



## A new species of *Xestocoris* Van Duzee, with comments on the genus (Hemiptera: Heteroptera: Rhyparochromidae: Rhyparochrominae)

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### Abstract

A new species of the rhyparochromine tribe Lethaeini, *Xestocoris tibialis*, from Arizona, is described and figured. The lectotype of *X. collinus* is redescribed. A lectotype of *X. nitens* is designated and redescribed. New distributional records for *X. nitens* are provided. A key to the species of *Xestocoris* and a discussion of phylogenetic relationships with other lethaeine genera are included.

**Key words:** Arizona, Lethaeini, sky islands, state records, generic phylogeny

### Introduction

Little has been written about *Xestocoris*, a genus widely distributed in North and Central America, since its original description (Van Duzee 1906). *Xestocoris* currently contains only 2 species: *X. collinus*, originally described by Distant (1893) from the mountains of Guatemala and placed in the genus *Rhaptus*; and *X. nitens*, the type species, described from New York, USA, by Van Duzee (1906). Bergroth (1916) transferred *Rhaptus collinus* and *R. uhleri* Distant to *Xestocoris* with no explanation or justification. Scudder (1957) placed the genus in the then composite Lethaeini; Ashlock (1964) included it in the Lethaeini *sensu stricto* when he redefined the tribe. Scudder (1967) designated a lectotype for *X. uhleri* and placed the species in *Bubaces*, where it remains today. Sweet (1960) elaborated on the basic biology of *X. nitens* that Blatchley (1926) had provided. Khan and Woodward (1979) described and figured the spermatheca of *X. nitens*, and O'Donnell (1991) described its sperm reservoir and discussed generic relationships.

This paper describes a new species; additional species are likely to be discovered in southwestern USA and adjacent Mexico.

*Xestocoris* has the following features, in addition to the features that characterize the Lethaeini: small body size; a shining dorsal surface covered with long hairs; head with two dorsal iridescent spots composed of overlapping pegs (O'Donnell 1986); and eyes with two long, forward-curving setae. None of these features is a synapomorphy of the genus, however. The shining dorsal surface is shared with *Bubaces* and *Esuris*. The double iridescent spot composed of pegs is found in many lethaeine genera, in both the New and the Old Worlds. The long hairs on the eye are also found in *Esuris* and *Valtissius* in the Western Hemisphere and *Lamproceps* and *Lampropunctus* in the Eastern Hemisphere. *Esuris* has a single iridescent spot on the head, but it may be independently derived from the remainder of the "one-spot clade" because the anterior margin is very different. If this is true, then the eye setae define a clade containing *Esuris*, *Valtissius*, *Lamproceps*, *Lampropunctus*, and *Xestocoris*. Sperm reservoir morphology also groups these genera together (O'Donnell 1991).

Woodward (1962) thought that *Austroxestus*, *Rhaptus*, and *Xestocoris* "undoubtedly belong to the same group of related genera," but based his assessment on overall resemblance rather than on character analysis;

*Rhaptus* and *Xestocoris* are not closely related, because *Rhaptus* belongs to the clade defined by possession of a single dorsal iridescent spot on the head, which I have hypothesized to be the derived state (O'Donnell 1986). *Austroxestus* has 2 iridescent areas basally on the top of the head (Woodward 1979), the presumed plesiomorphic condition. In addition, Woodward (1962) noted that the nymphs of *Austroxestus* "were closest to *Xestocoris* of all the North American Lygaeids in the nymphal key of Sweet and Slater (1961)." No specific characters supporting this relationship were given. *Austroxestus* does possess a single long hair on the eye, which may be homologous to one of the long hairs in *Xestocoris* and the other genera listed above. *Austroxestus* and *Xestocoris* were not placed in the same sperm reservoir group (*Austroxestus* was not placed in any group) (O'Donnell 1991). Khan and Woodward (1979) did not indicate a relationship between these genera based on spermathecal morphology.

