





Figs. 14–24. Male genitalia. 14–17. *Phytocoris biumbonatus*. 14. Right paramere, lateral view. 15. Base of left paramere, lateral view. 16. Left paramere, dorsal view. 17. Vesica. 18–21. *Phytocoris kerrvillensis*. 18. Right paramere, lateral view. 19. Base of left paramere, lateral view. 20. Left paramere, dorsal view. 21. Vesica. 22–24. *Phytocoris falcatus*. 22. Right paramere, lateral view. 23. Left paramere, dorsolateral view. 24. Vesica.

cies or any other taxa treated in "Group I" of Knight's (1923, 1941) review of eastern North American *Phytocoris* (see following discussion). *Phytocoris kerrvillensis* is easily distinguished from *P. davisi* and *P. albifacies* by the head with limited brownish red markings on tylus, maxillary plates, and bucculae (head ventrad of eyes uniformly pale in later species); antennal segment I pale ventrally; antennal segment II paler medially but without distinct white annulus; and by the structure of the male genitalia, especially the right paramere with 5 or 6 stout, spinelike processes dorsally (fig. 18). *Phytocoris kerrvillensis* is further distinguished from *P. davisi* by the uniformly darkened posterior lobe of the pronotum and basal two-thirds of the propleuron.

**DESCRIPTION:** *Male.* Length 4.41–5.47; greatest width across hemelytra 1.52–1.79; mottled brown general coloration; dorsal vestiture of semierect, dark, simple setae and recumbent, silky setae; darkened distal region of corium also with some narrow, black, scalelike setae. **Head:** Width across eyes 0.85–0.95; width of vertex 0.37–0.40; pale yellow ground color; vertex and base of frons marked with brownish red; frons tinged with brown laterally and with 5–6 slightly darker striae; apex of frons, base of tylus, dorsal half of mandibular plates, and margins of antennal fossae dark reddish brown; head ventrad of eyes mostly pale, except middle of tylus with brownish red mark, sometimes continuing along dorsal margin of maxillary plates, basal margin of bucculae darkened, and two brownish red marks behind eyes; eyes occupying about two-thirds of head height in lateral view. **Antennae:** I, length 1.02–1.08, white with large fuscous mark on dorsal surface beyond middle and at apex, and with several smaller brown markings dorsally on basal half; II, length 2.04–2.12, yellowish brown, slightly paler medially, with distinct pale annulus basally; III & IV, dark brown, III with pale annulus basally. **Labium:** Length 2.29–2.35, reaching slightly beyond apices of metacoxae to level of 5th or 6th abdominal segment. **Pronotum:** Mesal length 0.72–0.86; posterior width 1.30–1.49; collar and anterior lobe of disc between calli brownish yellow with red flecks; collar with series of stout, dark bristlelike setae dorsally; calli suffused

with brown and with some darker brownish red maculae; posterior lobe of disc uniformly brown; posterior submargin of disc with 6 weakly elevated, setiferous points, posterior margin narrowly white; propleura dark brown basally, apical third white, darkened region bordering pale apex tinged with red. **Scutellum:** Dirty white with limited faint brown markings, especially either side of pale median line. **Hemelytra:** Pale grayish yellow ground color, broadly darkened along claval vein; corium lightly suffused with fuscous basally and with large dark brown patch medially before apex; apex of corium except outer angle and base of cuneus pale; posterolateral angle of corium and maculae along embolium fuscous; cuneus strongly suffused with fuscous especially distally, apex narrowly pale; membrane conspurcate, more densely so inside areolar cells and at apex. **Legs:** Femora pale basally, reticulated with brown or reddish brown distally; metafemora more extensively darkened and marked with pale spots; foretibiae pale with 4 well defined fuscous annuli; meso- and metatibiae narrowly darkened apically and prebasally, and with 3 poorly defined dark annuli medially, intervening pale areas sometimes marked with faint brown maculae dorsally; tarsi with segments I & III brown or dark brown, segment II yellowish brown. **Genitalia:** Figures 18–21, 53.

*Female.* Unknown.

**ETYMOLOGY:** Named for the type locality in Kerr County, Texas.

**DISCUSSION:** Knight (1923, 1941) placed many of the eastern North American species of *Phytocoris* into four groups, primarily on the basis of dorsal coloration and the length and color pattern of the first and second antennal segments. While three of these groups (II, III, and IV) appear for the most part to be natural assemblages, "Group I" is clearly not monophyletic and includes taxa belonging to no fewer than nine distinct groups. Six species from Knight's "Group I" (*albifacies*, *corticeviventis* Knight, *davisi*, *fumatus* Reuter, *sulcatus* Knight, *tuberculatus* Knight) together with *P. kerrvillensis* and *P. falcatus*, described herein, form a monophyletic group defined by the following characters: (1) head mostly pale ventrad of eyes, (2) head with broad, dark band anteriorly stretching un-

interrupted between antennal fossae, (3) pronotal collar with series of stout, dark setae dorsally, (4) pronotum with prominent, medially confluent calli, (5) genital capsule with strongly developed tubercle above base of left paramere, (6) vesica of male genitalia with single, elongate primary membranous sac, often with small spines distally, and well developed, partially sclerotized right basal lobe, (7) sclerotized process of vesica elongate, usually twisted and/or with reflexed margins, sometimes strongly so and appearing almost tubular.

