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# A new North American genus of Hetaeriinae (Coleoptera: Histeridae), with descriptions of six new species from the U.S.A. and Mexico

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## Abstract

*Renclasea* ***n. gen.***, a genus of the Hetaeriinae (Histeridae), with six species, *R. skelleyi* **n. sp.** (United States: Florida and Georgia), *R. falli* **n. sp.** (United States: California), *R. helavai* **n. sp.** (United States: Arizona), *R. mexicana* **n. sp.** (Mexico: Hidalgo), *R. occidentalis* **n. sp.** (United States: Arizona and New Mexico) and *R. cazieri* **n. sp.** (United States: Arizona), are described, illustrated and diagnosed. The status of two female specimens of *Renclasea* from western Texas, apparently closely related to *R. occidentalis*, remains uncertain. The only host record available for the genus is an association of *R. mexicana* with undetermined species of *Neivamyrmex* army ants.

**Key words:** Coleoptera, Histeridae, Hetaeriinae, *Renclasea*, new genus, new species, myrmecophily, *Neivamyrmex*

## Introduction

Although the North American fauna of the obligate myrmecophilous and termitophilous histerid subfamily Hetaeriinae has attracted and fascinated taxonomists and naturalists for a long time (e.g., Wheeler 1908) and is not overwhelmingly rich, its species remain largely unrevised (Kovarik & Caterino 2001). The existence of numerous undescribed species has been reported (Kovarik & Caterino 2001). Moreover, even the process of initial species discovery may be incomplete in light of the collection of a new species of *Hippeutister* Reichensperger, 1935, a genus new to the US fauna, in California in the mid 2000s (Caterino & Tishechkin 2008). Revisions for only three genera are published (*Hetaerius* Erichson, 1857: Martin 1922; *Terapus* Marseul, 1862: Hinton 1945; *Hippeutister*: Caterino & Tishechkin 2008), but the former two are outdated and poorly illustrated and so not reliable for species identification.

The major taxonomic impediment with the North American hetaeriine fauna has been incorrect and poorly justified generic assignment of some species. One such case was resolved recently with the description of the genus *Aritaerius* Kovarik & Tishechkin (2004) for a species previously referred to *Chrysetaerius* Reichensperger, 1923. Another is the case of North American species of *Euclasea* Lewis, 1888. This neotropical genus has had a confused status dating back almost to the date of its erection. Most of the taxonomic confusion and species misplacements in *Euclasea* were clarified by Tishechkin (2007). The only remaining taxonomic problem revolves around the placement of several similar, undescribed North American hetaeriine species. Their membership in *Euclasea* was first proposed by Helava *et al.* (1985: 252–254), who did not study authentic material for this genus, incorrectly basing their concept of *Euclasea* on those North American species. This mistake was perpetuated by Kovarik and Caterino (2001). Tishechkin (2007) noted that species of *Euclasea sensu* Helava *et al.* (1985) belong to an apparently undescribed genus, but did not take any other actions.

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Herein, we finally describe this genus and its six constituent species as another step in our ongoing effort to revise North American Hetaeriinae. The final precipitation point for this manuscript preparation was a discovery of another undescribed species by one of the authors during his California Beetle Project (Caterino 2006).

## Materials and methods

This study is based on the material from the collections of Arizona State University, Tempe (ASU), California Academy of Sciences, San Francisco (CAS), California Department of Food and Agriculture, Sacramento (CDFA), Canadian Museum of Nature, Ottawa (CMN), Florida State Collection of Arthropods, Gainesville (FSCA), Santa Barbara Museum of Natural History, Santa Barbara (SBMNH), Snow Entomology Collections, Natural History Museum, University of Kansas, Lawrence (SEMC), Texas A & M University, College Station (TAMU) and United States National Museum, Smithsonian Institution, Washington (USNM) as well as private research collections of P.W. Kovarik, Columbus, OH (PWK) and one of the authors (AKT).

Methods of specimen dissection, illustration preparation, terminology, body part measurement conventions and abbreviations follow Caterino & Tishechkin (2008) and Tishechkin (2007).

## *Renclasea* Tishechkin & Caterino, n. gen.

Type species: *Renclasea skelleyi* **n. sp.**

**Description**. Body elongate oval, convex dorsally (L: 1.6–2.3 mm). Body surface smooth and mostly shiny (Figs. 2A, 5A), sometimes with areas of alutaceous microsculpture dorsally (Fig. 1B), mostly asetose, some species with sparse inconspicuous setae, especially on legs, antennal scape, labrum and clypeus. Head with latero-marginal frontal carina descending along inner edge of eyes (Fig. 2A), then running obliquely forward to posterior margin of clypeus, interrupted along clypeolabral border. Frons concave between carinae, frontal stria runs on top of the carina and is interrupted in medial concavity; occipital stria thin, complete, continuous with branches of supraorbital stria. Labrum in the same plane as clypeus, small, rectangular, sometimes with small blunt knob in the middle of apical margin. Mandibles robust, short, with faces of bases unmodified. Antennal scape strongly expanded (Fig. 2D), irregularly pyramidal, with all edges sharp. Antennal clubs with dense pubescence except for large sclerotized areas on dorsal, inner lateral and ventral surfaces. Pronotum convex, lateral sides weakly convergent anteriorly, moderately but conspicuously explanate. Pronotal basal margin obtusely angulate. Pronotal marginal stria complete (Fig. 1A, 2A), anterior stria broadly interrupted medially, present only around anterior angles. Anterior margin of pronotum with a pair of small glandular openings behind and slightly mediad eyes; lateral margin also with two elongated gland openings (Figs. 1A). Scutellum triangular, minute and inconspicuous. Elytron with reduced set of thin, impunctate dorsal striae. Both subhumeral striae complete, carinate; sutural stria abbreviated anteriorly or completely absent, traces of dorsal striae 1–4 variably present, apical stria thin, complete, united with sutural (if present) and inner subhumeral striae. Elytro-epipleural border sharp (Fig. 2C), angulate along outer subhumeral stria. Propygidium transversely hexagonal, with marginal stria complete, sometimes weakened along apical margin. Pygidium in females with ornament of thin striae represented by apical and/or basal transverse, and medial circular striations (Fig. 7). Prosternal lobe wide and short (Figs. 1D, 2B), with straight or slightly concave anterior margin. Anterior marginal stria of prosternal lobe complete, diverging from margin laterally; lateral foveae absent, lateral notches present. Prosternal keel relatively narrow, flat or weakly convex, with or without carinal striae, those if present narrowly separated, parallel (Fig. 6A). Lateral marginal prosternal striae distinct and long. Mesoventrite narrow, its anterior margin produced medially as a weak triangular process (Figs. 1D, 2B, 6). Marginal lateral stria of mesoventrite present, discal marginal stria absent. Metaventral disc

in males with weak median depression. Outer lateral stria of metaventrite present, complete. Inner lateral stria of metaventrite present only as long, double striated recurrent arm. First abdominal ventrite with lateral and postmetacoxal striae united near posterior edge of metacoxa, running thence as long, curved striae towards elytral margin. Legs relatively short; tibia wide, paddle-like. Protibia (Fig. 1E) strongly expanded, with 14–17 short spines along outer margin and with 8–10 bristles along apical part of inner margin. Meso- and metatibia (Figs. 1F–G) without teeth and spines on outer margins, on ventral side with complete marginal stria and two longitudinal striae closer to inner margin.

Aedeagus with parameres long, with long basal fusion ventrally and dorsally. Penis aligned along the longitudinal paramere axis. Basal piece long, with shallow and wide dorsal and ventral apical emarginations, its posterior opening circular, in caudal position. Male sternite 8 with fused full-sized halves (although suture between halves distinct), pair of small velae and fringes of long setae along postero-lateral parts of apical margin. Dorsal apical parts of male sternite 8 with inward long narrow rectangular processes. Male tergite 8 with transverse anterior stria (TAS) and complete intra-TAS plate present and no transverse posterior suture. Intra-TAS plate not separated from the tergite body along TAS. Male sternite 9 with slightly expanded stick-shaped "handle". Male tergite 9 with medium ventral apodemes, long basal projections, short pointed apical projections and medium sclerotized ventral processs. Halves of male tergite 9 separate; tergite 10 present, large, fitting into apical emargination of tergite 9, with apical margin widely and deeply acutely emarginated.

Female sternite 8 with deeply emarginate apical margin, distinct basal bridge with angulate lateral parts and obtusely angulate basal angles. Female tergite 8 present as single plate or three narrowly separated plates. Coxites not connected. Female tergite 9 present as single transverse plate, its lateral margins close, but not connected to coxites. Female genital sclerites separate, elongate, strip-shaped.

**Etymology.** The generic epithet represents the combination of hetaeriine generic names *Euclasea* and *Reninus* Lewis 1889, relatively closely related genera, some representatives of which resemble *Renclasea* species. The gender is feminine.

**Diagnosis.** Despite the generalized appearance of *Renclasea* and history of taxonomic confusions surrounding the genus, it is relatively easily recognizable among Hetaeriinae, especially given its North American distribution. It runs to *Euclasea* in the key to North American Hetaeriinae (Kovarik & Caterino 2001) as well as in the most comprehensive key available for the entire subfamily (Helava *et al.* 1985). The latter key is not complete, but even given this fact and taking into consideration available undescribed hetaeriine material (Caterino & Tishechkin, unpublished), it would work well to identify *Renclasea* species in global hetaeriine context (keying them to *Euclasea*). The combination of convex elongate body shape, smooth shiny surfaces almost completely devoid of setae, explanate pronotal sides, strongly expanded pro-, but not meso- and metatibia and reduction of striae and punctures on elytra and metaventrite readily diagnose the genus. Some representatives of *Euclasea* (*sensu* Tishechkin 2007) may be quite similar externally, but none of them have explanate sides of pronotum and strongly expanded protibia. Some species of *Reninus* (those included earlier in the presently synonimized subgenus *Brachylister* Bickhardt, 1917) have similar general appearance and similar structure of male genitalia, but all of them have extremely expanded meso- and metatibia and complete set of discal and lateral striae on metaventrite.