## Material and methods

Specimens from the following collections were examined:

BMNH	The Natural History Museum, London
CAS	California Academy of Sciences
CUIC	Cornell University Insect Collection
LSU	Louisiana State University
NMNH	Smithsonian Institution, National Insect Collection
SNOW	The University of Kansas Entomology Collection
UCMS	The University of Connecticut (now housing Lethaeini from the James A. Slater collection)
UMC	University of Missouri, Columbia
UMMZ	University of Michigan, Museum of Zoology

All measurements are in millimeters. Genitalic dissection techniques and terminology follow O'Donnell (1991, 2001). Interpretation of wing modifications follows the definitions of Slater (1975).

## Results

### Key to Species of *Xestocoris*

1. Fore tibia of male greatly expanded, broader than fore femur, and excavated on inner surface (Figure 1); female with tibia broadened but not so much as in the male..... *tibialis*, **n. sp.**
- 1'. Fore tibia of male not broader than fore femur; female tibia not expanded distally ..... 2
2. Metathoracic scent gland with stout peritreme; pronotum nearly uniformly dark (humeri somewhat lighter); evaporative area on mesopleuron not prolonged dorsally along meso-metapleural suture.....*collinus*
- 2'. Metathoracic scent gland with peritreme narrower; pronotum with light bands across collar and humeri; evaporative area prolonged along meso-metapleural suture in a narrow tongue .....*nitens*

### *Xestocoris collinus* (Distant)

*Rhaptus collinus* Distant 1893, p. 410;  
*Xestocoris collinus* Bergroth 1916, p. 221;

**Type:** The lectotype designated by Scudder (1967) is in the Natural History Museum, London.

It is a male, the left of two pinned specimens on the same card, with the following labels: a) Type (round label outlined in red); b) *Rhaptus collina* Dist. (handwritten); c) Quiché Mts., 7–9,000 ft., Champion [these mountains are in Guatemala]; d) B.C.A., Hem.1 *Rhaptus collina*; e) Type (round label outlined in violet); f) *Rhaptus collina* Distant 1893, G.G.E. Scudder 1965, Lectotype (rectangular pink label).

**Redescription:** Small (3.0 mm); brachypterous; dorsal surface highly polished, with long pubescence mostly rubbed off. General coloration chestnut, becoming darker on head and amber at tip of tylus, on humeri, on clavus, laterally on corium, and at apex of scutellum. Antennae with first two segments amber, last two segments slightly darker. Venter nearly uniformly dark chestnut, lighter at pleural edges; labium amber; femora chestnut, fading gradually to amber on tarsi.

Head: moderately declivent; tylus broader than first antennal segment; eyes protuberant. Length head 0.50; preocular length 0.35; width head 0.68; interocular 0.45. Antennae with segments I and II terete, III and IV fusiform; length antennal segment I 0.40; II 0.50; III 0.40; IV 0.50; venter of head swollen and punctate on either side of midline; labium with segments II – IV obscured, length labial segment I 0.48.

Thorax: Pronotum with anterior margin slightly concave, posterior margin nearly straight; collar area weakly indented, with a few shallow punctures; lateral margins carinate, only slightly sinuate at level of shallow transverse impression, narrowing gradually anteriorly, trichobothrium present; calli convex, impunctate; posterior lobe with scattered shallow indistinct punctures. Length pronotum: 0.68; anterior width 0.43; posterior width 0.95. Scutellum flat, with punctures along lateral edges and a few mesally; length scutellum 0.53; width scutellum 0.53. Hemelytron: clavus with 3 rows of widely spaced punctures; corium with vein R+M prominent on anterior half; venation otherwise reduced; punctation sparse, with one regular row along claval suture; membrane reduced to a small triangular flap, no veins apparent; length claval commissure 0.35; length apex clavus- apex corium 0.50; length corium 1.45. Legs: fore femora more swollen than mid or hind femora, spines not visible; tibiae sparsely spinose. Metathoracic scent gland with auricle strongly raised, truncate; evaporative area covering half of metapleuron, not extending dorsally at anterior margin; evaporative area on mesopleuron not extending dorsally along meso-metapleural suture.

