

**REVIEW OF *DALEAPIDEA* KNIGHT
(HETEROPTERA: MIRIDAE: ORTHOTYLINAE: ORTHOTYLINI)**

RANDALL T. SCHUH

Department of Entomology, American Museum of Natural History,
New York, New York 10024

Abstract.—A revised diagnosis is provided for *Daleapidea* Knight. A key, diagnoses, distributional data, and illustrations of the male habitus and genitalia are provided for the three species currently placed in the genus. *Hadronema decorata* (Uhler) is transferred to *Daleapidea* and a lectotype is designated.

Knight (1968) described the genus *Daleapidea* to include two species, *albescens* (Van Duzee) and *daleae* Knight. Recent collecting and examination of existing collections reveal that *Hadronema decorata* Uhler also belongs to this colorful group of Orthotylini which breeds on the leguminous plant genus *Psorothamnus* in the American southwest and Baja California.

Daleapidea Knight

Daleapidea Knight, 1968:101 (n. gen., key). Type species: *Daleapidea daleae* Knight.

Diagnosis. Orthotylinac: Orthotylini: Recognized by the structure of the fore tibia, which is flattened distally and covered with thickly set short setae on the ventral surface of the flattened area (Figs. 4A, B), the first antennal segment which is relatively long and inflated subbasally (Figs. 1–3), the rather strong sexual dimorphism with the males elongate and slender and the females much more robust, and the structure of the male genitalia (Fig. 5), with two vesical spines, the longer with two recurved branches, the shorter simple, and the hatchet-shaped right paramere. All three species are strikingly colored, and the males, particularly of *daleae*, are wasp-like in their movements.

Discussion. Knight (1968) in his description and key related *Daleapidea* to *Lopidea* Uhler and *Lopidella* Knight based on the presence of a “suture extending down from the base of the jugum to a point near middle of gena.” It is not clear whether the structure Knight referred to is actually a suture, and it furthermore appears that it occurs widely outside of *Lopidea* and its close relatives. My examination of the external morphology and male and female genitalia, suggest that *Daleapidea* is certainly a member of the Orthotylini; however, its relationship to *Lopidea* or *Hadronema* (in which two of the species were originally described) is not evident. I have found no other generic grouping in North America that shares any unique characters with *Daleapidea* that are not also shared with some more inclusive taxon, and suggest further searching be pursued in the relatively poorly studied faunas of Mexico and South America.

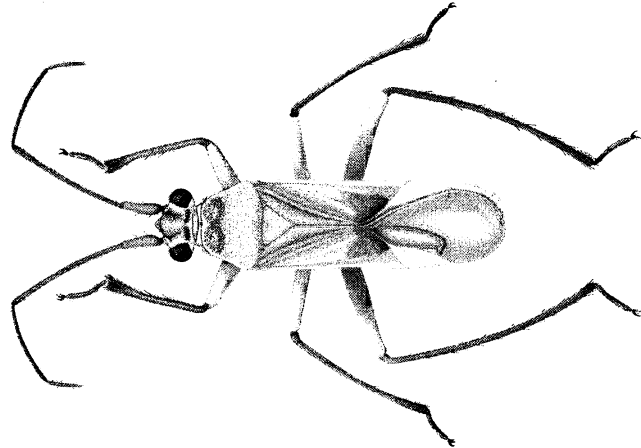


Fig. 1. *Daleapidea albescens* (Van Duzee).

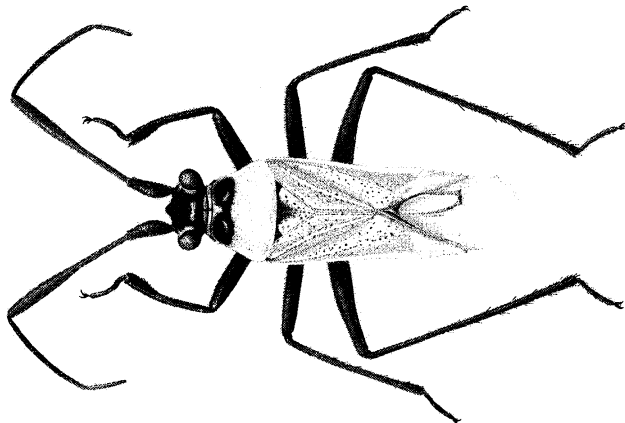


Fig. 2. *Daleapidea daleae* Knight.