### Key to the species of *Renclasea*

1. Prosternal keel with carinal striae present (Fig. 6A) ..... *R. falli* **n. sp.**
1'. Prosternal keel without carinal striae ..... 2
2. Substantial areas of dorsal body surface with alutaceous microsculpture, at least on elytral intervals and apical areas ..... 3
2'. Dorsal body surface without alutaceous microsculpture ..... 5
3. Dorsal striae inconspicuous, barely traceable; surface of pygidium smooth, shiny or finely microsculptured ..... 4
3'. Dorsal striae 1–4 distinct, almost complete, thin, impunctate and slightly costate, especially anteriorly; surface of pygidium rugose; disc of mesoventrite (in females) medially with circular flat microsculptured callus (Fig. 6B) .....

.....*R. helavai* **n. sp.**

4. Surface of frons, vertex, pronotum, most of elytra and propygidium with alutaceous microsculpture; northern Mexico (Hidalgo) ..... *R. mexicana* **n. sp.**

4'. Dorsal alutaceous microsculpture present as longitudinal bands at interstrial intervals on elytra, these being somewhat expanded and merged at posterior fourth (Fig. 1B); southeastern United States (Florida and Georgia) ..... .....*R. skelleyi* **n. sp.**

5. Elytra with distinct traces of dorsal striae 1–3 and almost complete sutural striae; mesoventrite and anterior portion of metaventrite without medial longitudinal keel ..... *R. occidentalis* **n. sp.**

5' Elytra without any traces of dorsal and sutural striae; mesoventrite and anterior portion of metaventrite (in males) with sharp medial longitudinal keel (Fig. 2B) ..... *R. cazieri* **n. sp.**

***Renclasea skelleyi* Tishechkin & Caterino, n. sp.**
(Figs. 1, 3, 4)

**Material examined:** Holotype male: "FLORIDA: Levy Co. 4.0 mi. SW Archer 16-V-1991; P. E. Skelley blacklight on ground / HOLOTYPE *Renclasea skelley* sp. n. A. K. Tishechkin & M. S. Caterino des. 2008" (FSCA). Paratypes (6): female from Florida, Putnam Co., 2.5 mi NE Florahome, collected by P. Skelley on January 8, 1993 (FSCA); male from Florida, Marion Co., Lake Delancy collected at UV lights by J. Cicero on August 31, 1996 (FSCA); male from Florida, Marion Co., Ocala Nat. Forest, 2.5 mi N of 40, FS97 collected at UV/MV lights by R. Morris and S. Lingafelter on July 26–27, 2002 (AKT); male and female from Georgia, Tattnall Co., 2–3 mi E of 147 along Ohoopee River near Reidsville, 32°0.54'N 82°8.48'W, collected at UV lights by R. Morris and E. H. Donaldson on May 7, 1998 (PWK); male from the same locality collected at UV lights by R. Morris on August 1, 1998 (AKT).

**Diagnosis:** By the presence of alutaceous microsculpture in elytral intervals 1–4 and along the posterior margin of elytra this species resembles only *R. helavai*. Apart from its disjunct distribution, *R. skelleyi* can be distinguished from the latter by only weakly marked traces of dorsal striae 1–3, different pattern of female pygidial ornament (Fig. 7A) and lack of median callus on mesoventrite in females.

**Description:** L: 1.89; W: 1.49; E/Pn L: 1.81; E/Pn W: 1.19; Pn W/L: 1.66; E L/W: 0.92; Pr/Py: 1.15; Sterna: 0.47, 0.16, 0.44; Tibiae: 0.51, 0.60, 0.69 (n=7). Body reddish-brown, shiny, except areas of alutaceous microsculpture on elytra (Fig. 1B) and pygidium, smooth and asetose. Frons almost flat, clypeus depressed at middle between lateral carinae; labrum narrowly rectangular, weakly produced at the middle of apical margin. Prosternal sides convergent (Fig. 1A), much more strongly in anterior fourth, above antennal cavities, weakly inwardly sinuate, with the anterior angles narrowly rounded, almost rectangular; marginal stria present along lateral edge, almost entire, variably narrowly interrupted between anterior angles and outer part of anterior emargination; pronotal lateral sides narrowly flattened and slightly reflexed; median angle of pronotal posterior margin about 100º. Prosternum (Fig. 1D) with anterior margin of prosternal lobe weakly concave; prosternal keel slightly elevated and flattened, covered with fine microsculpture, without carinal striae.

Scutellum elongate triangular, small; elytra (Fig. 1B) convex, widest at middle, with minute sparse background punctures, these more conspicuous along sutural stria; dorsal elytral striae 2–3 weakly marked on disc, abbreviated both anteriorly and posteriorly, weaker traces of oblique humeral stria and dorsal stria 1 also present; sutural stria abbreviated in anterior fourth; elytral intervals with elongate band of fine alutaceous microsculpture, somewhat expanded and merging in posterior third.

Mesoventrite (Fig. 1C) flat in males, with somewhat depressed areas laterad of the mesoventral projection base in females; mesoventral projection short, triangular, its apex slightly elevated; mesometaventral suture 'curly bracket'-shaped, thin and inconspicuous; disc of metaventrite in males in anterior half with shallow wide triangular depression bordered laterally by anterior parts of outer striae of metaventrite; weak wide elevation present near posterior margin of metaventrite; disc of metaventrite in females weakly, evenly convex. Lateral parts of meso- and metaventrite with fine alutaceous microsculpture.

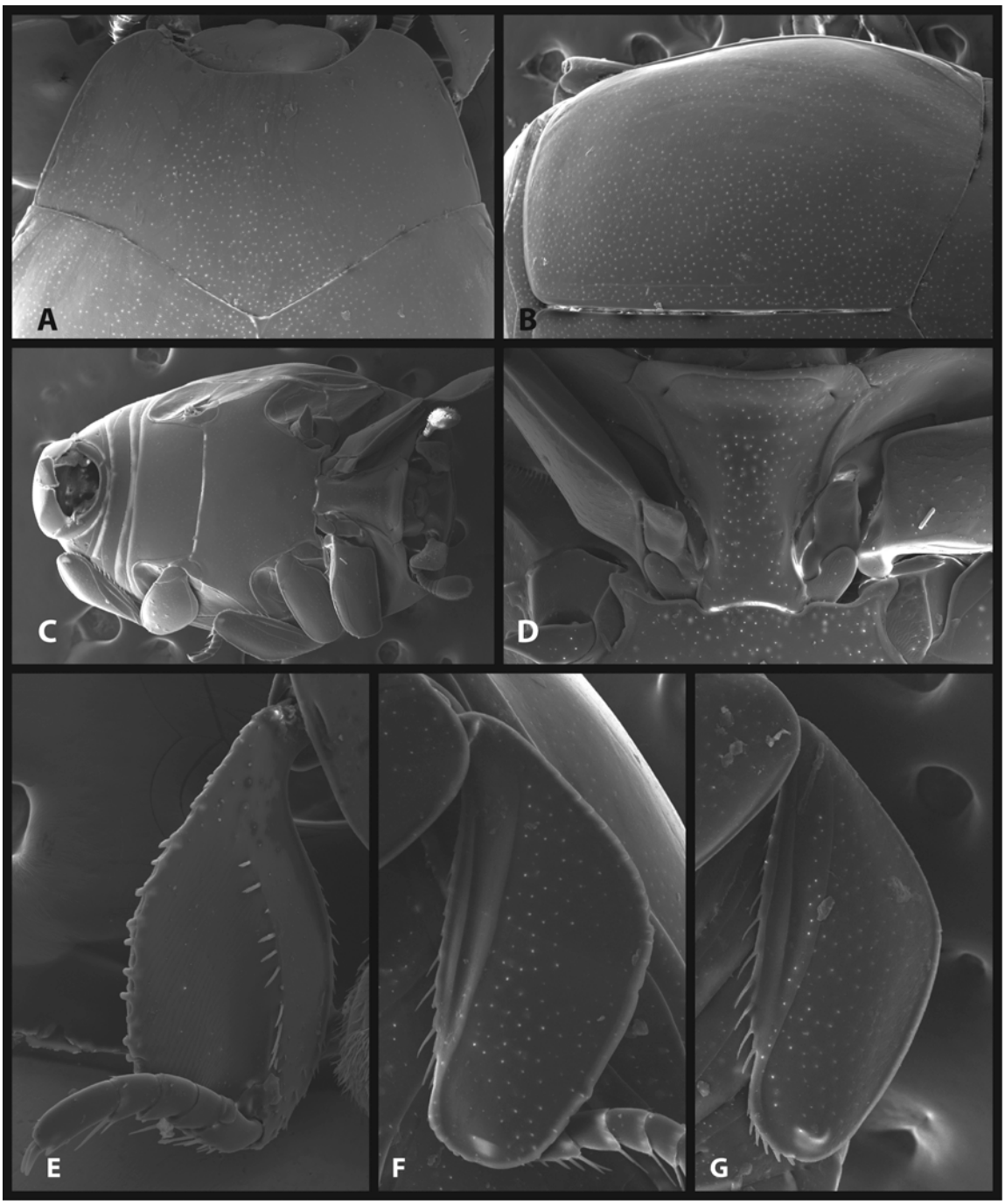


**FIGURE 1.** Generic appearance and characters, *Renclasea skelleyi*. A. pronotum; B. left elytron; C. ventral habitus; D. prosternum; E. protibia and tarsus; F. mesotibia; G. metatibia.

Propygidium weakly convex, disc with fine dense shallow punctures merging locally into shallow transverse wrinkles; marginal stria of propygidium complete; pygidium smooth, with few small shallow punctures along anterior margin, weakly convex, with striate ornament in females (Fig. 7A). Male and female genitalia as illustrated (Figs. 3, 4).

