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REVISION OF THE SPIDER-COMMENSAL PLANT BUG GENUS *RANZOVIUS* DISTANT (HETEROPTERA: MIRIDAE)

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Abstract.—The spider-commensal plant bug genus *Ranzovius* Reuter (Hemiptera: Miridae) is revised. The species *californicus* Van Duzee and *mexicanus* Van Duzee are resurrected from synonymy, and the new species ***agelenopsis*** and ***contubernalis*** are described from the eastern United States. New distributions are given and records in the literature are clarified. Illustrations of antennal segments and male genitalia and a key are provided to help separate the 7 known species. Possible morphological modifications in the claws of *Ranzovius* and several other heteropteran taxa associated with spider webs are discussed.

The habits of species in the phyline genus *Ranzovius* Distant are among the most interesting in the plant bug family Miridae (Hemiptera: Heteroptera). Carvalho (1954) first reported on the relationship between *R. fennahi* Carvalho and the semi-social spider *Theridion eximius* Keyserling [*Anelosimus eximius* (Keyserling)]. Adults and nymphs of *fennahi* were observed to live in the webs and feed on *A. eximius* eggs. Davis and Russell (1969) recorded similar observations of commensalism between a species identified as *R. moerens* (Reuter) and the funnel-web spider *Hololena curta* (McCook). They noted two differences from Carvalho's report: *H. curta* is a solitary spider, not semi-social; and *R. moerens* is a scavenger in the spider webs, not an egg predator.

My interest in this genus developed because material in the National Museum of Natural History (NMNH) from California differed from specimens recently collected in the eastern United States. Because of this discrepancy and because a name is needed for a paper on the biology and habits of a new eastern species (Wheeler and McCaffrey, 1984—this issue), I attempt to clarify the names and recognize the species now included in the genus *Ranzovius.* I review the species of *Ranzovius,* describe 2 new species from the eastern United States, clarify previous synonymies, figure antennal segments and male genitalia, and provide a key to help distinguish species.

I thank the following curators for lending specimens: M. Boulard and J. Carayon, Natural History Museum, Paris (NHMP): W. R. Dolling, British Museum (Natural History), London (BM); P. H. Arnaud, Jr., California Academy of Sciences, San Francisco (CAS); J. C. Schaffner, Texas A&M University, College Station (TAM); R. T. Schuh, American Museum of Natural History, New York (AMNH); J. A. Slater, University of Connecticut, Storrs (UCN); and A. G. Wheeler, Jr., Pennsylvania Department of Agriculture, Harrisburg (PDA).

Taxonomic History

Distant (1893) erected the genus *Ranzovius* to accommodate his new species *crinitus* described from Guerrero and Veracruz, Mexico; Carvalho and Dolling (1976) selected a female from Omilteme, Guerrero as the lectotype. Reuter (1905) described *Nyctella moerens* from Venezuela and (1908) *Nyctella lunifera* from Puebla, Mexico. Carvalho (1954) synonymized *Nyctella* Reuter, transferred both of Reuter's species to *Ranzovius* and placed *lunifera* in synonymy under *crinitus*. Van Duzee (1917) described *Excentricus californicus* from Placer Co., California and (1923) *Excentricus mexicanus* from Francisquita Bay, Lower California. Blatchley (1926) reported *mexicanus* (in *Excentricus*) from Florida, providing the only eastern U. S. record for the genus. Carvalho (1954) described *Ranzovius fennahi* from Trinidad, and later (1955a) transferred both of Van Duzee's species to *Ranzovius*, synonymizing them under *moerens*. Knight (1968) reported *moerens* from Arizona and Texas.

Ranzovius Distant

Ranzovius Distant, 1893: 422. Type-species: *Ranzovius crinitus* Distant, 1893: 422 (Monobasic).

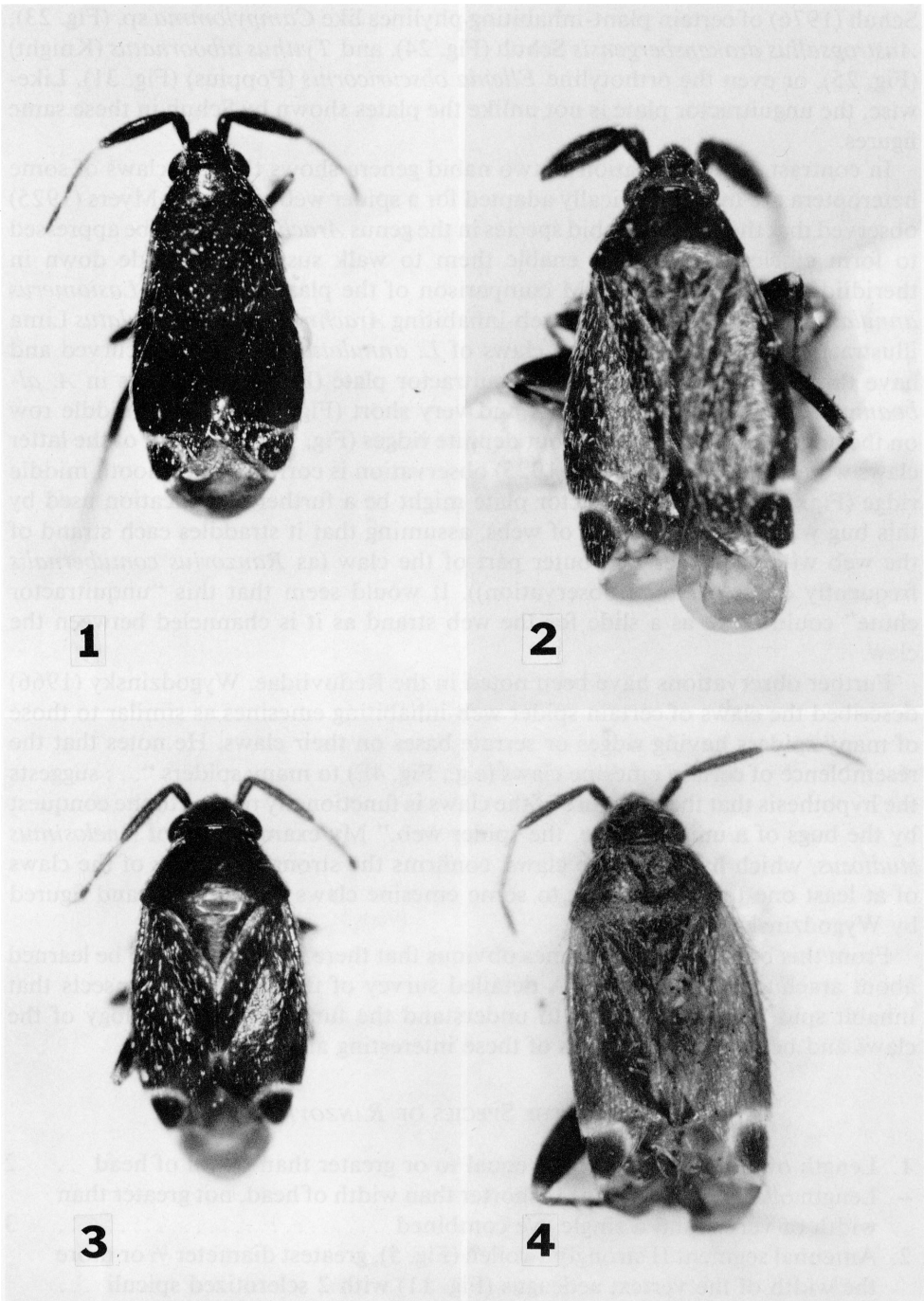
Nyctella Reuter, 1905: 35. Type-species: *Nyctella moerens* Reuter, 1905: 35 (Monobasic) (Synonymized by Carvalho, 1954: 95).