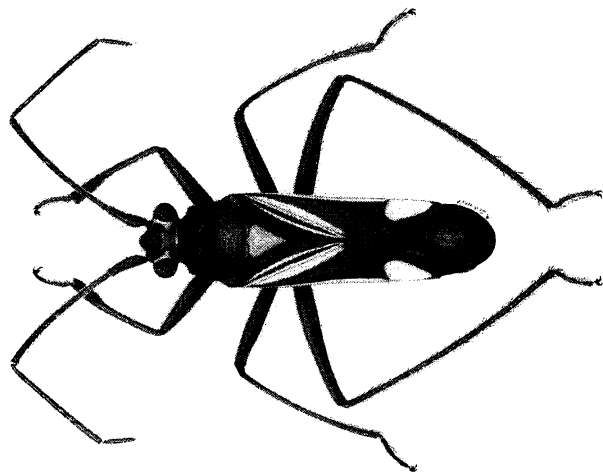


Fig. 3. *Daleapidea decorata* (Uhler).

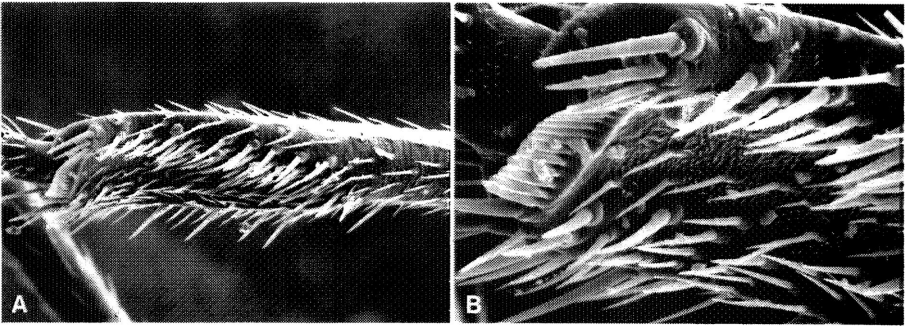


Fig. 4. Distoventral view of foretarsus of female *Daleapidea decorata*. A. Overall view. B. Detail of tibial comb and modified setae.

KEY TO SPECIES OF *DALEAPIDEA* KNIGHT

1. Dorsum charcoal with white cuneus and white longitudinal markings along claval suture; scutellum bright red; all appendages charcoal; male genitalia as in Figures 5I–L *decorata*
- Dorsum never largely charcoal; scutellum sometimes orange; appendages either charcoal or in part lighter in coloration 2
2. All appendages charcoal; scutellum gray with some charcoal markings on anterior margin; antennal segment 2 distinctly clavate in males; male genitalia as in Figures 5E–H *daleae*
- All femora and scutellum with some orange coloration, dorsum largely pale; antennal segment 2 not distinctly clavate in males; male genitalia as in Figures 5A–D ... *albescens*

Daleapidea albescens (Van Duzee)

Figs. 1, 5A–D, 6

Hadronema albescens Van Duzee, 1918:297 (n. sp., host).

Daleapidea albescens Knight, 1968:102 (distr., hosts).

Holotype. ♂, Palm Springs, Calif., 50-21-17, EP Van Duzee collector; deposited in the CAS.

Diagnosis. Recognized by the generally pale dorsum with an orange scutellum and the endocorium infuscate posteriorly, the orange femora (Fig. 1), and the structure of the male genitalia (Fig. 5A–D), in which the left paramere has an elongated sensory lobe bearing bristle-like setae arranged in a cluster and a lateral process with a hammerhead-like apex.

Distribution. See Figure 6.

Hosts. *Psorothamnus emoryi*, *P. polydenius*.

Specimens examined: Same data as holotype (CAS), 11♂♂, 12♀♀. MEXICO: **Baja California Norte**: San Luis, April 1889 (Haines; CAS), 1♀; 26 mi S of San Felipe, 15 April 1965 (Ross et al.; CAS), 2♂♂, 4♀♀. USA: **Arizona**: *Yuma Co.*: Ligurta, 8 April 1942 (Stitt; OSU), 1♂, 1♀. **California**: *Imperial Co.*: 5.4 mi NW of Ocotillo on 52, 23 April 1980, ex *Psorothamnus emoryi* (Russell and Schwartz; AMNH), 10♂♂, 6♀♀. *Inyo Co.*: Antelope Springs, 14 June 1961 (Toschi; CAS, UCB), 1♂, 3♀♀; 21.7 mi E