Of the remaining species placed in Knight's "Group I", my observations indicate the following relationships: (1) *purvus* Knight and *minutulus* Reuter appear to have much closer affinities with species in Knight's "Group III," a similar placement is indicated for *balli* Knight (1926); (2) *lasiomerus* Reuter, *pallidicornis* Reuter, and *rubropictus* Knight belong to the *lasiomerus* species-group of Stonedahl (1988), *osborni* Knight (1928) may also belong to this group; (3) *conspurcatus* Knight and *difficilis* Knight (1927) belong to the *conspurcatus* species-group of Stonedahl (1988); (4) *junceus* Knight belongs to the *junceus* species-group (see Knight, 1974 and Stonedahl, 1988); (5) *breviusculus* Reuter belongs to the *juniperanus* species-group of Stonedahl (1988); (6) *vittatus* Reuter and *palmeri* Reuter are junior synonyms of *inops* Uhler (Henry and Stonedahl, 1983), which belongs to the *fraterculus* species-group of Stonedahl (1988); (7) *dimidiatus* Kirschbaum and *ulmi* (Linnaeus) are European introductions and have affinities with Old World species (Knight, 1923; Stonedahl, 1988); and (8) *antennalis* Reuter is closely related to *annulicornis* (Reuter), but the affinities of these two species to other North American *Phytocoris* are not clear.

**HOLOTYPE:** Male. USA, Texas, Kerr Co., Kerrville, 6.VI.1969, Board & Hafernik (TA&M; donated to AMNH).

**PARATYPES:** USA: Texas: Brown Co.: 1 male, 19.V.1944, Lot 44-13554, plum orchard, no. 20886, on sticky board, W. F. Turner (USNM—Knight Collection). Burnet Co.: 2 males, Inks Lake State Park, 23.V.1989, R. Anderson (TA&M). Kerr Co.: 1 male, Kerrville, 8.VI-1990, at light, W. F. Chamberlain (TA&M).

***Phytocoris falcatus*, new species**

Figures 22–24, 54

**DIAGNOSIS:** Very similar to *P. kerrvillensis* externally, except with slightly larger average size, head with narrower vertex (ratio of vertex width to head for males: *kerrvillensis* 0.42:1 to 0.46:1; *falcatus* 0.33:1 to 0.35:1), bristlelike setae on pronotal collar pale, and hemelytra with fewer dark markings. *P. falcatus* is further distinguished from *P. kerrvillensis* by the absence of tubercles on the male genital capsule dorsal to the paramere bases (fig. 54), the scythe-shaped left paramere (fig. 23), and the elongate sclerotized process of the vesica (fig. 24).

**DESCRIPTION:** *Male.* Length 5.40–5.62; greatest width across hemelytra 1.80–1.97; pale brownish gray general coloration; dorsal vestiture of semierect, dark, simple setae intermixed with recumbent, silky setae. **Head:** Width across eyes 0.95–0.96; width of vertex 0.32–0.33; pale yellow or dirty white ground color; vertex sometimes with limited faint brown markings; frons with 6–8 faint, brown striae either side of middle; anterior region of head with broad fuscous band stretching between antennal fossae; posterolateral region of head behind eyes with 2 dark stripes; head below antennal fossae uniformly pale. **Antennae:** I, length 1.13–1.15, white with 3 large fuscous maculae dorsally, ventral surface fuscous basally; II, length 2.04–2.26, brown or dark yellowish brown with pale annulus basally and slightly broader pale band medially; III & IV, brown, III with pale annulus basally. **Labium:** Length 2.33–2.38, reaching to 7th or 8th abdominal segment. **Pronotum:** Mesal length 0.80–0.83; posterior width 1.43–1.46; collar pale with broad fuscous mark laterally; dorsal surface of collar with series of long, erect, pale, bristlelike setae; calli grayish white, lightly tinged with fuscous anteriorly; pronotal disc posterior and lateral to calli strongly infuscated, posterior margin narrowly pale; propleura shiny fuscous, apical third white. **Scutellum:** Grayish white with faint brown mark either side before apex; mesoscutum with fuscous patch either side of middle, continuing just onto anterior margin of scutellum. **Hemelytra:** Grayish white ground color with faint tinge of green and moderate dusting of brown to

fuscous maculae, especially along veins and embolium; posteromedial region of corium with large, uniformly pale quadrate patch; posterolateral angle of corium and apical third of cuneus more extensively darkened; membrane conspurcate, veins pale distally, slightly darker basally. **Legs:** Femora pale yellow with several large dark brown maculae dorsodistally, these broken by pale spots; metafemora also moderately reticulated with brown to fuscous ventrally; tibiae pale with 3 dark annuli, those on metatibiae somewhat obscured by intervening pale spots; tarsi dark brown, broadly pale medially. **Genitalia:** Figures 22–24, 54.

*Female.* Unknown.

**DISCUSSION:** *Phytocoris falcatus* belongs to a complex of eastern North American species originally grouped with other unrelated taxa by Knight (1923, 1941)—see discussion of Knight's "Group I" species under *P. kerrvillensis*. As is the case with *P. kerrvillensis*, *P. falcatus* does not key reliably to any of the species treated in Knight's "Group I."

**ETYMOLOGY:** From the Latin *falcatus* (sickle-shaped, curved), referring to the scythelike left paramere of the male genitalia.

**HOLOTYPE:** Male. USA, Texas, Jim Wells Co., La Copita Res. Sta., 8 mi W Ben Bolt, 20–21.V.1987, J. C. Schaffner (TA&M; donated to AMNH).