Diagnosis.—Small, length 1.8–2.7 mm, dark colored, clothed with simple setae, intermixed on dorsum and pleural areas of thorax with recumbent, silvery, silky setae; head broader than long, produced in front of eyes; eyes finely pubescent, touching anterior margin of pronotum; rostrum reaching metacoxae or beyond; antennae stout, segment I shortest and thickened, II longest and swollen in both sexes, subequal to or greater than thickness of segment I, slightly greater than, to shorter than, width of head; pronotum trapeziform, scutellum equilateral; hemelytra entire, membrane with 2 closed cells; claws phyline, without fleshy paempodia.

Remarks.—The genus *Ranzovius* can be keyed in Blatchley (1926) [as *Excentricus* Van Duzee not Reuter] or Slater and Baranowski (1978) based on the claws, the silky pubescence, the length of thickened 2nd antennal segments, and by the head that is produced in front of the eyes. Because the silky pubescence was not a known character for the genus, Carvalho's (1955b) key will not work in the final couplet containing *Ranzovius*.

It has been suggested that the claws of certain spider web-inhabiting insects, including members of the genus *Ranzovius*, are specialized for walking on spider webs. Davis and Russell (1969) described that the claws of *R. californicus* [as *R. moerens*—see discussion of *R. californicus*] can be held down, parallel to the tarsus, for walking on top of spider webs or almost perpendicular for hanging under the webs. They also noted a ridge [unguitractor plate] at the base of the claws, suggesting a further adaptation for movement in webs.

Contrary to Davis and Russell's (1969) suggestion that the claws of *R. californicus* are modified for walking in webs, I find that there is little observable morphological difference in *Ranzovius contubernalis* claws (Fig. 16) compared to the claws of other genera or even subfamilies of the Miridae. Scanning electron microscopy shows that while the claws of *Ranzovius* (Fig. 16) are much less curved than in some taxa, they are quite similar to the claw micrographs provided by



Figs. 1–4. 1, *Ranzovius agelenopsis* (paratype ♀). 2, *R. californicus* (holotype ♀). 3, *R. contubernalis* (holotype ♂). 4, *R. crinitus* (paralectotype ♂).

Schuh (1976) of certain plant-inhabiting phylines like *Campylomma* sp. (Fig. 23), *Austropsallus drakensbergensis* Schuh (Fig. 24), and *Tytthus alboornatus* (Knight) (Fig. 25), or even the orthotyline *Ellenia obscuricornis* (Poppius) (Fig. 31). Likewise, the unguitractor plate is not unlike the plates shown by Schuh in these same figures.