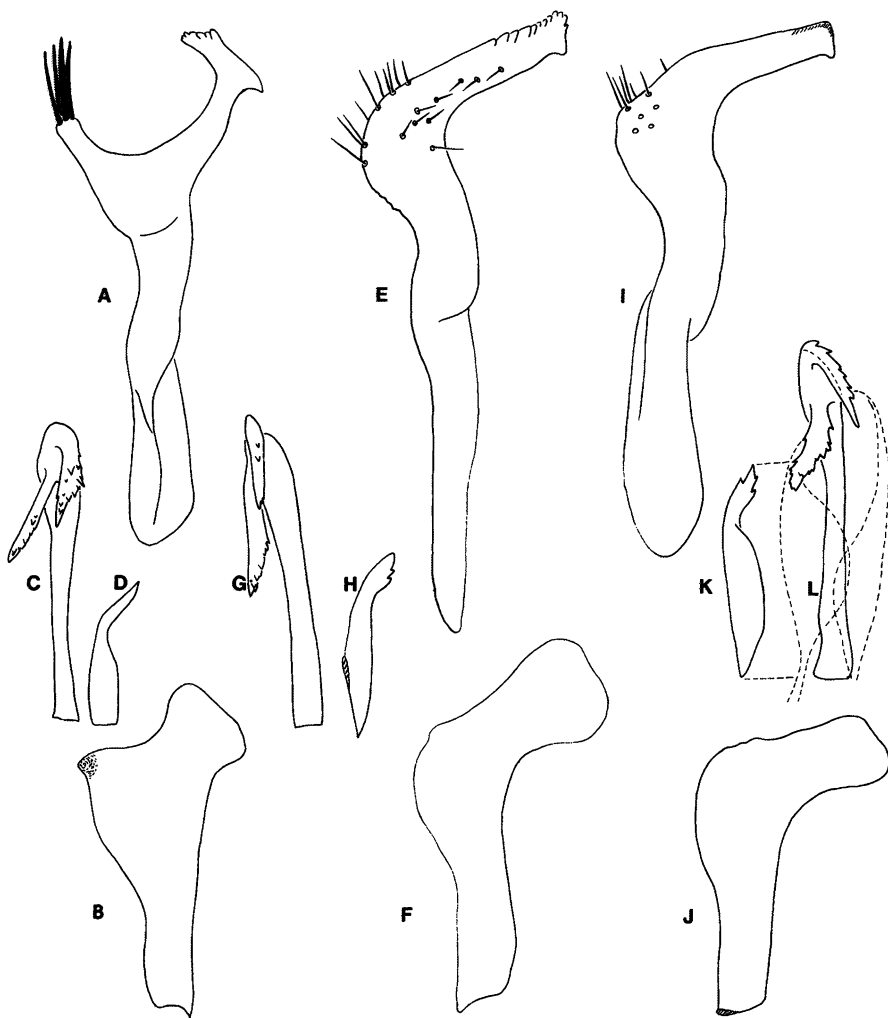


Fig. 5. Male genitalia of *Daleapidea*. A–D. *albescens*. A. Left paramere. B. Right paramere. C. Large spiculum. D. Small spiculum. E–H. *daleae*. E. Left paramere. F. Right paramere. G. Large spiculum. H. Small spiculum. I–L. *decorata*. I. Left paramere. J. Right paramere. K. Small spiculum. L. Large spiculum.

of Rt 395 on Westgard Pass Road, ca 1560 m, 2 July 1980, ex *Psorothamnus polydenius* (Schuh; AMNH), 21♂♂, 30♀♀; Deep Spring Lake Flats on Rt 168, 1644 m, 12 July 1980, ex *Psorothamnus polydenius* (Schuh and Stonedahl; AMNH), 3♂♂, 12♀♀; Deep Spring Lake Flats, on Hwy 168, 5260 ft, 12 July 1980 (Stonedahl; AMNH), 12♂♂, 19♀♀. *Marin Co.*?: Mill Valley, May 9, 1927 (Van Dyke; CAS), 1♂. *Mono Co.*: 6 mi N of Bishop, fish slough, 15 June 1973 (Pinto; AMNH), 2♂♂, 1♀; Benton Hot Springs,