**PARATYPE:** 1 male, same data as holotype (TA&M).

*Phytocoris belfragei*, new species

Figures 25–29, 55

**DIAGNOSIS:** Similar to *P. omani* Stonedahl (1988) in external appearance and structure of the male genitalia, but distinguished by the larger size, longer antennae—segment II with pale band medially, more extensively darkened dorsal surface of the metafemora, broadly flattened tubercle on genital capsule dorsal to base of left paramere (fig. 55), narrowly produced sensory lobe of the left paramere (figs. 27, 28), greater number of spine-like processes on the dorsal surface of the right paramere (fig. 26), and membranous lobes of vesica weakly sclerotized apically (fig. 29).

**DESCRIPTION:** *Male.* Length 7.22–7.45; greatest width across hemelytra 2.30–2.39;

pale brown general coloration; dorsal vestiture of semierect, black, simple setae and recumbent, silky setae. **Head:** Width across eyes 1.05–1.08; width of vertex 0.37–0.39; dirty white with limited brown to fuscous markings on posterodorsal margin, vertex, middle of tylus, margins of antennal fossae, dorsal margins of maxillary plates and bucculae, and behind eyes; apex of frons, base of tylus and dorsal half of mandibular plates more extensively darkened; frons weakly produced anteriorly of antennal fossae in lateral view, with several faint brownish striae laterally; eyes occupying four-fifths of head height in lateral view. **Antennae:** I, length 1.35–1.40, dark brown with pale maculae of variable size dorsally; II, length 2.86–3.01, brown with broad pale annulus at base and middle; III & IV dark brown, III with pale annulus basally. **Labium:** Length 2.74–2.81, reaching slightly beyond apices of metacoxae to level of 5th abdominal segment. **Pronotum:** Mesal length 0.95–0.98; posterior width 1.75–1.79; collar pale yellow with brown mark either side of middle; anterior lobe of disc pale yellow; calli lightly suffused with brown; posterior lobe of disc pale brownish gray; posterior submargin of disc with wavy fuscous line and 6 weakly elevated, setiferous points, posterior margin narrowly white; propleura fuscous, anterodorsal margin pale. **Scutellum:** Pale grayish yellow, moderately tinged with brown midlaterally; medial longitudinal line pale, bordered anteriorly by strong fuscous marks. **Hemelytra:** Pale grayish yellow with faint brown markings especially along veins, outer margin of corium, and inner half of corium posteriad of claval apex; corium with large pale patch distomedially; posterolateral angle of corium and apex of cuneus darker fuscous; cuneus more densely mottled with dark brown; membrane densely conspurcate, veins mostly pale yellow. **Legs:** Femora creamy white or pale yellow with reddish brown to fuscous reticulations mostly restricted to distal half of segment; metafemora more extensively darkened especially on distal third and along leading edge; dark patches on femora usually broken by pale spots; tibiae pale with reddish brown to fuscous markings; foretibiae with 4 dark annuli including faint band at base; mesotibiae with 5 weakly defined

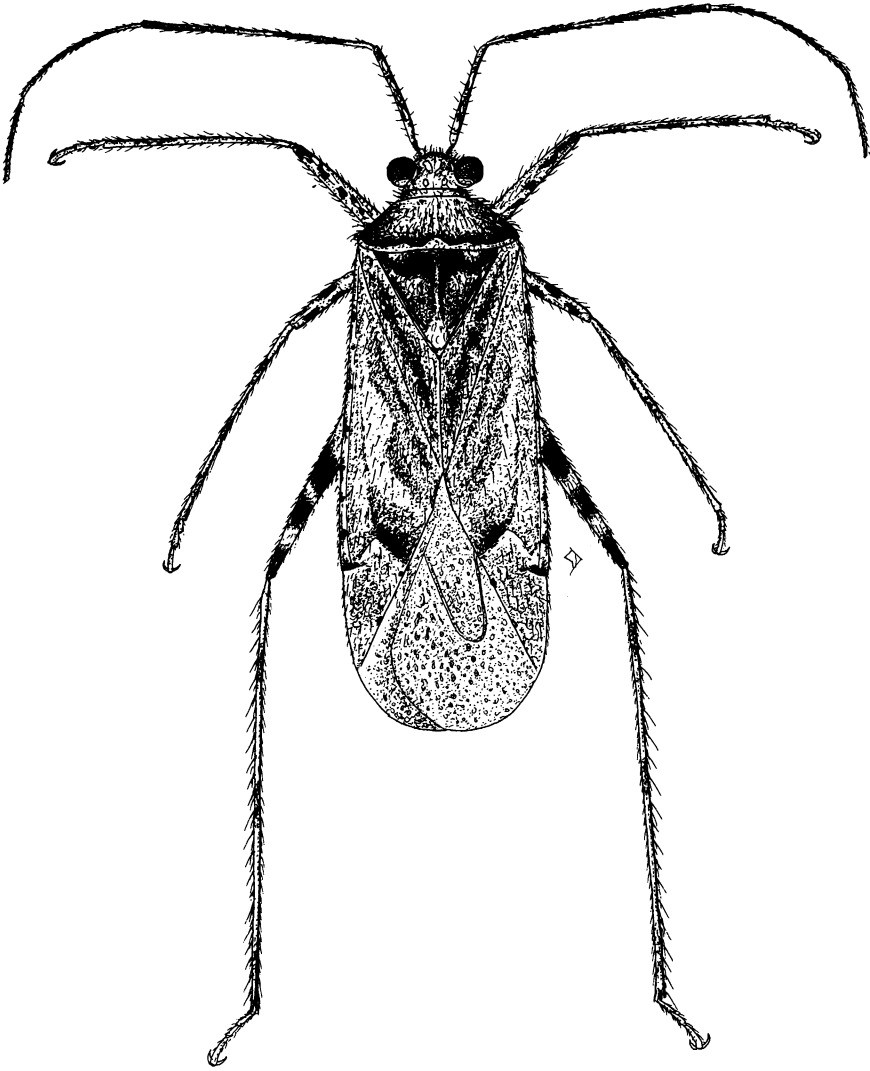


Fig. 25. *Phytocoris belfragei*, dorsal habitus, male.