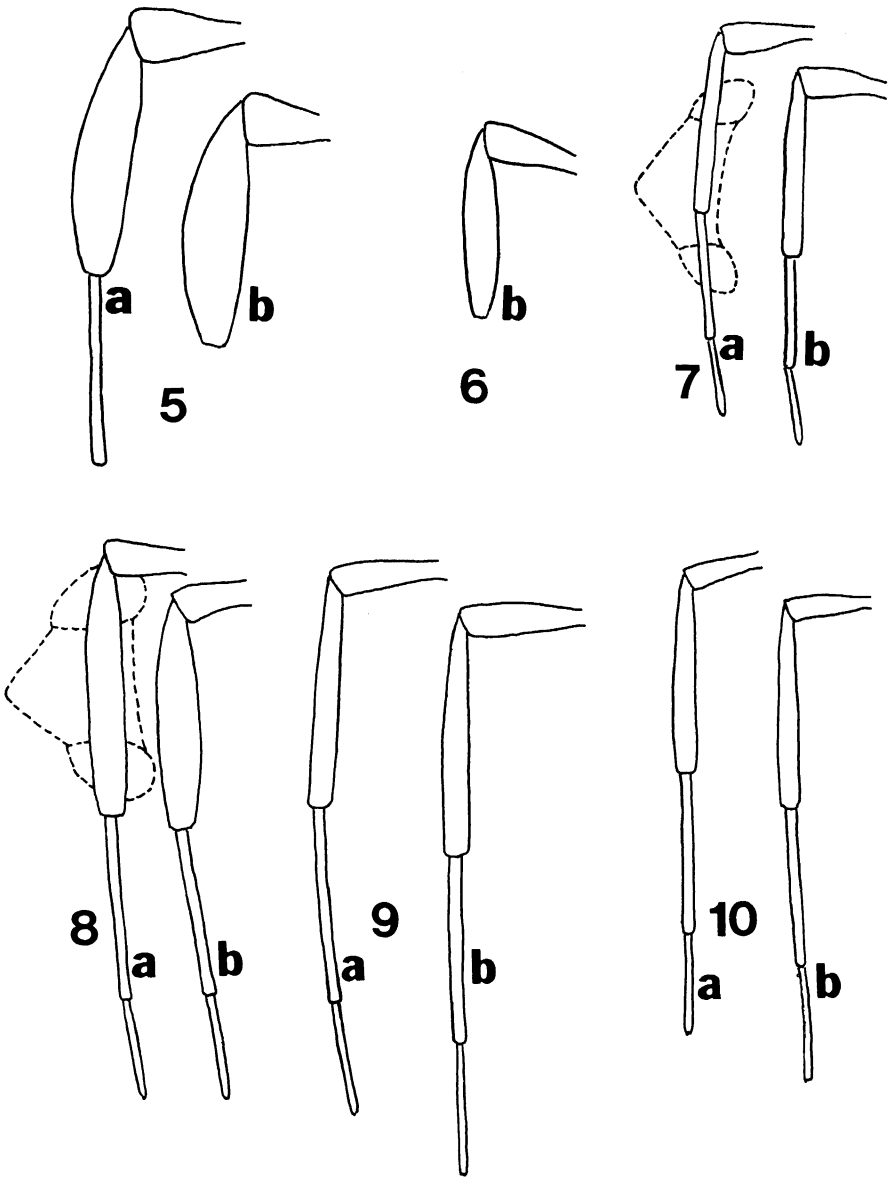
In contrast, an examination of two nabid genera shows that the claws of some heteroptera are morphologically adapted for a spider web existence. Myers (1925) observed that the claws of nabid species in the genus *Arachnocoris* can be appressed to form efficient hooks that enable them to walk suspended upside down in theridiid spider webs. An SEM comparison of the plant-inhabiting *Lasiomerus annulatus* (Reuter) to the spider web-inhabiting *Arachnocoris alboannulatus* Lima illustrates some differences. The claws of *L. annulatus* are long and curved and have three rows of ridges on the unguitractor plate (Fig. 19), whereas in *A. alboannulatus* the claws are straight and very short (Fig. 17) and the middle row on the unguitractor plate is without definite ridges (Fig. 18). The form of the latter claws would imply that Myers' (1925) observation is correct. The smooth middle ridge (Fig. 18) of the unguitractor plate might be a further modification used by this bug when walking on top of webs, assuming that it straddles each strand of the web with the inner and outer part of the claw (as *Ranzovius contubernalis* frequently does (personal observation)). It would seem that this "unquitractor chute" could serve as a slide for the web strand as it is channeled between the claw.

Further observations have been noted in the Reduviidae. Wygodzinsky (1966) described the claws of certain spider web-inhabiting emesines as similar to those of many spiders having ridges or serrate bases on their claws. He notes that the resemblence of certain emesine claws (e.g., Fig. 4E) to many spiders ". . . suggests the hypothesis that the structure of the claws is functionally related to the conquest by the bugs of a unique niche, the spider web." My examination of *Anelosimus studiosus,* which has comblike claws, confirms the strong similarity of the claws of at least one theridiid spider to some emesine claws as described and figured by Wygodzinsky.

From this brief study, it becomes obvious that there is a great deal to be learned about arachnophilous insects. A detailed survey of the diversity of insects that inhabit spider webs is needed to understand the functional morphology of the claws and behavioral adaptions of these interesting arthropods.

Key to the Species of *Ranzovius*

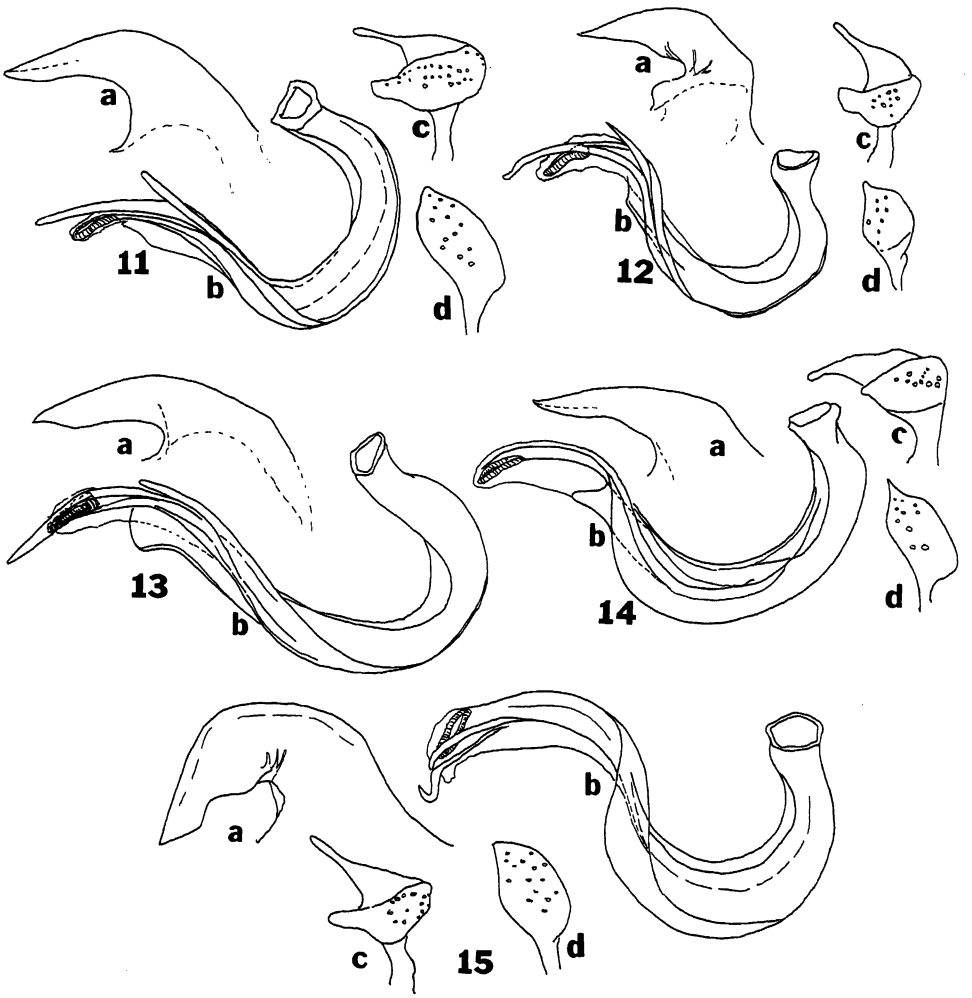
1. Length of antennal segment II equal to or greater than width of head .. 2
– Length of antennal segment II shorter than width of head, not greater than width of vertex and a single eye combined 3
2. Antennal segment II strongly swollen (Fig. 5), greatest diameter ½ or more the width of the vertex; aedeagus (Fig. 11) with 2 sclerotized spiculi ... . *californicus* (Van Duzee)
– Antennal segment II more slender (Fig. 8), greatest diameter about ⅓ the width of the vertex; aedeagus (Fig. 14) without any apparent spiculi ... . *agelenopsis* Henry, new species
3. Apex of embolium and base of cuneus with a wide, white, lunate mark, often reaching from outer margin to membrane 4