**Etymology.** This species is dedicated to one of its collectors, Paul Skelley of FSCA, in appreciation of our long collaboration and his efforts in collecting rare and poorly known beetles in southeastern United States.

**Distribution.** Known from several localities in northern Florida and southern Georgia (Fig. 14).

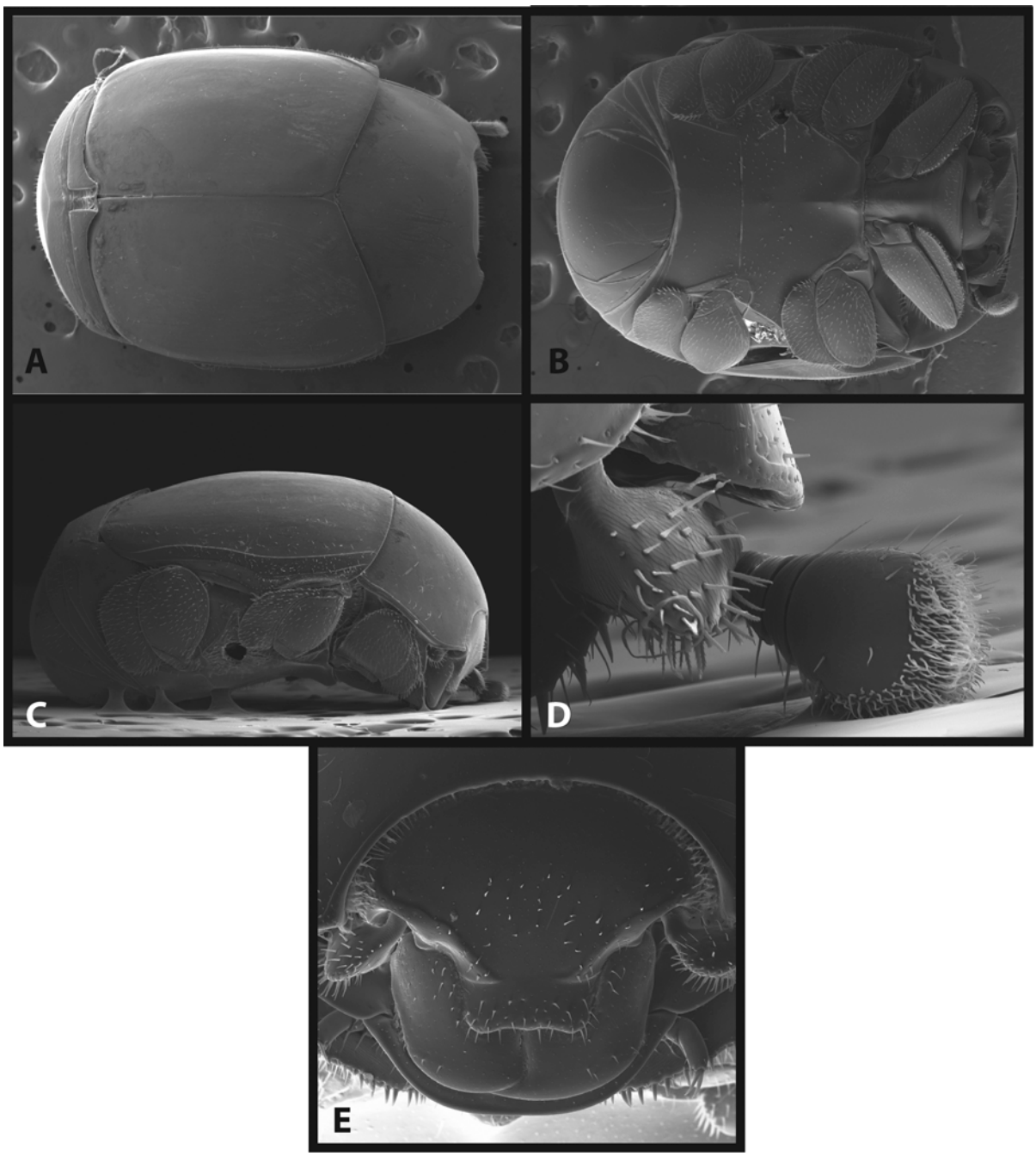


**FIGURE 2.** Generic appearance and characters. A. *Renclasea cazieri*, dorsal habitus; B. *R. cazieri*, ventral habitus; C. *R. cazieri*, lateral habitus; D. *R. cazieri*, antennal scape and club; E. *R. cazieri*, frons.

***Renclasea falli* Tishechkin & Caterino, n. sp.**
(Figs. 5, 6, 7, 8)

**Material examined:** Holotype male: "CA: Riverside Co. 33.7244°N, 116.8061°W, SBNF: San Jacinto R. v.24.2005, M. Caterino at light / CA BEETLE PROJ, CBP0029649 / HOLOTYPE *Renclasea falli* sp. n. A. K. Tishechkin & M. S. Caterino des. 2008" (SBMNH). Paratype (1): female from Bautista Canyon, 12 mi SE Hemet, California collected on February 26, 1971 (CDFA); genitalia missing.

**Diagnosis:** This species can be identified by the presence of distinct complete prosternal carinal striae (Fig. 6A). In addition to that, it appears smaller and less robust than *R. occidentalis* and *R. helavai*, the only

other species without alutaceous background microsculpture on dorsal surface. The female is one of only two species (as far as known) that have a mesosternal callus (Fig. 6B), the other being *R. helavai*. In *R. falli* this callus is smooth, and only very finely punctate, whereas in *R. helavai* it is finely rugose.

**Description:** L: 1.80; W: 1.41; E/Pn L: 1.75; E/Pn W: 1.15; Pn W/L: 1.64; E L/W: 0.93; Pr/Py: 1.04; Sterna: 0.41, 0.14, 0.42; Tibiae: 0.46, 0.54, 0.63 (n=2). Body (Fig. 5) pale rufescent, shiny, smooth and asetose throughout except of a few setae on antennomeres 1–7. Frons and clypeus depressed at middle between lateral carina; labrum narrowly rectangular, with a small weak knob at the middle of apical margin. Prosternal sides convergent, much more strongly in anterior fifth; anterior margin straight above antennal cavities, with the anterior angles sharp, almost rectangular; marginal stria present along lateral edge, slightly extending around anterolateral corner; pronotal lateral sides narrowly flattened and slightly reflexed; median angle of pronotal posterior margin about 110º. Prosternum with anterior margin of prosternal lobe weakly concave; prosternal keel slightly elevated and weakly convex, carinal striae thin and long, converging anteriorly, their anterior ends in close proximity, but not united, almost reaching base of prosternal lobe.

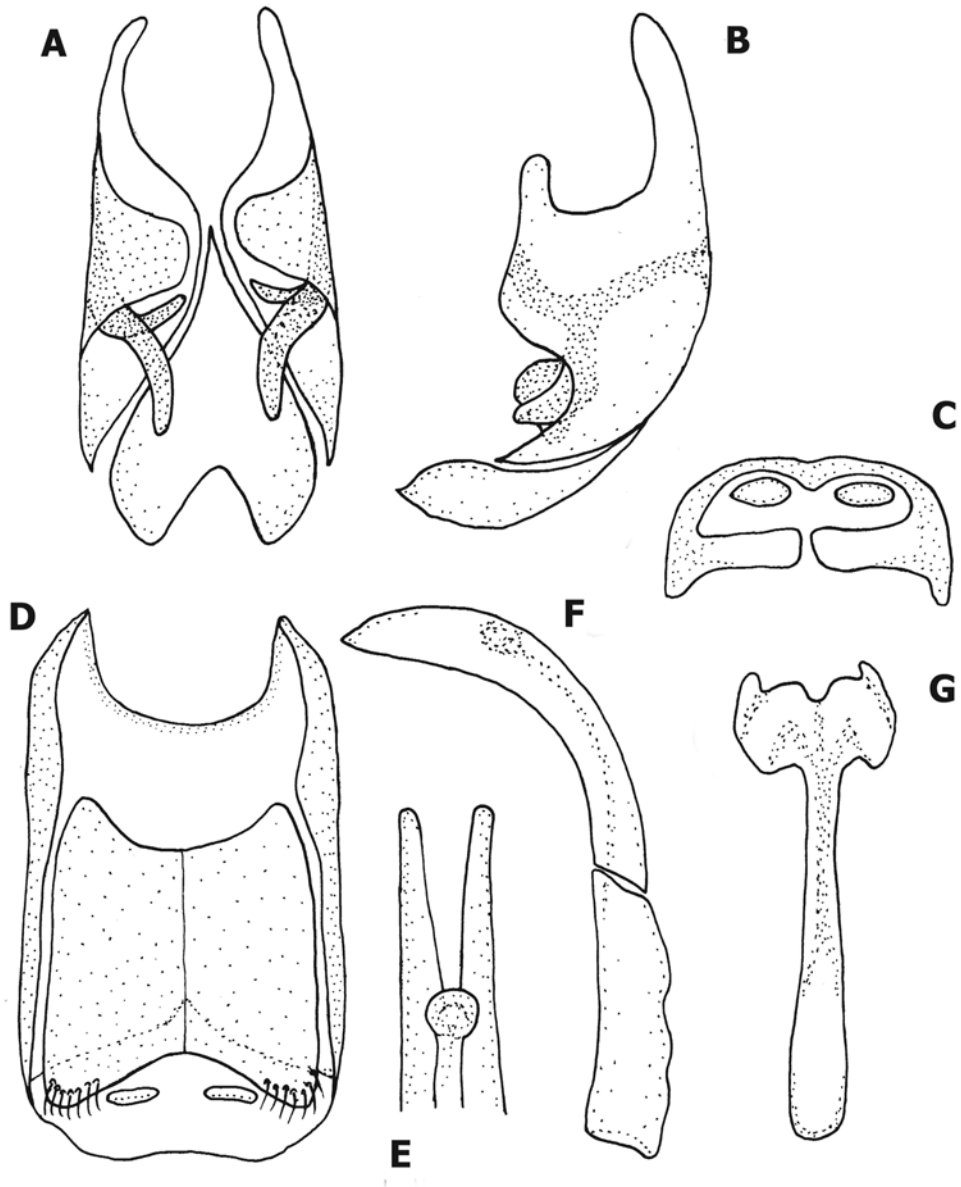


**FIGURE 3.** Male genitalia, *Renclasea skelleyi*. A. Abdominal segments 9–10, dorsal view; B. Abdominal segments 9–10, lateral view; C. Abdominal segment 8, apical view; D. Abdominal segments 8, ventral view; E. Apex of parameres, dorsal view; F. Aedeagus, lateral view; G. Ninth sternite (spiculum gastrale), ventral view.