dark annuli, these more distinct on ventral aspect; metatibiae narrowly darkened apically and on underside of basal third of segment, but lacking distinct annuli medially; tarsal segments I & III brown or dark brown, II yellowish brown. **Genitalia:** Figures 26–29, 55.

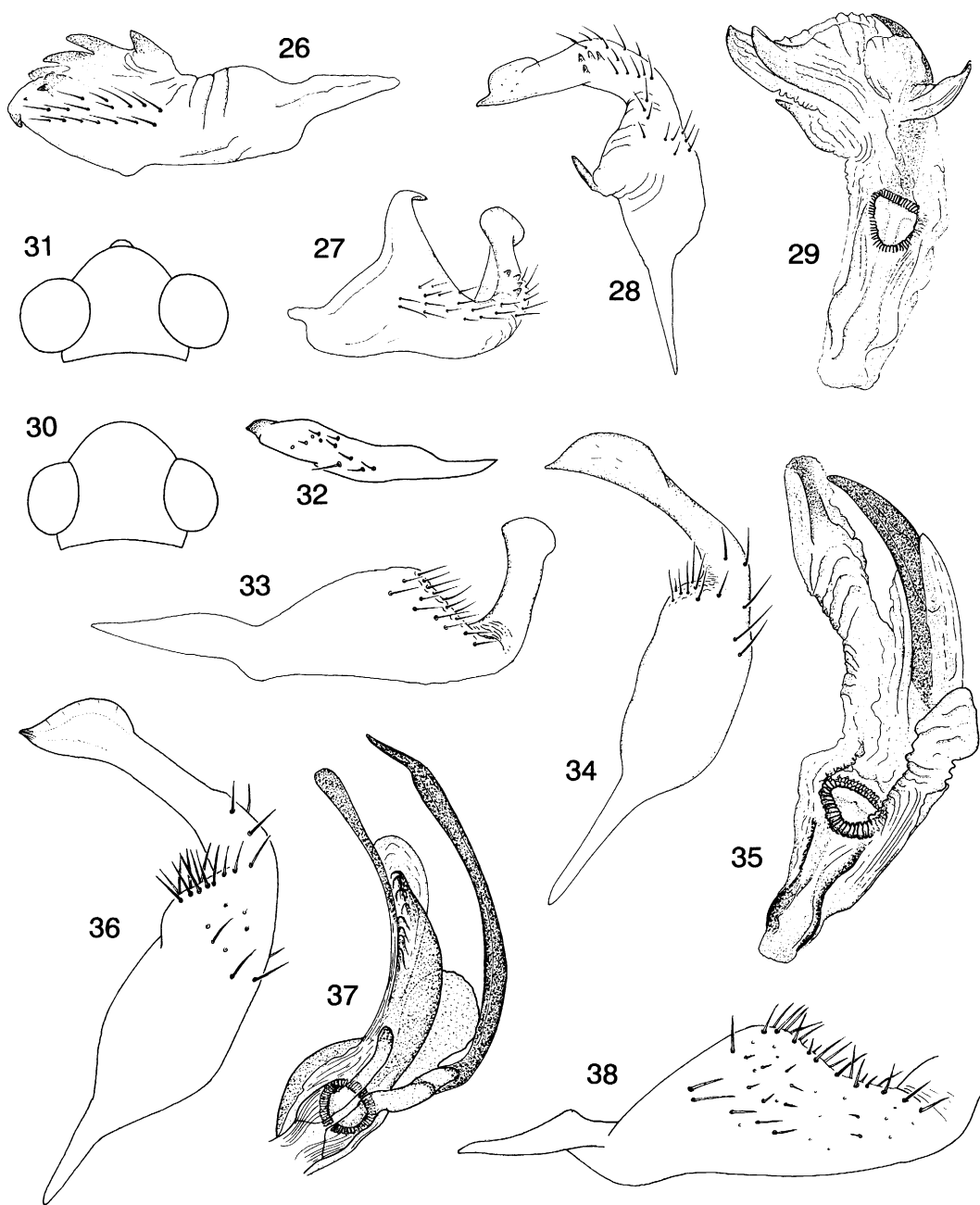
*Female.* Unknown.

**ETYMOLOGY:** Named in honor of Gustave W. Belfrage (born Stockholm, immigrated to

America in 1859), a pioneer of American entomology who lived and collected extensively in the State of Texas from 1867 until his death on December 7, 1882 (see Nowell, 1975, for further information on G.W. Belfrage).

**HOLOTYPE:** Male. USA, Texas, Comal Co., 5 mi W Sattler on Canyon Lake, 17.IV.1983, J. C. Schaffner (TA&M; donated to AMNH).