Figs. 5–10. a, Male antenna; b, female antenna. 5, *Ranzovius californicus*. 6, *R. mexicanus*. 7, *R. contubernalis*. 8, *R. agelenopsis*. 9, *R. fennahi*. 10, *B. crinitus*.

- Apex of embolium black or, at most, narrowly whitish, base of cuneus black 5

4. Larger species, length 2.28–2.32 mm in males, length 2.60–2.68 mm in females; length of antennal segment III greater than width of vertex; spiculi of aedeagus (Fig. 13) relatively thickened, secondary spiculum blunt apically ..... *crinitus* Distant
- Smaller species, length 1.86–2.10 mm in males, length 2.08–2.28 mm in females; length of antennal segment III equal to or less than width of



Figs. 11–15. Male genitalia: a, phallotheca; b, aedeagus; c, left paramere; d, right paramere. 11, *Ranzovius californicus*. 12, *R. contubernalis*. 13, *R. crinitus*. 14, *R. agelenopsis*. 15, *R. fennahi*.

vertex; spiculi of aedeagus (Fig. 12) relatively slender, secondary spiculum acute apically ..... *contubernalis* Henry, new species

5. Antennal segment II swollen (Fig. 6), length less than length of head; length of antennal segment III less than width of vertex .... *mexicanus* (Van Duzee)

– Antennal segment II relatively slender (Fig. 9), length distinctly longer than length of head; length of antennal segment III greater than width of vertex ..... *fennahi* Carvalho and *moerens* (Reuter)

Ranzovius agelenopsis Henry, New Species

Figs. 1, 8, 14

Description.—*Holotype* ♂: Length 2.40 mm (paratype ♂ 2.32 mm), width 1.00 mm (0.88 mm). *Head:* Length 0.40 mm (0.44 mm), width 0.54 mm (0.52 mm),

vertex 0.24 mm (0.22 mm). *Rostrum:* Length 1.10 mm (1.10 mm), reaching apices of metacoxae. *Antenna:* Segment I, length 0.22 mm (0.24 mm), apical diameter 0.08 mm (0.08 mm); II, length 0.56 mm (0.56 mm), greatest diameter 0.08 mm (0.08 mm); III, length 0.42 mm (0.42 mm); IV, length 0.26 mm (0.28 mm). *Pronotum:* Length 0.40 mm (0.42 mm), basal width 0.76 mm (0.76 mm). *Genitalia:* Aedeagus (Fig. 14b), left paramere (Fig. 14c), right paramere (Fig. 14d).

Shiny black, apex of corium or embolium and base and apex of cuneus whitish, membrane fumate with a small clear area at middle, veins pale or whitish; antenna black, segments III and IV brownish, base of III whitish; venter shiny black, ventral margin of propleura and ostiolar evaporatum slightly paler; femora black with apices whitish, sometimes tinged with red; tibiae yellowish brown, bases brown or reddish, tibial spines black, metatibial spines with indistinct dark spots at bases.

Females.—Length 2.40–2.56 mm ($\bar{x}$ = 2.46 mm, n = 3), width 1.04–1.12 mm. *Head:* Length 0.40–0.42 mm, width 0.50–0.52 mm, vertex 0.28–0.30 mm. *Rostrum:* Length 1.10–1.12 mm. *Antenna:* Segment I, length 0.22 mm, apical width 0.08 mm; II, length 0.52–0.54 mm, greatest diameter 0.10 mm; III, length 0.40–0.44 mm; IV, length 0.24–0.26 mm. *Pronotum:* Length 0.42–0.44 mm, basal width 0.78–0.80 mm.

Similar to male in color and pubescence.

Type specimens.—*Holotype* ♂: Knox Co., Tennessee, Knoxville, University of Tenn. Campus, 10 Aug. 1981, L. N. Sorkin and D. Faber, taken in web of *Agelenopsis pennsylvanica* (C. L. Koch), on tree trunk covered with two species of ivy (AMNH). *Paratypes:* 2 ♂, 6 ♀ (2 5th-instar nymphs), same data as for holotype (AMNH; 1 ♂ and 1 ♀ in USNM); 8 ♂, 1 ♀, Tennessee, Knox Co., Univ. Tenn. Agric. Campus, 15–17 Jul. 1982, A. G. Wheeler, Jr., taken in webs of *Agelenopsis pennsylvanicus* on tree trunk covered with ivy and on boxwood (PDA, USNM).

Remarks.—*Ranzovius agelenopsis* is most similar to *californicus* in having the 2nd antennal segment thickened, especially in the female, and the relatively long 2nd antennal segments that are equal to or greater than the width of the head, but can be separated as given in the key by the lack of apparent spiculi on the aedeagus and by the more slender 2nd antennal segment that has a diameter about ⅓ the width of the vertex.

The type specimens of *agelenopsis* were taken in the webs of the agelenid *Agelenopsis pennsylvanicus* (C. L. Koch). According to Kaston (1981), this is one of our most common spiders that ranges from New England to Tennessee, and west to Oregon and Washington.