Abdomen: venter covered sparsely with long hairs and more densely with very short hairs. Genitalia not found upon dissection of the abdomen. NOTE: The female on the same card as the lectotype is 3.3 mm long, lighter in color, and is also brachypterous.

**Distribution:** Known from Guatemala and Panama (Slater 1964).

**Material examined:** The only authoritatively determined material I have seen is the lectotype redescribed above and the associated female mounted on the same card.

### *Xestocoris nitens* Van Duzee

*Xestocoris nitens* Van Duzee 1906, p. 390;

**Type:** Van Duzee (1906) described this species from 9 examples taken at Colden (8 individuals) and Buffalo (1 individual), New York. I have seen 8 of these 9 specimens, all with an “EPVanDuzee Collection” label on them. Van Duzee did not designate a holotype, nor could I find any subsequent designation of a lectotype in the literature, so these specimens are all syntypes despite the labels on them. 2 specimens (on the same pin) from CAS bear a red “Paratype” label, with “nitens” handwritten below “Paratype”, from Colden; in addition, there are 3 more specimens (2 pointed on one pin) in CAS with yellow “Paratype” labels from Colden, also with “nitens” handwritten below “Paratype”. There is another specimen from the same place and date in the Smithsonian with a red “co-type” label (“USNM no. 12245”), and with a separate handwritten “*Xestocoris nitens*” label; another CAS specimen collected by Ph. Fischer at Buffalo bears a yellow paratype label with “nitens” handwritten on it. CAS Type no. 1977 is labeled “Lectotype”, with “nitens” handwritten beneath

“Lectotype.” It appears that all these labels were written by the same hand; the sample of Van Duzee’s handwriting provided by the California Academy of Sciences indicates that these labels were probably all written by Van Duzee himself. I hereby designate CAS Type no. 1977 as the Lectotype, following Van Duzee’s intent, and have attached a new label so stating. The Lectotype (Figure 2) is redescribed below.

**Redescription:** Female; small, elongate-oval, shining, hairy, brachypterous. Pleural and sternal surfaces shining. Total body length 3.52; maximum width, across hemelytra at level of apex of clavus, 1.44. Head, third and fourth antennal segments (fourth is missing on the lectotype; color discerned from topotypic female paralectotype), disk of pronotum, scutellum, visible terga, and all of venter chestnut, tinged with amber on tylus, anterior and posterior pronotal margins, acetabula, and posterior margins of propleuron and metapleuron. First two antennal segments, labium, femora, and mid and hind tibiae amber; hemelytron paler, cream color laterally.

Head nearly smooth, convex across vertex, with only indistinct shallow rugosities; eyes small, ocelli present; length head 0.60; preocular length 0.40; length eye 0.20; width across eyes 0.76; interocular width 0.48. Antennae with first segment surpassing apex of tylus by about one-half its length; length antennal segment I 0.48; II 0.52; III 0.40; IV 0.48 (from topotypic female paralectotype). Head beneath moderately swollen on either side of midline. Length labial segments I 0.88; II 0.88; III 0.36; IV 0.32.

Thorax: Pronotum quadrate, flat; anterior margin slightly concave; collar not well-differentiated, represented by only a few punctures, remainder of pronotum impunctate; posterior margin straight; lateral margins nearly straight, very narrowly carinate; trichobothrium removed from anterolateral corner by about the width of an eye; transverse impression obsolete mesally, very shallow laterally; length pronotum 0.76; width across trichobothria 0.84; width across humeri 1.16. Scutellum flat, only slightly raised along anterior margin, with row of punctures laterally and several scattered punctures between; length scutellum 0.68; width scutellum 0.64. Clavus with 3 rows of punctures; length claval commissure 0.40. Corium with distinct, regular row of punctures along clavus, and 3 irregular rows lateral to regular row; lateral (outer) half impunctate. Membrane reduced to a broadly rounded flap extending to level of apex of corium, no veins apparent; straight-line distance apex clavus-apex corium 0.56. Metathoracic scent gland auricle comma-shaped, raised and set off from remainder of evaporative area by a deep groove; evaporative area covering all of mesepimeron, extending in narrow band along posterior margin of mesopleuron nearly to dorsal edge of mesopleuron; occupying ventral half of metapleuron, dorsal margin nearly straight and sloping evenly posteriorly. LEGS: fore femur not much more swollen than mid or hind femora; fore femur with 4 spines, the three distal ones stout, the more proximal one not so stout as the other three; mid and hind femora mutic.