**PARATYPE:** 1 male, USA, Texas (USNM—Knight Collection).



Figs. 26–38. *Phytocoris* species. 26–29. Male genitalia of *Phytocoris belfragei*. 26. Right paramere, lateral view. 27. Base of left paramere, lateral view. 28. Left paramere, dorsal view. 29. Vesica. 30, 31. Dorsal view of head. 30. *Phytocoris carnosulus*. 31. *Phytocoris guadalupe*. 32–35. Male genitalia of *Phytocoris guadalupe*. 32. Right paramere, lateral view. 33. Base of left paramere, lateral view. 34. Left paramere, dorsal view. 35. Vesica. 36–38. Male genitalia of *Phytocoris pallidilineatus*. 36. Left paramere, dorsal view. 37. Vesica. 38. Base of left paramere, lateral view.

***Phytocoris guadalupe*, new species**

Figures 31–35, 56

**DIAGNOSIS:** Closely related to *P. carnosulus* Knight and keying to this species in Stone-dahl (1988), but distinguished by the head with less prominent frons and narrower vertex (ratio of vertex width to head width 0.33:1 to 0.36:1 for males of *P. guadalupe* [fig. 31] and 0.42:1 to 0.45:1 for males of *P. carnosulus* [fig. 30]), shorter first antennal segment (length less than or equal to head width for *P. guadalupe* and usually slightly greater than head width for *P. carnosulus*), and by the structure of the male genitalia, especially the much smaller genital capsule with less prominent tubercle above base of left paramere (fig. 56), more abruptly narrowed apex of left paramere (fig. 34), and smaller apical sclerite on left primary lobe of vesica (fig. 35).

**DESCRIPTION:** *Male.* Length 4.64–6.23; greatest width across hemelytra 1.39–1.75; grayish white ground color with brown to fuscous markings; dorsal vestiture of semierect, dark, simple setae and recumbent, silky setae. **Head:** Width across eyes 0.79–0.88; width of vertex 0.28–0.32; pale yellow or dirty white; limited markings on vertex and 8–10 striae on frons brownish red to fuscous; mandibular plates, maxillary plates, bucculae, genae, and apex of tylus extensively darkened with reddish brown or fuscous; narrow mark dorsad of antennal fossae, 2 broad marks posterolaterad of eyes and arcuate mark on posterodorsal margin of head also fuscous, the later often obscured medially by anterior margin of pronotal collar; frons moderately produced but leaving tylus visible in dorsal view (fig. 31); lower margin of antennal fossae well above ventral margin of eye; eyes occupying most of head height in lateral view. **Antennae:** I, length 0.73–0.93, white or pale yellow with large fuscous maculae dorsally; II, length 1.61–2.23, brown or pale brownish gray with narrow white annulus basally; III & IV, brown or grayish brown. **Labium:** Length 2.19–2.62, reaching at least to 6th abdominal segment, sometimes to base of genital capsule. **Pronotum:** Mesal length 0.55–0.72; posterior width 1.17–1.39; collar fuscous with pale median mark, sometimes also with pale spot laterally; disc pale grayish yellow, mottled with brown to fuscous, sometimes extensive-

ly so along lateral margins; calli and middle of disc behind calli sometimes also lightly tinged with red; propleura fuscous, distal third white. **Scutellum:** Moderately elevated, mostly fuscous dorsomedially; anterolateral angles and apex broadly pale. **Hemelytra:** Grayish white ground color, moderately to extensively mottled with brown to fuscous, especially on basal half of clavus, along veins and outer margin of corium, and on distal third of cuneus; apex of clavus, posterolateral angle of corium, and spot on paracuneus dark fuscous; base and extreme apex of cuneus pale; membrane conspurcate, spots sometimes joining to form larger dark maculae, veins pale distally, usually tinged with brown basally. **Legs:** Femora pale yellow with reddish brown to fuscous, reticulate markings mostly restricted to distal half of segment; tibiae pale with 4 dark annuli including narrow band at base; tarsi brown, segment II and base of III usually yellowish brown. **Genitalia:** Figures 32–35, 56.

*Female.* Brachypterous, hemelytra reaching to 7th abdominal tergum, wing membrane reduced to narrow flap; vertex broader, labium longer, pronotum narrower, and metafemora more robust than for males. Similar to male in color and vestiture, except scutellum with limited fuscous markings dorsally. Length 4.02; greatest width across hemelytra 1.34. **Head:** Width across eyes 0.85; width of vertex 0.36. **Antennae:** I, length 0.80; II, length 1.72. **Labium:** Length 2.70, reaching to base of ovipositor. **Pronotum:** Mesal length 0.51; posterior width 0.95.

**ETYMOLOGY:** Named for its occurrence in the Guadalupe Mountains of western Texas; a noun in apposition.

**HOLOTYPE:** Male. USA, Texas, Culberson Co., Guadalupe Mountains National Park, 3–4.IX.1986, East, Haack & Kovarik (TA&M; donated to AMNH).

**PARATYPES:** USA: Texas: Brewster Co.: Big Bend National Park: 1 male, Chisos Mts. Basin, 28–29.IV.1984, “night,” L. G. & T. P. Friedlander (TA&M); 1 male, 1 female, Rosillos Mts., Buttrill Spring, 23–25.IV.1991, G. Zolnerowich (TA&M); 4 males, 22.X.1991 and 2 males, 23.X.1991, Rosillos Mts. Lodge, at black light, G. Zolnerowich (AMNH, TA&M). Culberson Co.: 9 males, same data as holotype (TA&M). Presidio Co.: 1 male,

Big Bend Ranch State Nature Area, 3.5 mi SE La Sauceda, 26–28.IV.1991, G. Zolnerowich (TA&M).