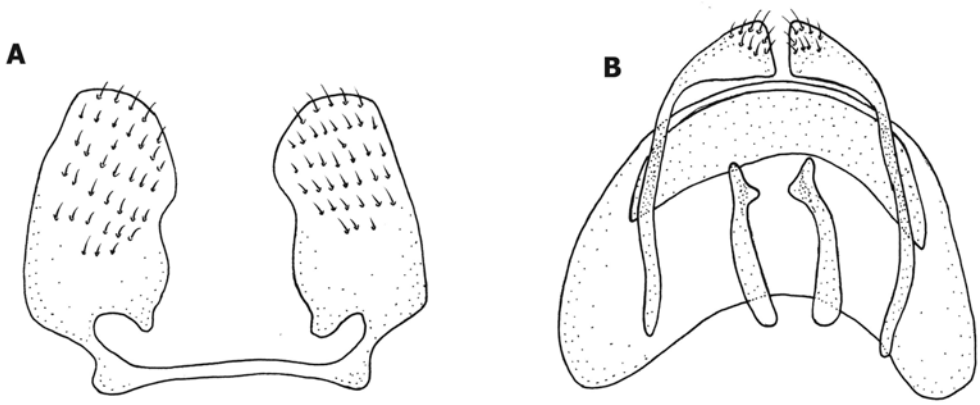


**FIGURE 4.** Female genitalia, *Renclasea skelleyi*. A. Abdominal sternite 8, ventral view; B. Tergite 8, gonocoxites, and genital sclerites, ventral view.


**FIGURE 5.** Montaged photographs of *Renclasea falli*. A. dorsal; B. lateral.

Scutellum short triangular, tiny, but distinct; elytra convex, widest at anterior third, with minute sparse background punctures, being denser and more conspicuous along sutural striae and at posterior fifth, where some merge into a weak background microsculpture; dorsal elytral striae 1–4 weakly marked on disc, abbreviated both anteriorly and posteriorly; sutural stria abbreviated in anterior eighth, its anterior end slightly bent outwards.

Mesoventrite flat, with mesoventral projection short, triangular, its apex slightly elevated, in female with subcircular impressed callus (Fig. 6A), its borders not closed posteriorly; mesometaventral suture widely V-shaped, thin and inconspicuous; disc of metaventrite in male in anterior two-thirds with shallow wide triangular depression, bordered laterally by anterior parts of outer striae of metaventrite, narrowing posteriorly; disc surface weakly raised posteriorly.

Propygidium weakly convex, disc with fine microsculpture of merged short transverse striolets; marginal stria of propygidium widely interrupted along posterior margin; pygidium smooth, weakly convex in male. Female with striate pygidial ornament (Fig. 7B). Male genitalia as illustrated (Fig. 8); female genitalia unknown.

**Etymology.** We take pleasure in naming this new species for Henry Clinton Fall (1862-1939), one of the fathers of California coleopterology.

**Distribution**. This species is known from two localities in western Riverside County, California (Fig. 14). The habitat at the type locality is dry, open, sandy riparian woodland, with western sycamores (*Platanus occidentalis*) and coast live oak (*Quercus agrifolia*) as the dominant trees, along with a large assortment of shrubs, including willows (*Salix* spp.), coyote brush (*Baccharis* sp.), *Yucca* sp. and others.

***Renclasea helavai* Tishechkin & Caterino, n. sp.**
(Figs. 6, 7, 9)

**Material examined:** Holotype female: "Tucson, Ariz. Aug. 5 1935 Bryant 20 At light / SEM / Collection of the CALIFORNIA ACADEMY OF SCIENCES, San Francisco, Calif. / *Euclasea* **n. sp.** 2 Helava '82 / HOLOTYPE *Renclasea helavai* sp. n. A. K. Tishechkin & M. S. Caterino des. 2008" (CAS).

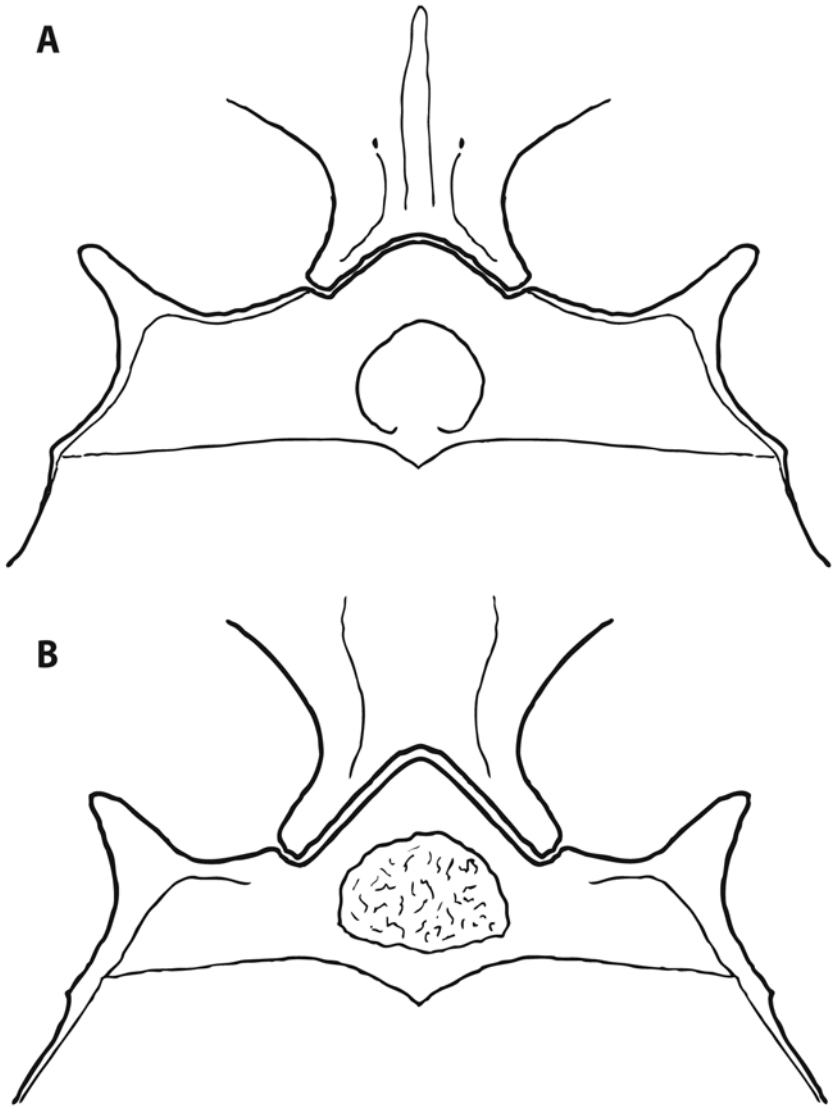


**FIGURE 6.** Female mesosternum, ventral view. A. *Renclasea falli*; B. *R. helavai*.

**Diagnosis:** Among three species with the presence of dorsal alutaceous microsculpture (*R. helavai*, *R. mexicana*, *R. skelleyi*), this species can be identified by its distinct dorsal elytral elytra striae 1–4. The prominent circular medial callus of mesoventrite (in females; Fig. 6B) is shared only with *R. falli*, in which it is smooth rather than faintly rugose.

**Description:** L: 1.68; W: 1.33; E/Pn L: 1.95; E/Pn W: 1.20; Pn W/L: 1.73; E L/W: 0.94; Pr/Py: 1.00; Sterna: 0.39, 0.18, 0.42; Tibiae: 0.45, 0.55, 0.62 (n=1). Body reddish-brown, shiny, except areas of alutaceous microsculpture on frons, pronotum, elytra and pygidia; smooth and asetose. Frons almost flat, microsculptured, clypeus smooth, depressed at middle between lateral carinae; labrum narrowly rectangular, its apical margin weakly inwardly arcuate. Prosternal sides convergent, much more strongly in anterior third, above antennal cavities, weakly inwardly sinuate, with the anterior angles narrowly rounded, almost

rectangular; marginal stria present along lateral, but not anterior edge. Pronotal surface mostly covered with alutacecous microsculpture, except bands along narrowly flattened and reflexed lateral sides; median angle of pronotal posterior margin about 100º. Prosternum with anterior margin of prosternal lobe weakly convex; prosternal keel slightly elevated and flattened, without carinal striae, its base excavated to fit process of mesoventrite.