It is interesting that *contubernalis* n. sp. was taken on the same boxwood bush in Tennessee as was *agelenopsis* n. sp., only apparently in the web of *Anelosimus studiosus* (A. G. Wheeler, Jr., personal communication). In one case, the webs of the two spiders actually were touching and it was assumed that *contubernalis* was specific to *Anelosimus studiosus* webs and *agelenopsis* was specific to *Agelenopsis pennsylvanicus* webs. Since this collection, however, Dr. Wheeler has found *contubernalis* in the webs of *Agelenopsis pennsylvanicus* in North Carolina and Virginia (see discussion under *contubernalis*).

The specific name *agelenopsis* is taken from the generic name of its spider associate, *A. pennsylvanicus.*

Ranzovius californicus (Van Duzee), Revised Status

Figs. 2, 5, 11

Excentricus californicus Van Duzee, 1917: 284.

Ranzovius californicus: Carvalho, 1955a: 224 (as synonym of *moerens*); Carvalho, 1958: 136 (as synonym of *moerens*).

Ranzovius moerens: Knight, 1968: 35 (in part); Davis and Russell, 1969: 262.

Description.—*Holotype* ♀: Length 2.52 mm (range, including holotype 2.44–2.52 mm, $n = 4$), width 1.16 mm (1.04–1.20 mm). *Head:* Length 0.46 mm (0.46–0.52 mm), width 0.50 mm (0.50–0.52 mm), vertex 0.30 mm (0.30 mm). *Rostrum:* Length ca. 0.98 mm (partially bent and imbedded in glue) (ca. 0.98–1.12 mm). *Antenna:* Segment I, length 0.28 mm (0.28 mm), apical width 0.12 mm (0.12 mm); II, length 0.50 mm (0.50–0.54 mm), greatest diameter 0.16 mm (0.16–0.18 mm); III, length ca. 0.34 mm (curled) (ca. 0.34–0.40 mm); IV, length 0.20 mm (0.20–0.30 mm). *Pronotum:* Length 0.44 mm (0.44–0.46 mm), basal width 0.84 mm (0.84–0.88 mm).

General coloration dark brown or fuscous (almost black); head strongly produced with anterior ½ in front of eyes; rostrum reaching just beyond metacoxae; antennal segments I–II black and strongly thickened, III–IV whitish to yellowish brown, slender; hemelytra blackish except for narrow pale or whitish areas at apex of cuneus and along cuneal fracture; membrane smoky black, middle and area near apex of cuneus clear; femora fuscous, apices white; tibiae pallid or yellowish white, bases and occasional large spots at bases of tibial spines dark brown or black.

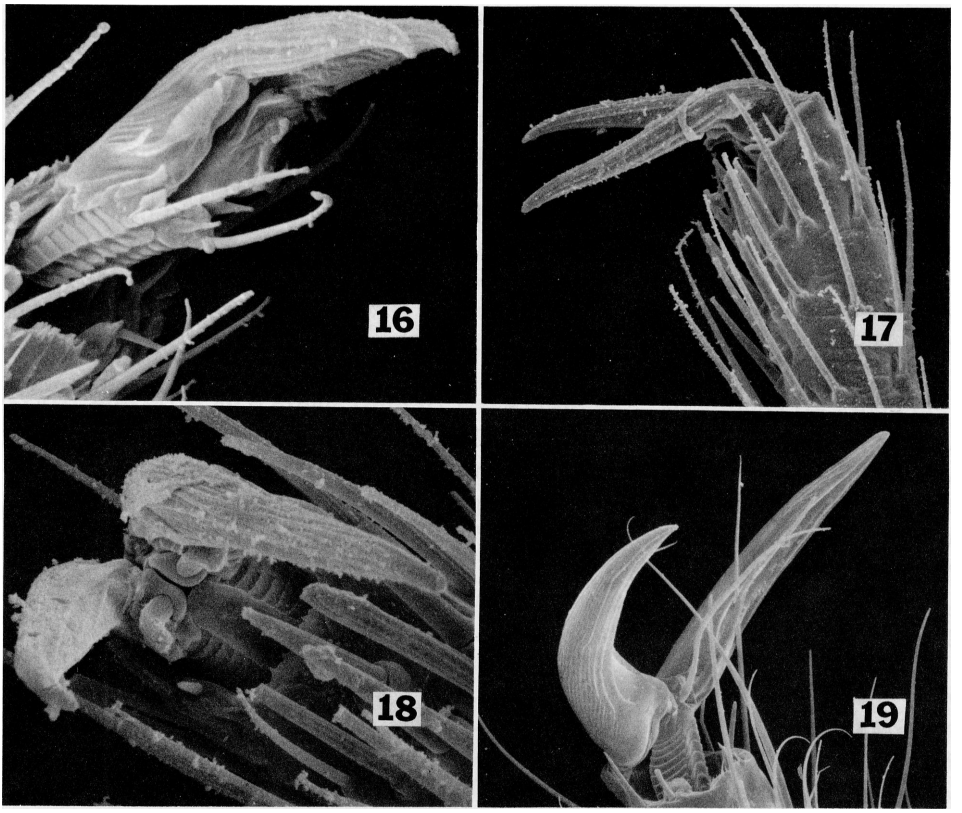
Male ($n = 4$).—Length 2.32–2.60 mm, width 1.00–1.04 mm. *Head:* Length 0.42–0.48 mm, width 0.46–0.50 mm, vertex 0.24–0.30 mm. *Rostrum:* Length 1.04–1.12 mm, reaching 3rd or 4th abdominal segment. *Antenna:* Segment I, length 0.24–0.26 mm, apical width 0.12 mm: II, length 0.52–0.54 mm, greatest diameter 0.12–0.14 mm; III, length 0.40–0.42 mm; IV, length 0.30–0.32 mm. *Genitalia:* Aedeagus (Fig. 11b), left paramere (Fig. 11c), right paramere (Fig. 11d).

Male very similar to female in color and pubescence.

Specimens examined.—*Holotype* ♀: Placer Co., California, 20 August 1916, 4500 ft., W. M. Giffard (CAS); 1 ♀, Lake Co., Cal., Lucerne, 10 Aug. 1957, H. B. Leech (CAS); 3 ♀, Los Angeles Co., San Marino, C. Goodpasture (USNM); 1 ♂ and 1 ♀, San Marino, 3–5 Aug. 1982, M. P. Russell (USNM); 1 ♀, Marin Co., Cal., Mill Valley, 3 Aug. 1957, H. B. Leech (CAS); 1 ♂, Sonoma Co., Santa Rosa, Cal., 1 July 1968, ex. corn, D. A. Moore (USNM); 1 ♂, Sisson, Cal., 24 July 1918, E. P. Van Duzee (CAS).