8 June 1966 (Gagné; UCB), 1♂. *Riverside Co.*: Blythe, 24 April 1939 (Bliven; CAS) 2♂♂, 1♀; Palm Springs, 18–21 May 1917 (Van Duzee; CAS), 29♂♂, 18♀♀; Coachella Valley, 9 May 1927 (Van Dyke; CAS), 3♀♀. *San Diego Co.*: Anza-Borrego State Park, Carrizo Creek, 10.2 mi NW of Ocotillo on 52, 23 April 1980, ex *Psorothamnus emoryi* (Russell and Schwartz; AMNH), 3♂♂, 2♀♀; Borrego, 28 April 1955 (Schuster; UCB), 1♂. Nevada: *Lyon Co.*: Yerington, 9 July 1909, 5100 ft (Baumberger; CAS), 1♂. *Nye Co.*: Nevada Atomic Test Site, Rock Valley on Jackass Flats Rd, 3300 ft (A25), 6 June 1983, ex mercury vapor lamp (Schuh, Schwartz, and Stonedahl; AMNH), 2♂♂; Nevada Atomic Test Site, 7.5 mi W of Mercury Hwy on Cane Springs Rd, 3800 ft (A26), 6 June 1983, ex *Psorothamnus polydenius* (Schuh, Schwartz, and Stonedahl; AMNH), 12♂♂, 46♀♀; Beatty, 23 June 1967, at night (Gagné; UCB), 4♀♀.

Discussion. The Mill Valley record, the label for which did not explicitly indicate a county, is almost certainly in error, or it represents another “Mill Valley” not indicated on maps available to me.

Daleapidea daleae Knight

Figs. 2, 5E–H, 6

Daleapidea daleae Knight, 1968:102 (n. sp., hosts).

Holotype. Not examined; deposited in the USNM.

Diagnosis. Recognized by the generally gray coloration with contrasting charcoal appendages, head, and calli, and the clavate second antennal segment (Fig. 2); the male genitalia (Fig. 5E–F) are very similar to those of *decorata*, with the sensory lobe of the left paramere not elevated and the setae scattered and the lateral process not developed into the hammerhead-like form found in *albescens*.

Distribution. See Figure 6.

Hosts. *Psorothamnus emoryi*, *P. fremontii*, *P. polydenius*, and *P. schottii*.

Specimens examined. USA: **California:** *Imperial Co.*: 5.4 mi NW of Ocotillo on 52, 23 April 1980, ex *Psorothamnus emoryi* (Russell and Schwartz; AMNH), 3♂♂, 5♀♀. *Inyo Co.*: 21.7 mi E of Rt 395 on Westgard Pass Road, ca 1560 m, 2 July 1980, ex *Psorothamnus polydenius* (Schuh; AMNH), 4♂♂, 4♀♀; Deep Spring Lake Flats on Rt 168, 1644 m, 12 July 1980, ex *Psorothamnus polydenius* (Schuh; AMNH), 4♂, 4♀; Deep Spring Lake Flats on Rt 168, 1644 m, July 12, 1980, ex *Psorothamnus polydenius* (Schuh and Stonedahl; AMNH), 3♀♀; Deep Spring Lake Flats, on Hwy 168, 5260 ft, 12 July 1980 (Stonedahl; AMNH), 6♀♀; Antelope Springs, 14–15 June 1961 (Toschi; UCB), 2♂♂. *Mono Co.*: 6 mi N of Bishop, fish slough, 15 June 1973 (Pinto; AMNH), 1♂. *Riverside Co.*: 10 mi E of Mecca Box Canyon, 7 April 1966, ex *Dalea schottii* (Turner; UCB), 3♂♂, 1♀, Boyd Desert Res. Center, 4 mi S of Palm Desert, 6–12 April 1963 (Hurd; UCB), 1♂, 1♀. *San Diego Co.*: Borrego, 24 April 1955 (Wasbauer; UCB), 1♂, 1♀; Anza-Borrego State Park, Carrizo Creek, 10.2 mi NW of Ocotillo on 52, 23 April 1980, ex *Psorothamnus emoryi* (Russell and Schwartz; AMNH), 2♂♂, 2♀♀. Nevada: *Clark Co.*: 5.8 mi NW of Valley of Fire State Park, 845 m, 17 May 1978, ex *Psorothamnus fremontii* (Schuh; AMNH), 22♂♂, 36♀♀. *Nye Co.*: 2.6 mi W of Mercury Hwy on Cane Springs Rd, 3400 ft, 6 June 1983, ex *Psorothamnus fremontii* (Schuh, Schwartz, and Stonedahl; AMNH), 6♂♂, 11♀♀; Nevada Atomic Test Site, 7.5 mi W of Mercury Hwy on Cane Springs Rd, 3800 ft (A26), 6 June 1983, ex *Psorothamnus polydenius* (Schuh, Schwartz, and Stonedahl; AMNH), 3♂♂, 5♀♀;