Abdomen: Sterna covered with minute appressed iridescent scale-like hairs. O’Donnell (1991) illustrates the clasper and sperm reservoir; Khan & Woodward (1979) describe and figure the spermatheca.

**Distribution:** Northern United States and southern Canada (Slater 1964; Ashlock & A. Slater 1988). I have seen specimens from the following places, not previously reported in the literature: District of Columbia (CUIC), Maryland (NMNH), Michigan (UMMZ), Missouri (UMC), Nebraska (NMNH), New Jersey (SNOW), Ohio (LSU), Virginia (NMNH) and Nova Scotia (NMNH).

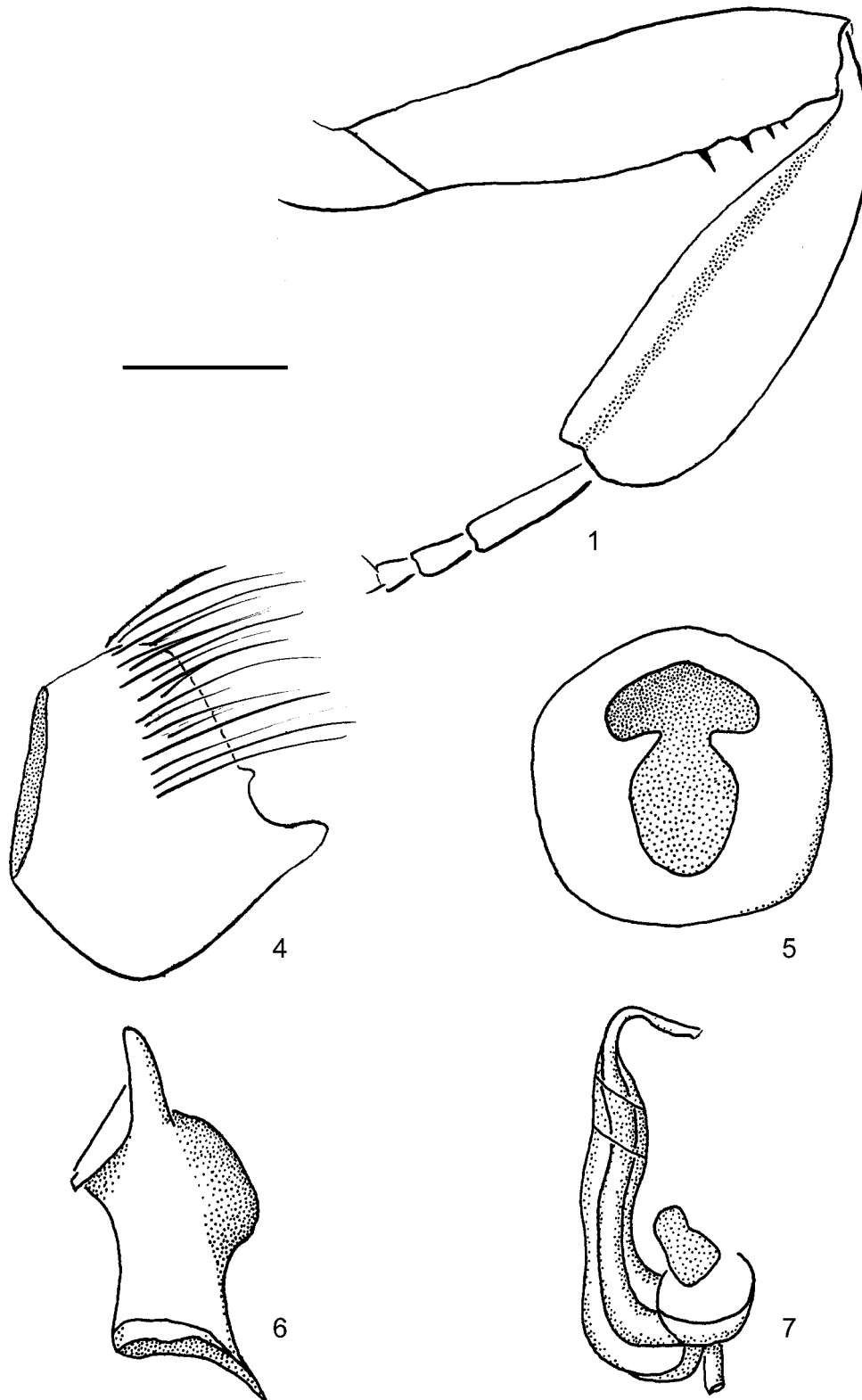
### *Xestocoris tibialis*, new species

Figures 1, 3, 4–7.

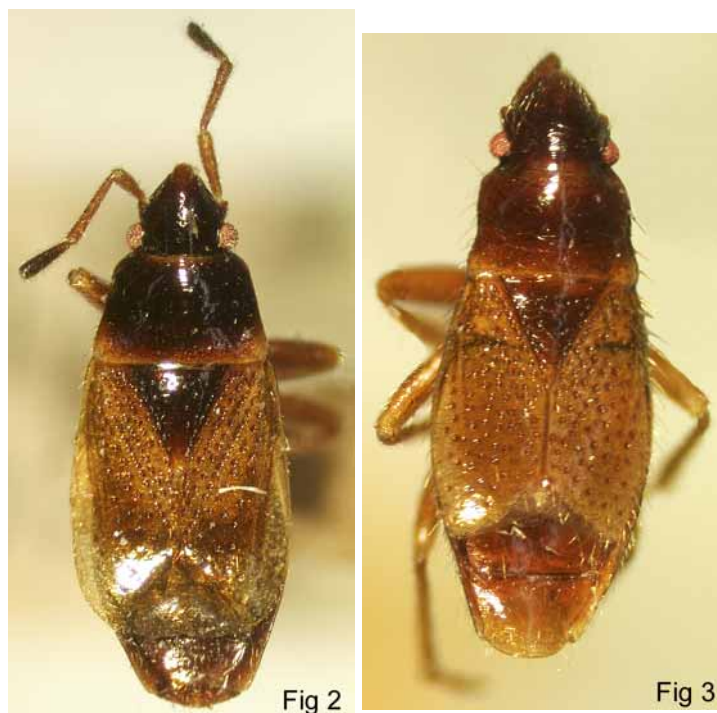
The following description is of the Holotype; measurements of the female paratype are given in parentheses following the corresponding measurement of the male holotype.

Elongate, body widest at level of apex of clavus; brachypterous. Dorsal surface polished, densely covered with long, upstanding cream color hairs. Total body length 3.0 (3.44). Head, disk of pronotum, scutellum, visible terga and all of venter chestnut, shining, becoming tinged with amber on tylus, anterior and posterior

pronotal margins, acetabula, and posterior metapleural lobe. Antennae, labium, femora, and mid and hind tibiae amber; fore tibia lighter, approaching cinnamon color of most of hemelytron; hemelytron fading to near cream color laterally.