Remarks.—Carvalho (1955a) synonymized this species and *Excentricus mexicanus* under *moerens,* stating that *californicus* and *mexicanus* were only the male and female of *moerens,* respectively. This statement, however, is in error because both of Van Duzee's species descriptions are based on unique female types. I have examined the holotype of *californicus* and find it distinct from other known species of the genus.

Judging from the distribution, I suspected that Davis and Russell's (1969) study was based on *californicus,* not *moerens.* Although the original material from their study has been lost, Dr. Russell kindly returned to and collected 2 specimens from the same locality. These specimens are *californicus. Hololena curta,* the spider



Figs. 16–19. Pretarsi of Heteroptera. 16, *Ranzovius contubernalis* (1720×). 17, *Arachnocoris alboannulatus* (740×). 18, *Arachnocoris alboannulatus* (1650×). 19, *Lasiomerus annulatus* (414×).

associate for this species, also is known only from California (Chamberlin and Ivie, 1942).

Ranzovius californicus can be recognized by the proportionately long 2nd antennal segment that is subequal to the width of the head, and by the strongly thickened 2nd antennal segment (Fig. 5) that is at least ½ as wide as the width of the vertex.

Ranzovius contubernalis **Henry, New Species**

Figs. 3, 7, 12, 17

Excentricus mexicanus: Blatchley, 1926: 962 (in part).
Ranzovius moerens: Knight, 1968: 35 (in part); Carvalho, 1958: 136 (in part).

Description.—*Holotype* ♂: Length 2.04 mm (range of 10 paratypes 1.86–2.10 mm, $\bar{x}$ = 1.98 mm), width 0.90 mm (0.82–0.90 mm). *Head:* Length 0.36 mm (0.34–0.40 mm), width 0.50 mm (0.48–0.50 mm), vertex 0.28 mm (0.26–0.28 mm). *Rostrum:* Length 1.00 mm (0.92–1.00 mm), reaching 7th or 8th abdominal segment. *Antenna:* Segment I, length 0.18 mm (0.18–0.20 mm), apical width 0.06 mm (0.06 mm, or less); II, length 0.40 mm (0.38–0.40 mm): greatest diameter 0.06 mm (0.06 mm, or less); III, length 0.26 mm (0.26 mm); IV, length 0.18 mm

(0.18–0.20 mm). *Pronotum:* Length 0.38 mm (0.34–0.38 mm); basal width 0.76 mm (0.68–0.76 mm). *Genitalia:* Aedeagus (Fig. 12b); left paramere (Fig. 12c); right paramere (Fig. 12d).

Generally brownish black to black, clothed with semierect, brown, simple setae, intermixed with patches of silvery scalelike setae on dorsum and thoracic pleura; head, pronotum, and venter shiny black; hemelytra dark, shiny, brownish black, apex of embolium and apex of cuneus whitish, base of cuneus from outer margin to membrane clear to translucent; membrane smoky black with a clear spot at center; veins reddish; antennal segments I and II black, segment III pale tinged with brown, segment IV brownish; femora black with apices yellow; tibiae brownish yellow with bases somewhat darker, basal ½ of metatibia with large black spots at bases of spines.

Females.—Length 2.08–2.28 mm ($\bar{x}$ = 2.19 mm), width 0.96–1.00 mm. *Head:* Length 0.38–0.40 mm, width 0.50–0.52 mm, vertex 0.28–0.30 mm. *Rostrum:* Length 0.98–1.04 mm. *Antenna:* Segment I, length 0.20 mm, apical width 0.06 mm, or less: II, length 0.30–0.40 mm, greatest diameter 0.60 mm, or less; III, length 0.28 mm; IV, length 0.20 mm. *Pronotum:* Length 0.36–0.40 mm, basal width 0.78–0.80 mm.

Very similar to males in color and pubescence, differing only in their slightly greater length and broader form.

Type specimens.—Holotype ♂: Washington, D.C., National Arboretum, 14–15 June 1981, T. J. Henry and A. G. Wheeler, Jr., taken in web of *Anelosimus studiosus* (Hentz) on azalea bushes (USNM type no. 73730). Paratypes: 20 ♂, 12 ♀, same data as for holotype (AMNH, BM, TAM, PDA, USNM); 3 ♂, 2 ♀, same locality as for holotype, 1 Aug. 1981, T. J. Henry (USNM); 28 ♂, 33 ♀, same locality as for holotype, 17 Aug. 1982, R. C. Froeschner, T. J. Henry, J. T. Polhemus, in webs of *A. studiosus* on ornamental azalea, *Hedera helix* L. '*arborescens,*' and *Quercus prinus* L. (AMNH, NHMP, TAM, USNM; J. T. Polhemus colln., Englewood, CO); 1 ♀, Westport, Connecticut, 15 July 1976, M. McClure, taken on hemlock (UCN); 1 ♀, Dade Co., Florida, Rt. 41, "Shark Valley," 10 April 1981. T. J. Henry and A. G. Wheeler, Jr. (USNM); 1 ♀, Patuxent R[iver], Maryland, 27 June 1926, H. H. Knight (USNM); 3 ♂, 2 ♀, Mecklenburg Co., North Carolina, nr. Matthews, 4–5 Nov. 1979, A. G. Wheeler, Jr., taken on *Juniperus virginiana* L. (PDA); 2 ♂, 1 ♀, Steeles Tavern, Virginia, 15 Sept. 1979, J. P. McCaffrey, associated with *Anelosimus studiosus* (Hentz) (PDA, USNM); 3 ♂, 5 ♀, Virginia, Fairfax Co., Alexandria, 22 Aug. 1982, T. J. Henry and K. Weisberg, in webs of *A. studiosus* on *Hedera helix* L., *Berberis* sp., *Rosa* sp., and ornamental azalea (USNM).