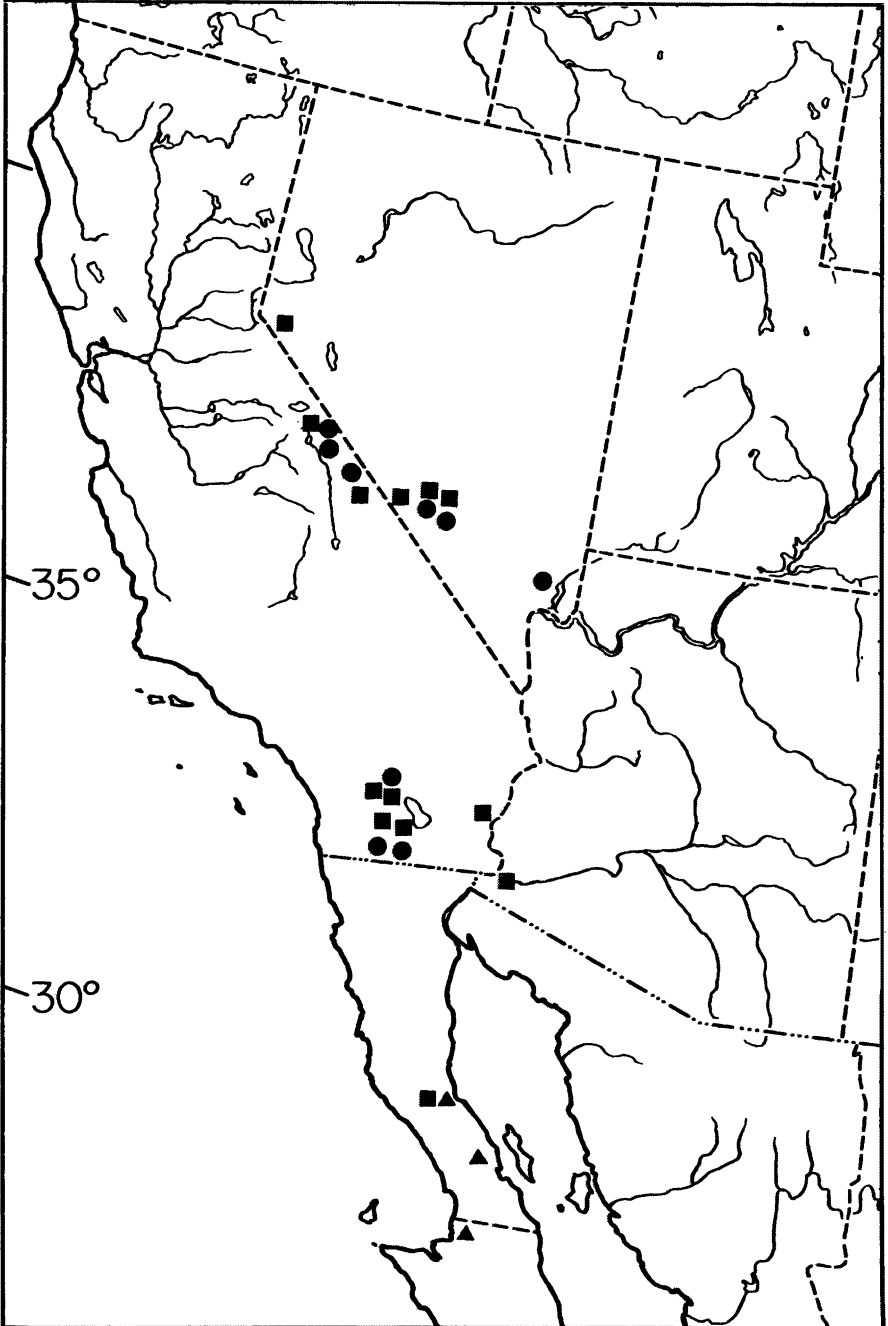


Fig. 6. Distributions of *Daleapidea* spp.: ■ *albenscens*; ● *daleae*; ▲ *decorata*.

6.8 mi SE of Mercury Hwy on Orange Blossom Rd (A11), 4000 ft, 8 June 1983, ex *Psorothamnus polydenius* (Schuh, Schwartz, and Stonedahl), 3♀♀.