**FIGURE 1, 4-7.** 1, Left foreleg of holotype of *Xestocoris tibialis*; scale line = 0.25mm; 4, Genital capsule of holotype of *Xestocoris tibialis*, lateral view; scale line = .25 mm; 5, Genital capsule of holotype of *Xestocoris tibialis*, dorsal view (hairs omitted); scale line = 0.25 mm; 6, Left clasper of holotype of *Xestocoris tibialis*, inner view; scale line = 0.10 mm; 7, Sperm reservoir of holotype of *Xestocoris tibialis*, lateral view; scale line = 0.10 mm.



**FIGURE 2–3.** **2,** Lectotype of *Xestocoris nitens* Van Duzee, dorsal view; **3,** Holotype of *Xestocoris tibialis*, **n. sp.**, dorsal view

Head: quadrate, strongly and abruptly declivent; eyes small, protuberant; ocelli reduced. Tylus as broad as apex of first antennal segment. Venter swollen on either side of labium, heavily punctate. Length head 0.50 (0.52); preocular length 0.33 (0.40); length eye 0.14 (0.14); width across eyes 0.68 (0.72); interocular width 0.48 (0.50). Antennae with first 2 segments fusiform, third and fourth terete; first segment exceeding tylus by one-half its length. Length antennal segment I 0.40 (0.48); II 0.58 (0.58); III 0.43 (0.44); IV 0.50 (0.54). Labium reaching hind coxae, first segment not reaching base of head. Length labial segment I 0.45 (0.50); II 0.45 (0.48); III 0.33 (0.34); IV 0.28 (0.30).

Thorax: Pronotum quadrate, anterior margin slightly concave, posterior margin straight; lateral margins subcarinate, only slightly sinuate, trichobothrium present. Anterior lobe occupying most of pronotum; calli impunctate; transverse impression shallow; reduced posterior lobe with sparse shallow punctures. Length pronotum 0.53 (0.60); width across trichobothria 0.70 (0.76); posterior width 0.88 (0.94). Scutellum with sparse coarse punctures, nearly flat, without a y-shaped impunctate elevation. Length scutellum 0.53 (0.56); width 0.50 (0.54). Hemelytron coarsely punctate, brachypterous (nearly coleopteroid), exposing abdominal terga 6 and 7; claval-corial suture obsolete, membrane present only as a small triangular flap, without veins. Length of "extended" claval commissure 0.48 (0.56). Mesepimeron almost emergent; evaporative area not reaching dorsal margin of mesopleuron; metathoracic scent gland auricle strongly raised, comma-shaped, evaporative area occupying slightly more than one-half of metapleuron, curving in a broad arc from edge of mesopleural evaporative area to where it meets meta-acetabulum posteriorly, not extending to dorsal margin of metapleuron along meso-metapleural suture. All femora about equally swollen and densely hairy; fore femur with 5 right (4 left) stout spines; mid and hind femora mutic; fore tibia greatly expanded, wider than femur, inner surface with a longitudinal groove and a proximal depression (Figure 3); spines lacking on fore tibia, but outer surface covered with long semi-erect hairs; mid and hind tibiae with spines reduced, shorter than width of tibia and confined mostly to inner surfaces.

Abdomen: Exposed terga covered with long upstanding hairs; venter polished; all sterna with long upstanding cream color hairs and minute, appressed, iridescent scale-like hairs. Male genital capsule (Figures 4, 5) covered with long hairs dorsally (surrounding genital opening) (not shown on Figure 5); clasper (Figure

6) strongly concave on inner surface; outer projection heavily sclerotized and covered with long hairs (not shown on drawing); sperm reservoir (Figure 7) with basal spur; arcuate extension split basally, with large opening; sleeve with strongly sclerotized band distally.

**Holotype:** male: Mt. Wrightson, Sta. Rita Mts., ARIZ. Sept. 11, 1961, F. Werner & Nutting Summit 9453'. Deposited in SNOW.

**Paratype:** 1 female same data as holotype. Deposited in SNOW.

**Etymology:** Named for the characteristic, greatly expanded fore tibia of the male.

**Distribution:** Known only from the type locality in Arizona.

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