I also have examined material of this species from the following localities: 1 specimen, Santa Rita Mts., Arizona, 26 June 1920, A. A. Nichol (USNM); 10, Baton Rouge, Louisiana, 20 June and 10 Aug. 1935, T. McGregor (PDA, TAM); 1, Starkville, Mississippi, 13 June 1929, H. G. Johnston (TAM); 3, Brazos Co., Texas, 8 Oct. 1965, (AMNH, PDA, TAM); 10, Montgomery Co., Texas, Monroe, 16 July 1964, on *Pinus* sp. (AMNH, PDA, TAM); 1, Nacogdoches Co., Texas, 5 mi. s. of Martinsville, Oct. 1970, H. Burke and J. C. Schaffner (TAM).

Remarks.—*Ranzovius contubernalis* is closely related to *crinitus* but can be separated by the smaller size and the proportionately shorter 3rd antennal segment.

Also the spiculi of the aedeagus (Fig. 12b) are more slender than in *crinitus* (Fig. 13b). I have examined male genitalia of specimens from Arizona, North Carolina, Texas, and Washington, D.C. and find that the form of the aedeagus is consistent throughout the entire range.

The spider most often associated with *contubernalis, A. studiosus* (Hentz), ranges from New England south into Argentina (Levi, 1963). Since the discovery of this mirid it has been taken (Wheeler, PDA) in the webs of *Agelenopsis pennsylvanicus* in North Carolina, Tennessee, and Virginia. These finds disturb my original conclusion that species of *Ranzovius* are specific to the webs of certain species of spiders. Further research is needed on the biology of these bugs to study their degree in spider specificity.

The Latin name *contubernalis,* meaning tent companion, is provided for J. McCaffrey and A. G. Wheeler, Jr., who are publishing on the life history and habits of this species (this issue).

Ranzovius crinitus **Distant**

Figs. 4, 10, 13

Ranzovius crinitus Distant, 1893: 423; Carvalho 1954: 96.
Nyctella lunifera Reuter, 1908: 175 (Synonymized by Carvalho, 1954: 96).

Description.—*Lectotype* ♀: Length ca. 2.60 mm, apex of membrane folded (for paralectotype 2.68 mm), width 1.04 mm (1.08 mm). *Head:* Length 0.40 mm (0.38), width 0.54 mm (0.54 mm), vertex 0.32 mm, distorted (0.36 mm). *Rostrum:* Length 1.10 mm (venter obscured in glue). *Antenna:* Segment I, length 0.22 mm (0.22 mm), apical width 0.06 mm (0.06 mm); II, length 0.46 mm (0.46 mm), greatest diameter 0.06 mm (0.06 mm); III, length 0.36 mm (0.40 mm); IV, length 0.26 mm (0.26 mm). *Pronotum:* Length 0.42 mm (0.44 mm), basal width 0.90 mm.

General coloration dark brown to fuscous, except for pale or whitish apex of cuneus, and a distinct band encircling base of cuneus from embolium to membrane; membrane smoky black or fumate with an apparent pale area near apex of cuneus (membrane curled and distorted); antennal segments I and II dark, III pale or whitish; IV, brown with base and apex pallid; venter dark brown or black; femora dark brown or black with apices whitish; tibiae whitish or yellowish brown with fuscous spots at bases of tibial spines.

Males (2 paralectotypes).—Length 2.32 mm (2nd specimen with wing membrane distorted, length ca. 2.28 mm), width 1.04–1.08 mm. *Head:* Length 0.38 mm, width 0.46–0.50 mm, vertex 0.30–0.32 mm. *Rostrum:* Embedded in glue. *Antenna:* Segment I, length 0.22 mm, apical width 0.06 mm; III, length 0.42–0.44 mm, greatest diameter 0.06 mm; III, length 0.36 mm; IV, length 0.26 mm. *Pronotum:* Length 0.40–0.44 mm, basal width 0.76–0.80 mm. *Genitalia:* Aedeagus (Fig. 13b).

Specimens examined.—Mexico: Lectotype ♀, 1 paralectotype ♂, Omilteme, Guerrero, 8000 ft., H. H. Smith (BM); 1 paralectotype ♂ and ♀, Orizaba, Veracruz, H. H. Smith (BM).

Remarks.—*Ranzovius crinitus* is most similar to *contubernalis* in the pale markings at the apex of the corium and base of the cuneus, but *crinitus* is consistently

larger in overall body length and has the 3rd antennal segment (Fig. 10) longer in proportion to segment II (0.08 or more the length of II) than does *contubernalis* (0.71 or less the length of II). As discussed under *contubernalis* and in the key, the male genitalia also differ.

Ranzovius crinitus has not been associated with any spiders.

***Ranzovius fennahi* Carvalho**

Figs. 9, 15

Ranzovius fennahi Carvalho, 1954: 93; Carvalho, 1958: 136.

Description.—♂ ($n = 4$): Length 2.32–2.64 mm, width 1.00–1.12 mm. *Head:* Length 0.40–0.44 mm, width 0.54 mm, vertex 0.32–0.34 mm. *Rostrum:* Length 1.18–1.20 mm, reaching near base of genital segment. *Antenna:* Segment I, length 0.24–0.26 mm, apical width 0.06–0.08 mm; II, length 0.44–0.48 mm, greatest diameter 0.06–0.08 mm; III, length 0.38–0.40 mm; IV, length 0.28–0.30 mm. *Pronotum:* Length 0.44–0.46 mm, basal width 0.76–0.80 mm. *Genitalia:* Aedeagus (Fig. 15b), left paramere (Fig. 15c), right paramere (Fig. 15d).

General coloration dark brown or black; antenna black, segment III and IV brown with bases and apices whitish; hemelytra uniformly blackish, except for an occasional indistinct, very narrow, pale line at apex of embolium along cuneal francture; venter dark, ventral margin of propleura and anterior lobe of ostiolar evaporatum pale or whitish; femora black with apices pale; tibiae pale or whitish with indistinct dark spots at bases of metatibial spines.