ADDITIONAL SPECIMEN: 1 male, MEXICO, Chihuahua, Santa Clara Canyon, 3 mi W Parrita, 1.IX.1956, D. D. Linsdale (UCB).

***Phytocoris pallidilineatus*, new species**

Figures 36–38, 57

DIAGNOSIS: Closely related to *P. nigrolineatus* of the *hopi* species-group (Stonedahl, 1988) but distinguished by the smaller size, single pale line on antennal segment I, propleura fuscous with basal margin, apical third and anteromedial stripe pale, and male genitalia with large bilobed tubercle above base of left paramere (fig. 57), prominent sensory lobe of left paramere (fig. 38), and distinct vesica (fig. 37).

DESCRIPTION: *Male*. Length 5.40–5.85; greatest width across hemelytra 1.61–1.68; dark brown general coloration; dorsal vestiture of very short, semierect, dark simple setae, recumbent silky setae and some narrow, black, scalelike setae. **Head**: Width across eyes 0.95; width of vertex 0.43–0.44; extensively darkened dorsally but with distinct pale median line on frons and vertex; vertex bordering median line yellowish brown; frons strongly produced anteriorly, abruptly deflexed apically, with 8 faint fuscous striae laterally; deflexed apical region of frons, margins of antennal fossae, spot on dorsal margin of mandibular plates, medial marks on frons, and 3 striae laterally behind each eye fuscous; head mostly pale ventrad of eyes, except ventral margin of mandibular plates, middle of maxillary plates and anterodorsal margin of bucculae with limited red to fuscous markings. **Antennae**: I, length 1.33–1.40, fuscous with several large white maculae dorsally, these continuous with pale line on outer lateral surface; II, length 2.76, fuscous with pale annulus just beyond base and at middle; III & IV fuscous, III with pale annulus basally. **Labium**: Length 2.99, reaching onto genital capsule. **Pronotum**: Mesal length 0.89–0.91; posterior width 1.52–1.56; pale gray ground color; posterior lobe of disc tinged with brown; calli pale yellow with fuscous markings; collar mostly fuscous dorsally with pale mark me-

dially, continuing as pale line to near posterior margin of disc; posterior submargin of disc fuscous with several setiferous, weakly elevated bosses either side of middle; posterior margin of disc narrowly pale; lateral margins of disc more extensively darkened especially bordering calli; propleuron fuscous with apical third, dorsal margin, and anteromedial stripe pale. **Scutellum**: Mostly fuscous dorsally with conspicuous pale line medially reaching onto mesoscutum; anterolateral angles broadly pale. **Hemelytra**: Grayish white ground color with extensive dark brown markings especially along veins and on inner half of corium and cuneus; posterolateral angle of corium and apex of cuneus darker fuscous; inner margin of embolium also with some faint red markings; membrane densely conspurcate with spots coalescing medially and distally into larger dark blotches. **Legs**: Forefemora white or pale yellow with 4 fuscous lines, one of these only half as long as the others; foretibiae with 4 fuscous annuli including narrow band at base, basal 2 annuli obscured dorsally; mesofemora white or pale yellow with fuscous markings mostly restricted to apical half of segment and weakly arranged in lines; mesotibiae with 4 faint dark annuli, these totally obliterated dorsally; metafemora with dark markings mostly arranged in lines, ventral aspect also with some dark reticulate markings; dorsodistal third of metafemora more extensively darkened, but some spots and larger maculae remaining white; metatibiae narrowly darkened apically; basal half of metatibiae with three distinct fuscous maculae, but these not encircling segment to form complete bands; dorsal surface of metatibiae with limited dark markings mostly arranged in a single line; all tarsi uniformly fuscous. **Genitalia**: Figures 36–38, 57.