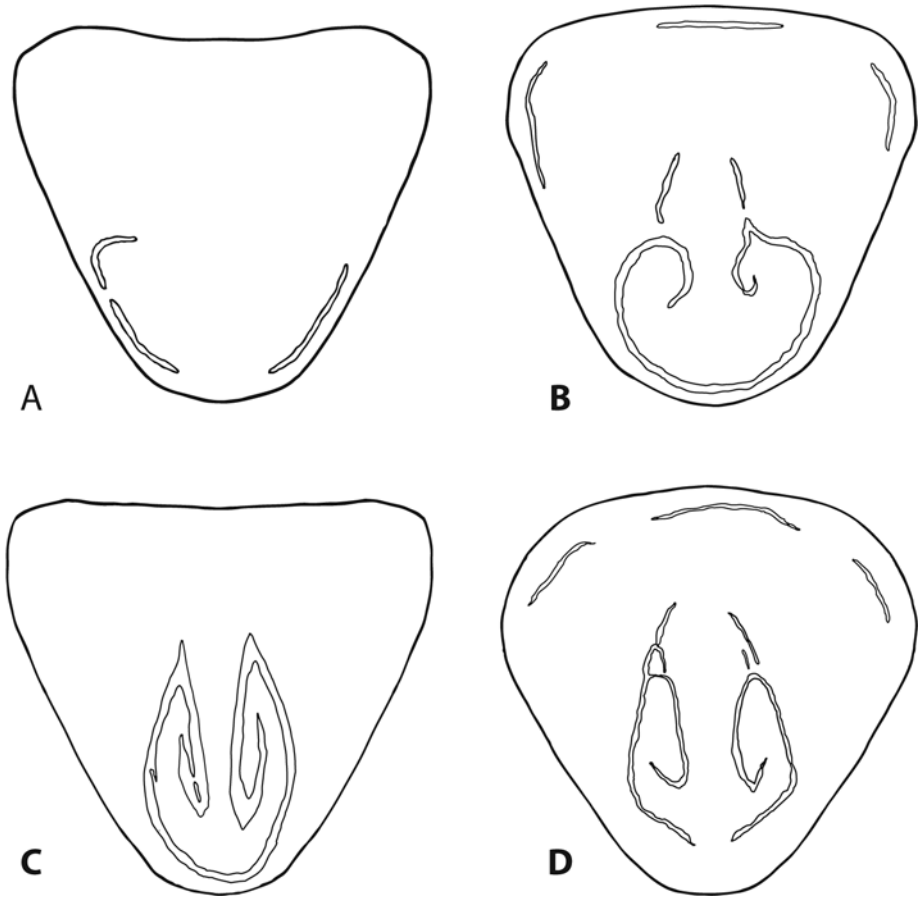


**FIGURE 7.** Female pygidia, posterior view. A. *Renclasea skelleyi;* B. *R. falli*; C. *R. helavai*; D. *R. occidentalis*.

Scutellum elongate triangular, tiny; elytra convex, widest at middle, smooth and shiny; dorsal elytral striae 1–4, distinct, not punctured, long, progressively shorter from stria 1 to 4, stria 1 almost reaching elytral apex and stria 4 abbreviated in posterior third; sutural stria complete; elytral intervals with elongate bands of fine alutaceous microsculpture, somewhat expanded and merging in posterior fifth.

Mesoventrite in females with median part of disc flat and lateral sides depressed, flat median part most mostly occupied by circular low microsculptured callus (Fig. 6B); mesoventral projection long, triangular; mesometaventral suture obsolete; disc of metaventrite in females weakly, evenly convex. Lateral parts of meso- and metaventrite with fine alutaceous microsculpture.

Propygidium weakly convex, disc with fine, dense, shallow punctures merging locally into shallow transverse wrinkles; marginal stria of propygidium complete; pygidium in females weakly convex, with rugose sculpture and striate ornament. Female genitalia as illustrated (Fig. 9), males are not known.

**Etymology.** This species is dedicated to Jussi Helava, who first recognized it as an undescribed, honoring his contributions to the taxonomy and systematics of Hetaeriinae.

**Distribution.** This species is only known from the type locality (Fig. 14).

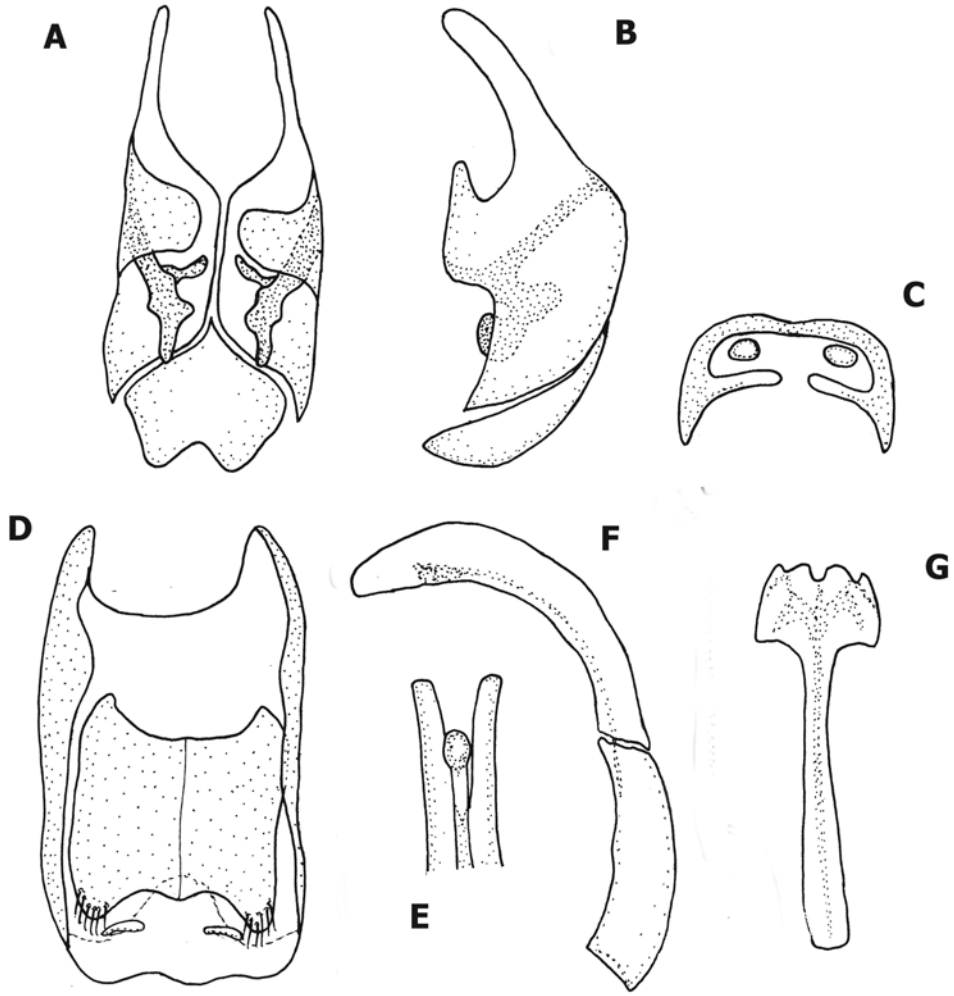


**FIGURE 8.** Male genitalia, *Renclasea falli*. A. Abdominal segments 9–10, dorsal view; B. Abdominal segments 9–10, lateral view; C. Abdominal segment 8, apical view; D. Abdominal segments 8, ventral view; E. Apex of parameres, dorsal view; F. Aedeagus, lateral view; G. Ninth sternite (spiculum gastrale), ventral view.

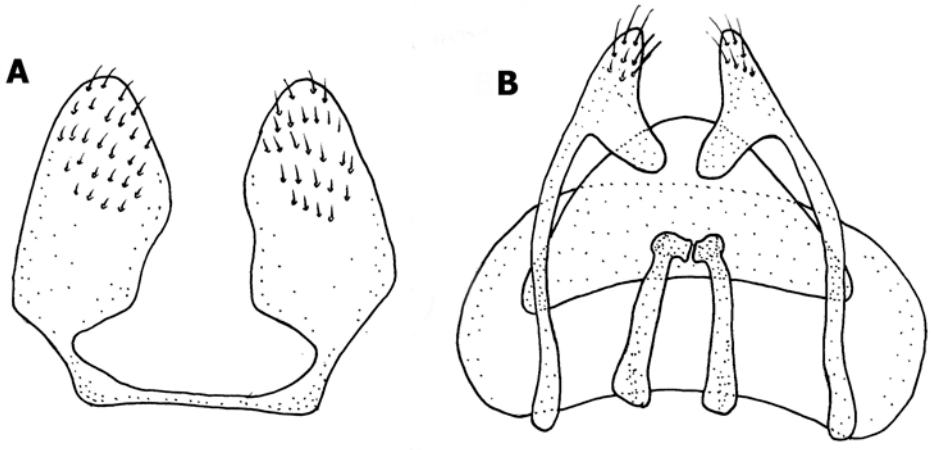


**FIGURE 9.** Female genitalia, *Renclasea helavai*. A. Abdominal sternite 8, ventral view; B. Tergite 8, gonocoxites, and genital sclerites, ventral view.

***Renclasea mexicana* Tishechkin & Caterino, n. sp.**
(Fig. 10)

**Material examined:** Holotype male: "MEXICO: Hidalgo 14.5 NW Cardonal 13 July 1990, 1850 m Danoff-Burg, ex: from *Neivamyrmex* bivouac / HOLOTYPE *Renclasea mexicana* sp. n. A. K. Tishechkin & M. S. Caterino des. 2008" (SEMC).

**Diagnosis:** Apart from its disjunct distribution, this species can be identified by the presence of distinct alutaceous microsculpture over almost entire dorsal and parts of ventral surfaces and presence of pair of small, shiny calluses near posterior margin of pronotum. Two other species with dorsal alutaceous microsculpture present lack the latter and have dorsal microsculpture much less widespread and present only on intervals and along apical margins on elytra.