Female ($n = 2$).—Length 2.64–2.68 mm, width 1.12–1.32 mm. *Head:* Length 0.44–0.48 mm, width 0.52–0.54 mm, vertex 0.32–0.40 mm. *Rostrum:* Length 1.32–1.38 mm, reaching 6th abdominal segment. *Antenna:* Segment I, 0.26–0.30 mm, apical width 0.10 mm; II, length 0.46–0.48 mm, greatest diameter 0.06–0.08 mm; III, length 0.40–0.44 mm; IV, length 0.28–0.30 mm. *Pronotum:* Length 0.50–0.52 mm, basal width 0.92–0.98 mm.

Female very similar to male in color and pubescence.

Specimens examined.—1 paratype ♀, Santa Cruz, Trinidad, 19 Mar. 1949, R. G. Fennah coll. (USNM); 1 ♂, Panama, Cerro Jefe, 11 Oct. 1974, D. Quintero, ex.: spider web of *Anelosimus eximius* (USNM); 10 ♂, 5 ♀, and nymphs, Touenke Island, French Guiana, 20 Nov. 1975, M. Boulard, taken in webs of *Anelosimus eximius* (MNHP; 3 in USNM); 4 ♂ and nymphs, Suriname, Saramacca Prov., along Coppename River, Voltzberg-Raleighvallin Reserve, Feb. 1982, Deborah R. Smith (USNM).

Remarks.—Boulard (1979) observed a phyline mirid from South America in webs of social spiders ". . . in the manner of the African Plokiophilidae." I have examined his specimens and find them to be the species *fennahi. Razovius fennahi,* described from Trinidad and Brazil, and now known from French Guiana and Panama, probably will be found wherever its spider-associate *A. eximius* occurs. According to Levi (1963), this theridiid ranges from Panama into southern Brazil.

Ranzovius fennahi can be recognized by the totally dark dorsum without white markings at the apex of the corium and cuneus, and by the long 2nd antennal segment that is subequal to or longer than the width of the head. A few of the Boulard specimens (in alcohol) have narrow, indistinct, white markings at the apex of the cuneus and embolium. This is the only species having a hooked spiculum on the aedeagus.

I have not been able to separate *fennahi* from *moerens*. Reuter's (1905) description closely fits that of *fennahi*. Judging from the description and distribution, I am reasonably certain that these two species will prove to be the same. Because I have not been able to locate Reuter's holotype and the original description lacks specific measurements and other details, I feel that it is best at this time to maintain the name until the type of *moerens* or additional specimens from the region are examined.

Ranzovius mexicanus (Van Duzee), Revised Status

Fig. 4, 6

Excentricus mexicanus Van Duzee, 1923: 163; Blatchley, 1926: 962 (in part).
Ranzovius moerens Carvalho, 1954: 95 (in part); Knight, 1968: 35 (in part).
Ranzovius mexicanus: Carvalho, 1955a: 224 (as synonym of *moerens*).

Description.—*Holotype* ♀: Length 2.28 mm, width ca. 1.04 mm (1 hemelytron missing). *Head:* Length 0.42 mm, width 0.54 mm, vertex 0.32 mm. *Rostrum:* Missing. *Antenna:* Segment I, length 0.22 mm, apical width 0.08 mm; II, length 0.38 mm, greatest diameter 0.08 mm; III and IV missing. *Pronotum:* Length 0.38 mm, basal width ca. 0.80 mm, posterior angles broken and missing.

General coloration dark brown to almost black; hemelytra dark, except for apex of cuneus, arrow pale area at apex of embolium along cuneal fracture, and a small area at inner angle of corium near apex of clavus; venter fuscous or black; membrane smoky black, paler around middle, veins pale becoming reddish posteriorly; femora fuscous with apices pale or whitish; tibiae pale yellowish brown or whitish with base and 4 or 5 fuscous spots at bases of tibial spines.

Specimens examined.—*Holotype* ♀: San Francisquito Bay, Gulf of California, Mexico, 10 May 1921, E. P. Van Duzee (CAS); 2 ♀, intercepted at Brownsville, Texas, from Mexico, 23 Mar. 1937, on gardenias (USNM).

Remarks.—Carvalho (1955a) synonymized *mexicanus* and *californicus* under *moerens* Reuter. Now that more specimens of the genus have become available for study, I can place more weight on the antennal characters. Comparison of both sexes of several species shows that the thickness of the 2nd antennal segment is consistent within the genus. For this reason, I recognize *mexicanus* because of the short and rather stout 2nd antennal segment. The thickened 2nd segment (Fig. 6) and the narrow white mark at the apex of the embolium (Fig. 4) will separate *mexicanus* from other species of *Ranzovius*.

Carvalho (1954) based his concept of *moerens*, at least in part, on 2 females from Mexico [intercepted at Brownsville, Tx.] in the USNM collection. These specimens, although in poor condition, have been restudied and are considered to represent the species *mexicanus*. As Carvalho noted, the 2nd antennal segment is stouter than in *crinitus* and *fennahi* and there are only narrow pale markings at the apex of the corium and cuneus. Blatchley's (1926) record of *mexicanus* from Florida should be referred to the species *contubernalis*. *Ranzovius mexicanus* has not been associated with any spider.

Ranzovius moerens (Reuter)

Nyctella moerens Reuter, 1905: 36.
Ranzovius moerens: Carvalho, 1954: 95 (in part); Carvalho, 1958: 136 (in part); Knight, 1968: 35 (in part).

I have been unable to locate Reuter's holotype of *moerens,* collected at Caracas, Venezuela. The following is a translation from Latin of Reuter's description.

Dull black, smooth dorsally; antennae black, segments III and IV missing; 2nd segment 2× the length of I and subequal to the width of an eye and vertex combined, subcylindrical, slightly thinner than segment I, constricted at the base; apical margin of corium and narrow apical margin [outer apex] of cuneus pale golden yellow; tibiae golden yellow, spines on metatibiae with black spots at bases, bases of metatibiae somewhat fuscous at bases; tarsi fuscous, paler at bases; rostrum darkly testaceous, 1st segment black at apex, apex reaching posterior coxae; length of pronotum about $^2/_5$ the basal width, anterior margin ½ as wide as base; membrane black with a glass-green spot at apex of cuneus. Length 2⅓ mm.

Remarks.—As indicated in the discussion under *fennahi,* I cannot separate *moerens* from *fennahi.* These species may prove to be synonymous.

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