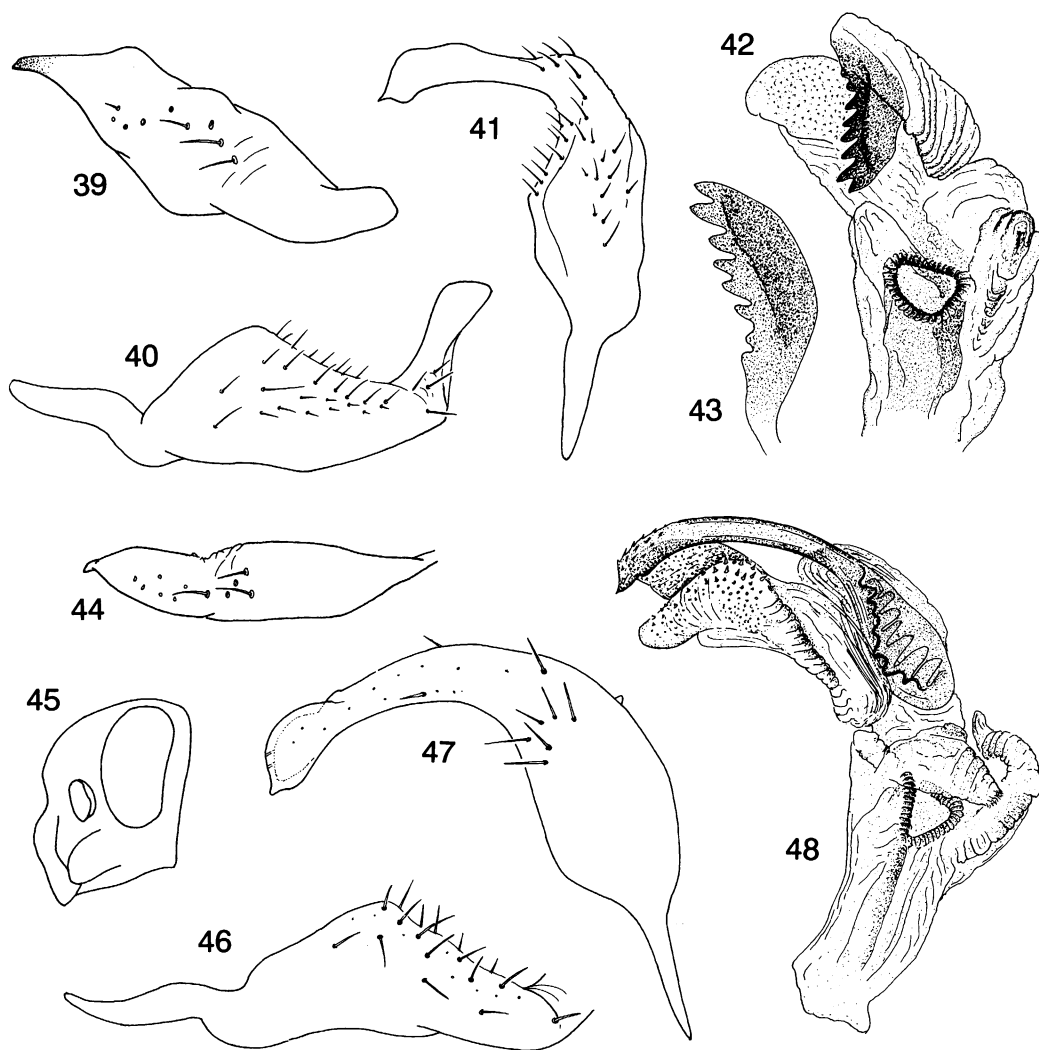
*Female*. Unknown.

ETYMOLOGY: From the Latin *pallidus* (ashen, pale) and *lineatus* (of a line), referring to the pale line on the outer surface of the first antennal segment.

HOLOTYPE: Male. USA, Texas, Presidio Co., Big Bend Ranch State Nature Area, Sauceda Ranch, 26.X–1.XI.1991, at UV light, E. Riley (TA&M; donated to AMNH).

PARATYPE: 1 male, USA, Texas, Brewster Co., Big Bend National Park, Green Gulch, 8.VI.1972, W. E. Clark (TA&M).





Figs. 39–48. *Phytocoris* species. 39–43. Male genitalia of *Phytocoris denticulatus*. 39. Right paramere, lateral view. 40. Base of left paramere, lateral view. 41. Left paramere, dorsal view. 42. Vesica. 43. Sclerotized process of expanded vesica. 44–48. Head and male genitalia of *Phytocoris tumidifrons*. 44. Right paramere, lateral view. 45. Head, lateral view. 46. Base of left paramere, lateral view. 47. Left paramere, dorsal view. 48. Vesica.

***Phytocoris denticulatus*, new species**

Figures 39–43, 58

**DIAGNOSIS:** This species keys to *P. stitti* Knight in Stonedahl (1988—*plenus* species-group) but is easily distinguished by the slightly larger eyes and broader vertex (ratio of vertex width to head width for males: *denticulatus*, 0.38:1 to 0.40:1; *stitti*, 0.28:1 to 0.32:1), mostly darkened apical third of antennal

segment I, longer rostrum (reaching to 7th or 8th abdominal segment in *denticulatus*; not exceeding metacoxae in *stitti*), and structure of the male genitalia, especially the more erect genital tubercles (fig. 58), less pronounced apical expansion of the left paramere (fig. 41), and larger sclerotized process of the vesica with flattened rather than recurved basal teeth (figs. 42, 43).

**DESCRIPTION:** *Male*. Length 7.30–7.60;

greatest width across hemelytra 2.26–2.36; grayish brown general coloration; dorsal vestiture of short, dark simple setae intermixed with fine, recumbent silky setae. **Head:** Width across eyes 1.06–1.10; width of vertex 0.40–0.44; dirty white ground color; vertex lightly tinged with brown and with faint V-shaped mark medially; posterodorsal margin of head more extensively marked with reddish brown or fuscous; frons moderately convex, with incomplete dark band distally between antennal fossae, and with 4–6 dark striae medially; middle of tylus, ventral margins of antennal fossae, medial stripe and ventral margin of mandibular plates, mark on dorsal surface of maxillary plates, stripe on posterolateral margin of head behind eye, and band stretching from anterior juncture of buccula and maxillary plate to ventromedial margin of head reddish brown to fuscous; eye occupying about four-fifths of head height in lateral view, not extending above level of vertex. **Antennae:** I, length 1.64–1.82, basal third fuscous with large white maculae dorsally and laterally, those on outer surface mostly joined and forming an irregular pale stripe; middle third mostly pale with limited fuscous markings dorsally, more extensively darkened ventrally; apical third fuscous with 2 or 3 small white spots dorsally; II, length 3.28–3.39, yellowish brown, white basally; III & IV, brown or yellowish brown, III white basally and slightly paler medially. **Labium:** Length 3.28, reaching 7th or 8th abdominal segment. **Pronotum:** Mesal length 1.04–1.08; posterior width 1.75–1.81; dirty white ground color, posterior lobe of disc lightly tinged with fuscous; collar either side of middle, margins of disc and borders of calli more extensively darkened; posterior margin of disc narrowly pale; propleuron pale with faint brown stripe dorsally and broader fuscous band medially crossing coxal cleft. **Scutellum:** Grayish white, mottled with fuscous dorsally but leaving anterior angles and apex broadly pale. **Hemelytra:** Grayish white ground color, mottled with brown to fuscous maculae; embolium brighter yellowish white with series of reddish brown spots and more elongate marks; middle of corium at level of anal ridge more extensively darkened; posteromedial region of corium and base of cuneus with fewer dark markings; membrane densely conspurcate, veins lightly tinged with red and variously marked with