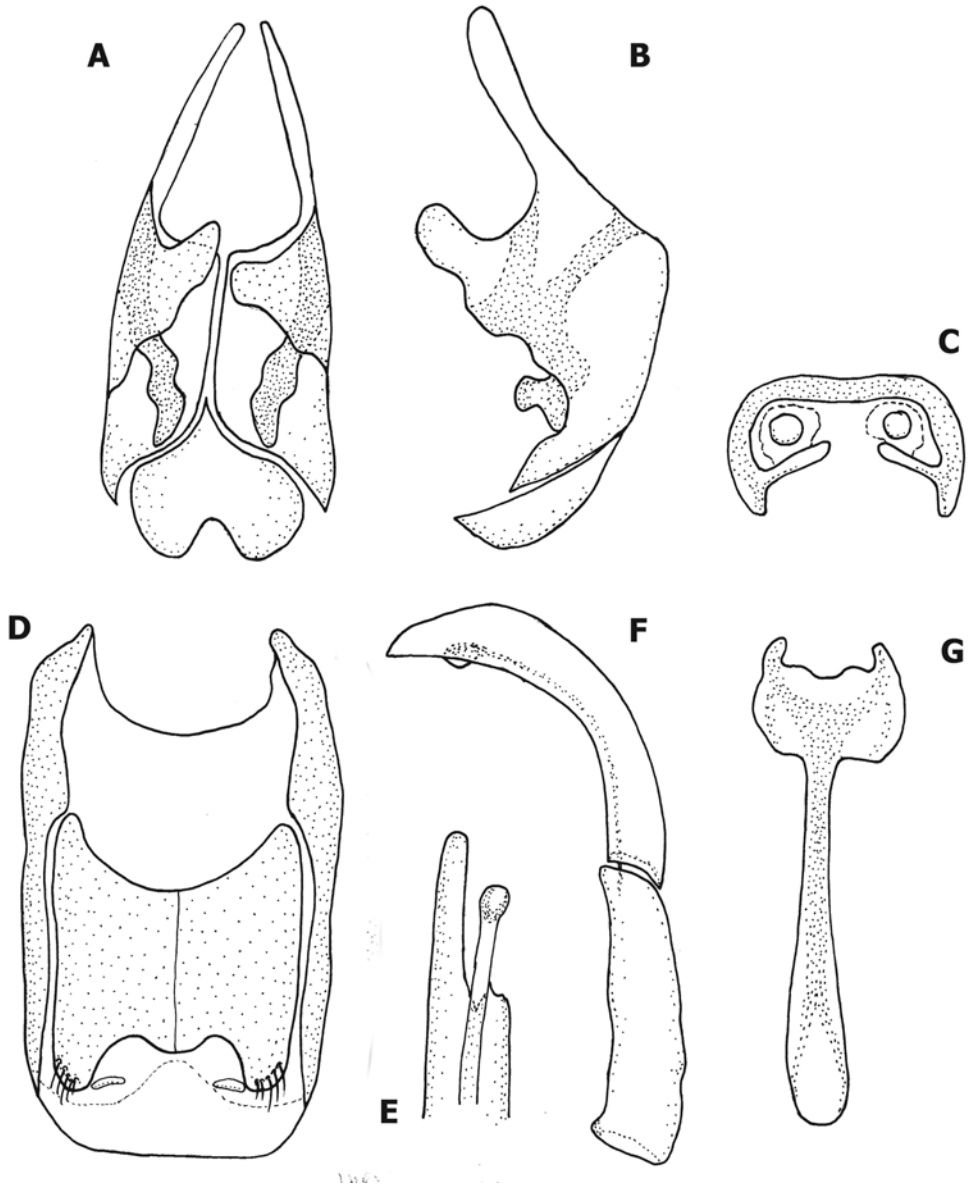


**FIGURE 10.** Male genitalia, *Renclasea mexicana*. A. Abdominal segments 9–10, dorsal view; B. Abdominal segments 9–10, lateral view; C. Abdominal segment 8, apical view; D. Abdominal segments 8, ventral view; E. Apex of parameres, dorsal view; F. Aedeagus, lateral view; G. Ninth sternite (spiculum gastrale), ventral view.

**Description:** L: 2.07; W: 1.64; E/Pn L: 1.95; E/Pn W: 1.17; Pn W/L: 1.82; E L/W: 0.91; Pr/Py: 0.99; Sterna: 0.45, 0.15, 0.46; Tibiae: 0.54, 0.62, 0.72 (n=1). Body light reddish-brown, mostly covered with

alutaceous microsculpture, smooth and asetose throughout except for a few setae on antennomeres 1–7. Vertex and most of frons covered with microsculpture; frons almost flat, clypeus depressed at middle between lateral carinae; labrum narrowly rectangular, weakly produced at the middle of apical margin. Prosternum covered with microsculpture, except for shiny smooth explanate lateral margins, a pair of slightly elevated elongate oval calluses at latero-medial parts of disc in its basal third and small opposing areas along basal margins. Prosternal sides convergent, much more strongly in anterior fourth, above antennal cavities, weakly outwardly sinuate, with the anterior angles narrowly rounded, almost rectangular; marginal stria present along lateral edge, interrupted at anterior angles; pronotal lateral sides narrowly flattened and slightly bent upwards; median angle of pronotal posterior margin about 100º. Prosternum with anterior margin of prosternal lobe weakly concave; prosternal keel slightly elevated and flattened, covered with fine microsculpture, without carinal striae, with short basal divergent fragments of lateral prosternal striae between procoxae.

Scutellum short triangular, tiny, but distinct; elytra convex, widest at middle, completely covered by alutaceous microsculpture, slightly rugulose in inner posterior third; dorsal elytral striae 1–3 weakly marked on disc, abbreviated both anteriorly and posteriorly; sutural stria abbreviated in anterior fourth.

Mesoventrite flat in males, mesoventral projection short, broadly triangular, its apex slightly elevated; mesometaventral suture 'curly bracket' ( ‘{‘ )-shaped, thin and inconspicuous; disc of metaventrite in male in anterior half with shallow oval depression, not reaching anterior parts of outer metaventral striae laterally; weak wide elevation present near posterior margin of metaventrite. Lateral parts of meso- and metaventrite and abdominal ventrite 1 with fine alutaceous microsculpture.

Propygidium weakly convex, microsculpture on its disc as on apices of elytra; marginal stria of propygidium complete; pygidium smooth, microsculptured in anterior part, weakly convex in males. Male genitalia as illustrated (Fig. 10), females are unknown.

**Etymology.** The species epithet reflects its apparent endemicity to Mexico.

**Distribution.** This species is only known from the type locality (Fig. 14).

***Renclasea occidentalis* Tishechkin & Caterino, n. sp.**
(Figs. 7, 11, 12)

**Material examined:** Holotype male: "NEW MEXICO: Catron Co.; Puebla Cmpgd S. of Reserve 9-VI-1987 Robert Gordon / HOLOTYPE *Renclasea occidentalis* sp. n. A. K. Tishechkin & M. S. Caterino des. 2008" (USNM). Paratype (1): female from Arizona, Cochise Co., 5 mi N Benson collected by A. R. Hardy, F. G. Andrews and J. W. Smith on July 26, 1969 (CDFA).

**Diagnosis:** This is one of two species without alutaceous background microsculpture on dorsal surface and presence of distinct traces of dorsal striae. It can be distinguished from smaller and less robust *Renclasea falli* by the absence of prosternal carinal striae.

**Description:** L: 2.09; W: 1.60; E/Pn L: 1.76; E/Pn W: 1.16; Pn W/L: 1.60; E L/W: 0.94; Pr/Py: 1.07; Sterna: 0.46, 0.17, 0.47; Tibiae: 0.53, 0.62, 0.71 (n=2). Body rufescent, shiny, smooth and asetose throughout except for a few setae on antennomeres 1–7. Frons and clypeus depressed at middle between lateral carinae; labrum narrowly rectangular, its apical margin straight, unmodified. Prosternal sides convergent, much more strongly in anterior fourth, above antennal cavities, weakly outwardly sinuate, with the anterior angles blunt, almost rectangular; marginal stria present along lateral edge, extending around anterolateral corner, interrupted at middle of anterior emargination of pronotum; pronotal lateral sides narrowly flattened and slightly reflexed; median angle of pronotal posterior margin about 110º. Prosternum with anterior margin of prosternal lobe almost straight; prosternal keel moderately elevated and flat, its base in male slightly excavated, carinal striae absent, weak basal fragments of lateral prosternal striae marked between procoxae in female specimen.

Scutellum elongate triangular, small; elytra convex, widest at anterior third, with minute sparse background punctures, being denser and more conspicuous along sutural striae and at posterior fourth, where

some merge into a weak background microsculpture; dorsal elytral striae 1–3 weakly marked on disc, abbreviated posteriorly; sutural stria abbreviated in anterior fifth.

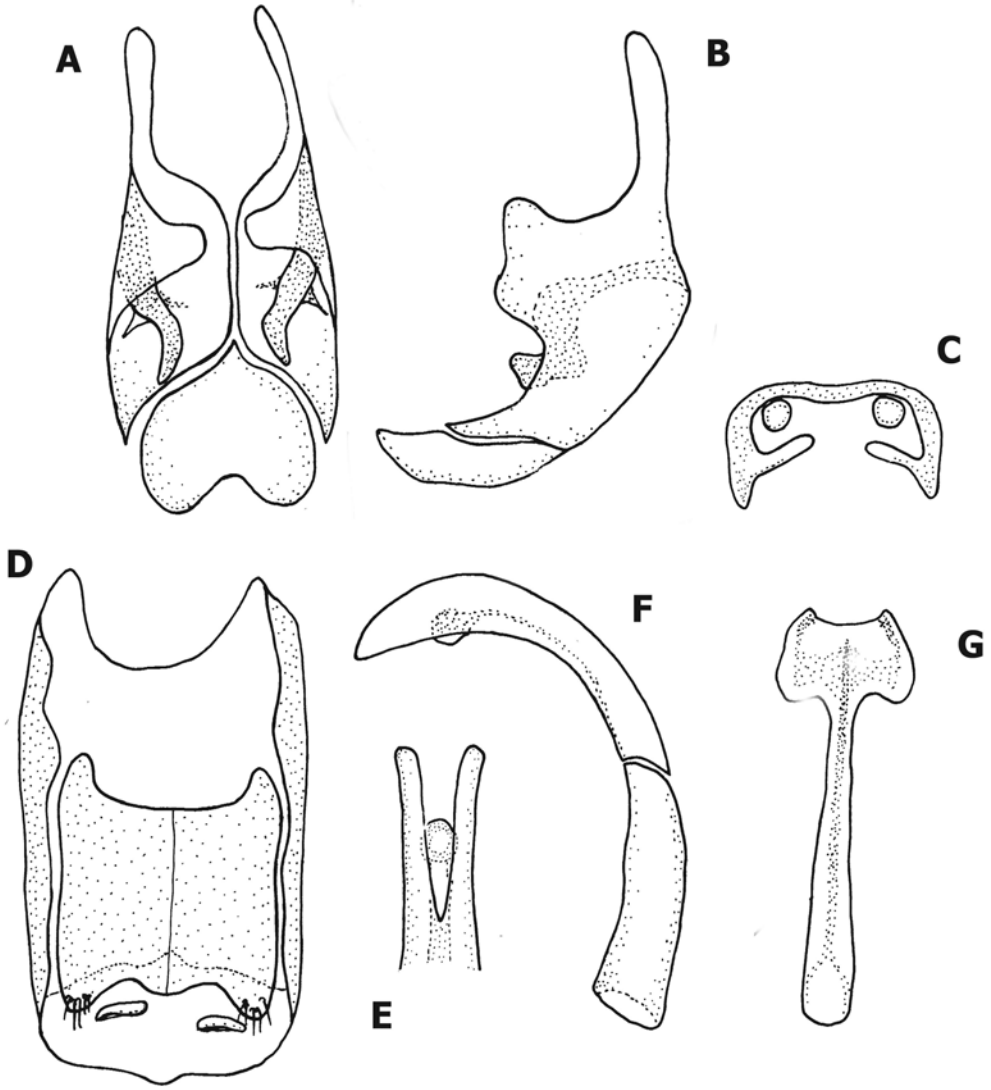


**FIGURE 11.** Male genitalia, *Renclasea occidentalis*. A. Abdominal segments 8–9, dorsal view; B. Abdominal segments 8–9, lateral view; C. Abdominal segment 8, apical view; D. Abdominal segments 8–9, ventral view; E. Apex of parameres, dorsal view; F. Aedeagus, lateral view; G. Ninth sternite (spiculum gastrale), ventral view.

Mesoventrite flat in males, with low elevated area in median fourth incorporating metaventral projection in females, mesoventral projection short, wide triangular, its apex slightly elevated; mesometaventral suture 'curly bracket'-shaped, thin and inconspicuous; disc of metaventrite in male in anterior half with shallow oval depression, not reaching anterior parts of outer metaventral striae laterally; metaventral disc in females weakly, evenly convex.

Propygidium weakly convex, disc with fine microsculpture of merged shallow dense punctures and short transverse striolets, alutaceous; marginal stria of propygidium complete; pygidium smooth, weakly convex, with striate ornament in females (Fig. 7D). Male and female genitalia as illustrated (Figs. 11, 12, respectively).

**Etymology.** The species epithet reflects its distribution in the American West.

**Distribution.** Known from two localities in Arizona and New Mexico (Fig. 14).

**Remarks.** Two female specimens from western Texas, both attracted to UV lights, from Fort Davis collected on May 30, 1959 by H. Howden and E. Becker (CMN) and from Randall Co., Palo Duro State Park

at 34°56.5'N 101°39.6'W collected on May 15, 2002 by E. G. Riley (TAMU), are very similar to this species. Pygidial ornamentation and female genitalia of these Texas specimens are, however, sufficiently different from those of *R. occidentalis* **n. sp.**, the most superficially similar (and potentially sympatric) species that we suspect them to represent an additional undescribed species. However, in this case we prefer to wait for the discovery of corresponding males from Texas before making a definite conclusion on their status.

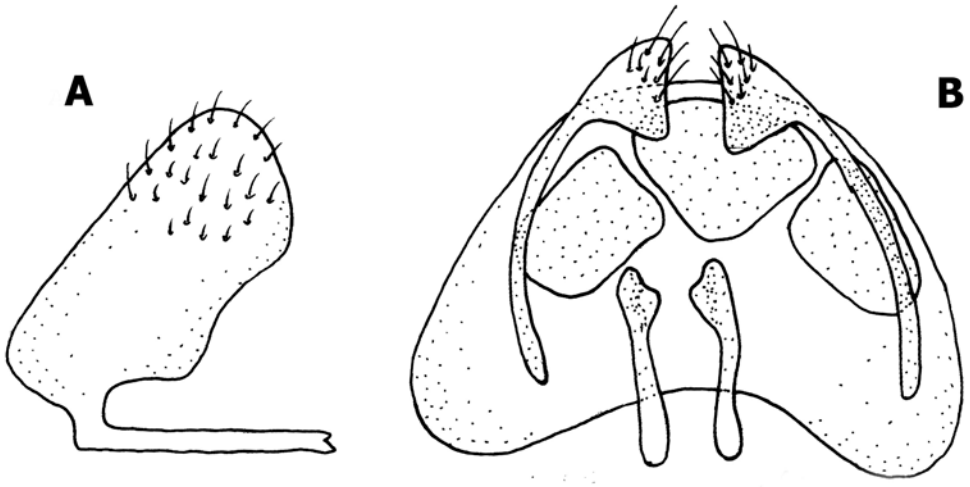


**FIGURE 12.** Female genitalia. A. *Renclasea occidentalis*. abdominal sternite 8, ventral view; B. *R. occidentalis*, tergite 8, gonocoxites, and genital sclerites, ventral view.

***Renclasea cazieri* Tishechkin & Caterino, n. sp.**
(Figs. 2, 13)

**Material examined:** Holotype male: "Portal, Ariz. Cochise Co. 4700 ft. at light VI-28-64 / Collectors Jean H. Puckle M. A. Mortenson M. A. Cazier / PROPERTY OF ARIZONA STATE UNIVERSITY / HOLOTYPE *Renclasea cazieri* sp. n. A. K. Tishechkin & M. S. Caterino des. 2008" (ASU).

**Diagnosis:** This is one of three species without alutaceous background microsculpture on dorsal surface (Fig. 2A). It can be easily distinguished from other species in this group by the total lack of traces of dorsal and sutural striae on elytra as well as the presence of sharp medial longitudial keel on meso- and anterior part of metaventrite (Fig. 2B).

**Description:** L: 2.34; W: 1.91; E/Pn L: 1.86; E/Pn W: 1.19; Pn W/L: 1.76; E L/W: 0.88; Pr/Py: 1.08; Sterna: 0.53, 0.22, 0.45; Tibiae: 0.52, 0.63, 0.78 (n=1). Body rufescent, shiny, smooth, short inconspicuous setae present on antennae, frons, legs, prosternal lobe, lateral parts of sterna and elytra. Frons and clypeus (Fig. 2E) weakly depressed at middle between lateral carinae; labrum narrowly rectangular, its apical margin weakly inwardly arcuate, unmodified. Prosternal sides convergent, much more strongly in anterior fourth, above antennal cavities, straight, with the anterior angles blunt, almost rectangular; marginal stria present along lateral edge, extending around anterolateral corner, interrupted at middle of anterior emargination of pronotum; pronotal lateral sides narrowly flattened and weakly reflexed; median angle of pronotal posterior margin about 110º. Prosternum with anterior margin of prosternal lobe almost straight; prosternal keel moderately elevated and narrow, its base in male not excavated; carinal striae absent, though with weak basal fragments marked between procoxae.

Scutellum elongate triangular, small; elytra convex, widest around midpoint, smooth and shiny; any traces of dorsal elytral and sutural striae absent.

Mesoventrite in males with sharply delimited median longitudinal keel (Fig. 2B) extending onto anterior part of metaventrite; mesoventral projection short, broadly triangular, its apex slightly elevated, continuous with anterior part of longitudinal keel; mesometaventral suture obsolete; disc of metaventrite in males flat, in

addition to posterior part of longitudinal keel of mesoventrite bears short, sharp tooth on midline around posterior third.

Propygidium weakly convex, smooth; marginal stria of propygidium abbreviated along posterior margin; pygidium in males smooth, convex. Male genitalia as illustrated (Fig. 13); females are unknown.

**Etymology.** We name this species in honor of Mont A. Cazier (1911–1995), collector of the type and founding director of the Southwest Research Station, who facilitated and inspired generations of entomological exploration in the American desert southwest.

**Distribution.** This species is only known from the type locality, on the edge of the Chiricahua Mountains of southeastern Arizona (Fig. 14).