dark spots. **Legs:** Femora white or pale yellow, reticulated with reddish brown to fuscous, apical fourth mostly darkened and with scattered pale spots; metafemora with distinct pale preapical band, this preceded and followed by broad dark patches broken by pale spots; tibiae pale with 4 or 5 fuscous annuli, those on metatibiae somewhat obscured by pale spots; all tibiae narrowly darkened apically; tarsi fuscous, broadly pale medially. **Genitalia:** Figures 39–43, 58.

*Female.* Unknown.

**ETYMOLOGY:** From the Latin *denticulatus* (with small teeth), referring to the series of small toothlike serrations on the sclerotized process of the male vesica.

**HOLOTYPE:** Male. USA, Texas, Wood Co., Pine Mills, 6.V.1994, W. Godwin (TA&M; donated to AMNH).

**PARATYPE:** 1 male, same data as holotype (TA&M).

*Phytocoris tumidifrons*, new species

Figures 45–48, 59

**DIAGNOSIS:** *Phytocoris tumidifrons* belongs to the *plenus* species-group and keys to *P. breviatus* Knight in Stonedahl (1988). It is distinguished from this and other members of the group by the following combination of characters: length of antennal segment I less than width of head across eyes; frons strongly produced, concealing tylus in dorsal view (fig. 45); pronotum, hemelytra, and legs with long, erect setae, those on dorsum as long as or longer than diameter of antennal segment I; and structure of the male genitalia distinct, especially the shape of the sclerotized process of the vesica (fig. 48).

**DESCRIPTION:** *Holotype male.* Length 5.55; greatest width across hemelytra 1.82; brownish yellow general coloration; dorsal vestiture of long (0.11–0.18), erect, black, simple setae and recumbent silky setae. **Head:** Width across eyes 0.93; width of vertex 0.44; pale yellow with limited brown to fuscous markings; frons strongly convex, concealing tylus in dorsal view (fig. 45), with 8 brown striae either side of middle and dark curved line reaching from inner margin of antennal fossa to inner margin of eye; vertex with fuscous mark either side of middle and larger dark mark bordering each eye; spot on maxillary plates, spot on mandibular plates, antero-



Figs. 49–59. Male left genital tubercle of *Phytocoris* species. 49. *P. avius*. 50. *P. ravidus*. 51. *P. rosillos*. 52. *P. biumbonatus*. 53. *P. kerrvillensis*. 54. *P. falcatus*. 55. *P. belfragei*. 56. *P. guadalupe*. 57. *P. pallidilineatus*. 58. *P. denticulatus*. 59. *P. tumidifrons*.

dorsal margin of bucculae, mark on genae, 2 marks behind each eye, and spot on postero-dorsal margin of head either side of midline fuscous. **Antennae:** I, length 0.88, pale yellow,

narrowly fuscous basally and with fuscous maculae dorsally along entire length; II, length 1.90, yellowish brown, becoming slightly darker distally; III & IV, brown. **Labium:**

Length 2.43, reaching well beyond apices of metacoxae. **Pronotum:** Mesal length 0.84; posterior width 1.57; grayish yellow with fuscous markings especially laterally and posteriorly; posterior margin of disc narrowly pale; propleuron mostly pale with fuscous stripe anteromedially continuing onto coxal cleft. **Scutellum:** Pale yellow with fuscous stripe anteriorly either side of pale midline, dark stripes expanding near midpoint of scutellum into oblique marks and reaching posterolateral margins of disc. **Hemelytra:** Grayish yellow with brown to fuscous maculae particularly on embolium, posterolateral angle of corium, paracuneus, and inner margin and apex of cuneus; cuneus broadly pale basally; membrane moderately conspurcate, veins yellow with faint reddish tinge. **Legs:** Femora pale yellow with limited fuscous

markings mostly restricted to distal half of segment; metafemora with reticulate pattern of fine markings, becoming more dense distally; tibiae with 5 dark annuli including narrow basal and apical bands, some annuli broken by pale spots; distal two-thirds of femora and most of tibiae with long, erect, pale and dark, simple setae, length of setae 2–3 times diameter of metatibiae; tarsi dark brown, segment II brownish yellow. **Genitalia:** Figures 46–48, 59.

*Female.* Unknown.

**ETYMOLOGY:** From the Latin *tumidus* (swollen) and *frons* (brow, forehead), referring to the prominent frons of the bug.

**HOLOTYPE:** Male. USA, Texas, Culberson Co., 2 mi SW Pine Springs, 12.IV.1971, at light, R. R. Murray (TA&M; donated to AMNH).

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