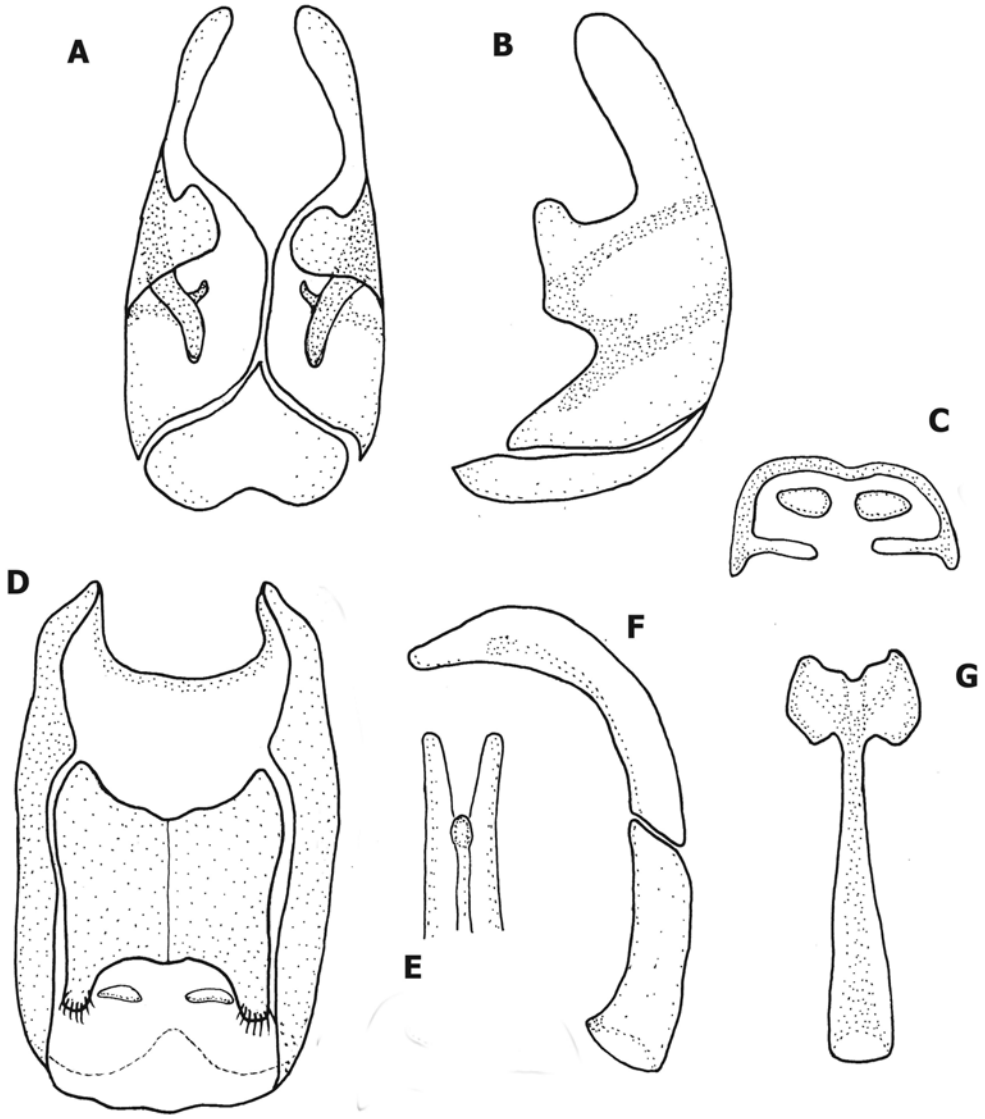


**FIGURE 13.** Male genitalia, *Renclasea cazieri*. A. Abdominal segments 8–9, dorsal view; B. Abdominal segments 8–9, lateral view; C. Abdominal segment 8, apical view; D. Abdominal segments 8–9, ventral view; E. Apex of parameres, dorsal view; F. Aedeagus, lateral view; G. Ninth sternite (spiculum gastrale), ventral view.

## Discussion

This paper brings the story of taxonomic confusion associated with the genus name *Euclasea* to an end (Tishechkin 2007). With the description of *Renclasea*, the genus level systematics of the Hetaeriinae of Nearctic Region appears finally settled. However, relationships of *Renclasea* within Hetaeriinae are much less

clear. According to current conventions in hetaeriine systematics (Helava *et al.* 1985, Tishechkin 2007), the genus should be classified in the tribe Hetaeriini, an artificial grouping of often distantly related genera of Hetaeriinae, within Helava *et al.*'s (1985) informal Group D. From the limited comparative morphological information available, *Renclasea* seems to be close to the genera *Reninus* and *Reninopsis* Helava, 1985, especially considering characters of male genitalia. Those characters provide one of the best morphological character systems in a taxon in which the external morphology appears to have evolved under strong, host-imposed selection pressure leading to convergent morphologies in distantly related lineages (Helava *et al.* 1985, Tishechkin 2007). Although external and genital morphology among *Renclasea* species are rather conserved, numerous distinct diagnostic characters are available, including those of female genitalia. This study is the first revisionary work on Histeridae in which female genitalia were studied for all available species. Contrary to the situation with the species in other histerid subfamilies and tribes (e.g., Kryzhanovskij & Reichardt 1976), this character system seems to provide reliable diagnostic and potentially phylogenetically informative characters not only at the level of genus (Tishechkin 2007), but also at the species level.

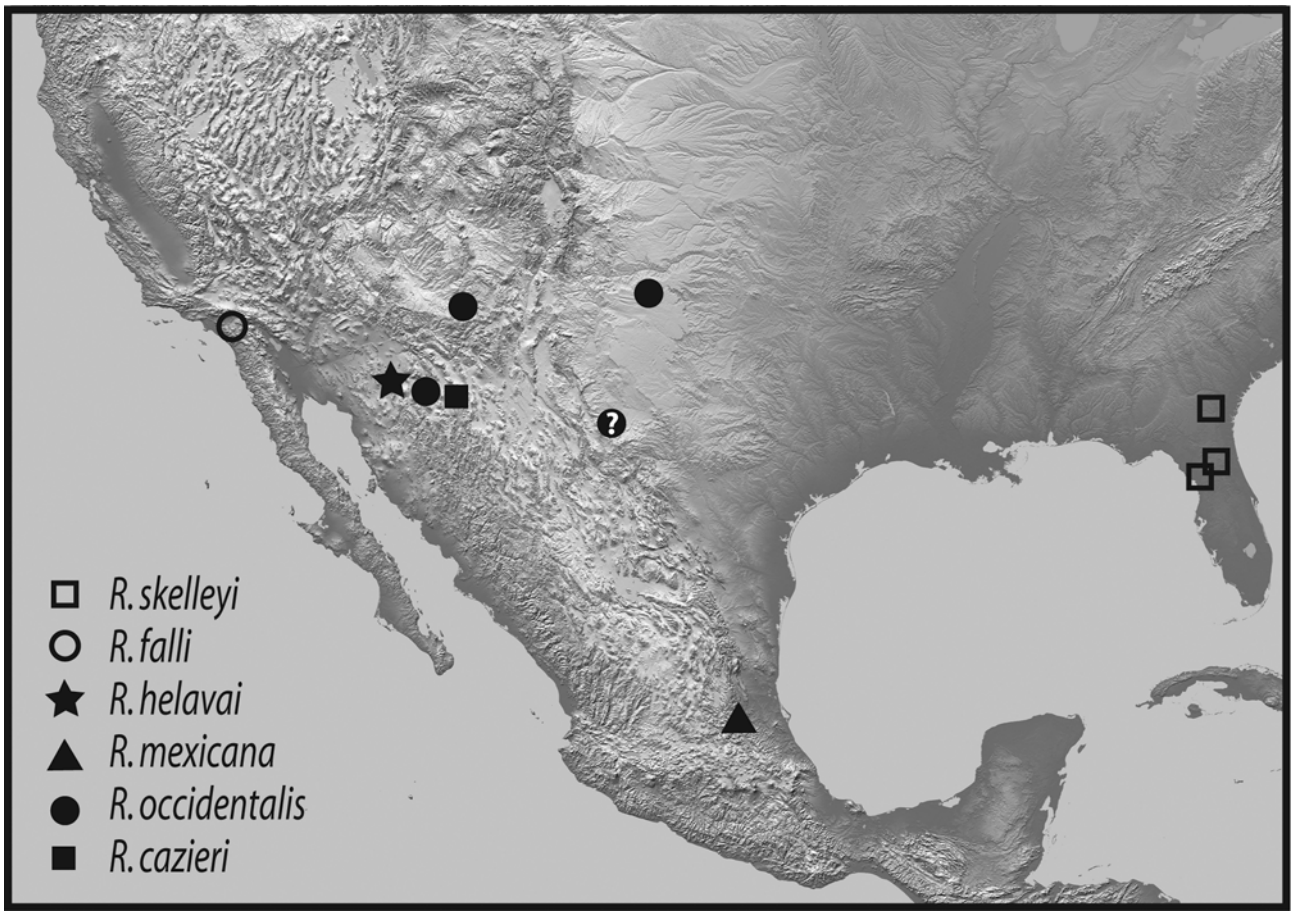


**FIGURE 14.** Map of southern North America, showing all known collecting localities for *Renclasea* spp. The question mark in west Texas represents specimens of uncertain identity (discussed under *R. occidentalis*).

Available host information for *Renclasea* is limited to a single record of *R. mexicana* with army ants of the genus *Neivamyrmex* Borgmeier, 1940, which is one of the six host ant genera known for representatives of the Hetaeriini, Group D (Helava *et al.* 1985). In addition, the lone specimen of *R. falli*, although collected at light, was in the company of another known *Neivamyrmex* associate (*Dinocoryna arizonensis* Seevers, 1959), indicating that the ants were in the area. On the other hand, one of the specimens of *R. skelleyi*, from Putnam Co, was collected in a locality which was visited repeatedly in winter months to collect histerid guests in nests of *Pheidole* Emery, 1892 ants, an undescribed species of the genus *Terapus* in particular (P. E. Skelley, personal communications). However, this paratype is the only *Renclasea* specimen among numerous

confirmed *Pheidole* guests from this locality, and P. E. Skelley has no recollections of it being found in *Pheidole* nests. So, this tentative host association should not be considered valid until additional records can be obtained.

We had some difficulty assigning all specimens to species, due in part to sexual dimorphisms. The pygidial ornaments exhibited by females of most species are poorly impressed and somewhat variable. Thus with generally small series from widely scattered localities we had some hesitation assigning males and females to the same species (e.g., *R. falli*, *R. occidentalis*). Although in most cases we have been confident enough to designate these as paratypes, these should be treated as hypotheses pending the accumulation of more material.

*Renclasea* is at least to some degree attracted to ultra violet light as are several other hetaeriine genera living in dry open habitats (Helava *et al.* 1985, Kovarik & Tishechkin 2004). It has been noted for at least some collecting events that these beetles appear low on or under UV light collecting sheets and fly during a short period of time, just around sunset (P. E. Skelley, personal communications; M. S. Caterino, personal observation). The same flight pattern was observed for a species of *Ulkeus* Horn, 1885 in Arizona (A. K. Tishechkin, personal observation). Nocturnal flights in these myrmecophile hetaeriines are suspected to be related to their searches for *Neivamyrmex* host ants (Kovarik & Tishechkin 2004), whose activity above the ground in hot dry habitats occurs almost exclusively at night (Gotwald 1995).

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