Daleapidea decorata (Uhler), **new combination**

Figs. 3, 5I–L, 6

Hadronema decorata Uhler 1894:251 (n. sp.).

Lectotype. ♀, San Luis, Lower Cal., Mex., Chas. D. Haines, April 1889; deposited in the USNM.

Diagnosis. Recognized by the generally charcoal coloration with a bright red scutellum, and the white cuneus and white areas along and adjacent to the claval suture (Fig. 3); the male genitalia (Figs. 5I–L) are very similar to those of *daleae*.

Distribution. See Figure 6.

Hosts. *Psorothamnus emoryi*.

Specimens examined. MEXICO: **Baja California Norte**: San Luis, April, 1889 (Haines; USNM), 1♂, 1♀, Calamalli Mines, April 1889 (Haines; CAS, USNM), 2♀♀; San Jose de Gracias, April 1889 (Haines; CAS), 2♀♀; 24 mi N of Punta Prieta, 2 April 1973 (Powell; UCB), 1♂; 53 km W of Punta Prieta toward Bahia de los Angeles, 340 m, 22 April 1985, ex *Psorothamnus emoryi* (Schuh and Massie; AMNH), 94♂♂, 85♀♀. **Baja California Sur**: 2.3 mi W of Mexico 1 on Bahia Tortugas rd, 19 March 1981 (Andrews and Faulkner; SDNM), 2♂♂, 1♀.

Discussion. Uhler (1894) described *decorata* on the basis of several male and female specimens from three localities in Baja California, Mexico. I located seven specimens matching Uhler's locality information in the California Academy of Sciences and the National Museum of Natural History. Of the three California Academy specimens, one bears a lectotype label and two bear paratype labels, probably affixed by Van Duzee, although he never published the designation. All of the specimens in both museums are in poor condition, and the abdomen is missing from the only male. I have selected a female from the National Museum as the lectotype, because it bears the Uhler label "*Hadronema decorata* Uhler."

I have been reminded by T. J. Henry that according to Steyskal (1973) the supposedly correct name is *Hadronema decoratum*, not *decorata*. Because Uhler gave no indication of derivation of the name *Hadronema*, Steyskal (1973) was left to presume that the name "may be derived from Greek *nema* . . .," a neuter noun. Steyskal opted to treat *Hadronema* as neuter, even though the type of the genus, *militaris* Uhler, suggested otherwise. Steyskal offered similar arguments for other genera of Miridae, such as *Campylomma* Reuter, a taxon proposed by a classical author who prepared literally hundreds of descriptions in Latin, and whom we are now supposed to believe—100 years later—was not able to determine the correct gender for the type species. It is my belief that nomenclature is ill served through the institution of such purely academic changes, and I therefore choose to disregard them.

ACKNOWLEDGMENTS

Thanks to the following individuals and institutions for the loan of specimens: P. H. Arnaud, Jr., California Academy of Sciences, San Francisco (CAS); J. D. Lattin, Department of Entomology, Oregon State University, Corvallis (OSU); D. Faulkner, San Diego Natural History

Museum (SDNM); J. Chemsak, Department of Entomology, University of California, Berkeley (UCB); and T. J. Henry, USDA Systematic Entomology Laboratory, % National Museum of Natural History, Washington, D.C. (USNM). Specimens are also deposited in the American Museum of Natural History (AMNH). I thank Michael D. Schwartz and Gary M. Stonedahl for discussion of Orthotylini morphology and classification and for cooperation in the field and MDS for assistance with manuscript preparation and for helpful comments on the final version. I also thank T. J. Henry for useful comments on the manuscript. Funds for field work and artistic services were provided by NSF grants DEB-8113431 and BSR-8606621.

LITERATURE CITED

- Knight, H. H. 1968. Taxonomic Review: Miridae of the Nevada Test Site and the Western United States. Brigham Young University Science Bulletin, Biol. Ser., vol. 9(3):282 pp.
- Steyskal, G. C. 1973. The grammar of names in the Catalogue of the Miridae (Heteroptera) of the World by Carvalho, 1957-1960. *Studia Entomol.* 16:203-208.
- Uhler, P. R. 1894. Observations upon the heteropterous Hemiptera of Lower California, with descriptions of new species. *Proc. Calif. Acad. Sci.*, ser. 2 4:223-295.
- Van Duzee, E. P. 1918. New species of Hemiptera chiefly from California. *Proc. Calif. Acad. Sci.*, ser. 4, 7:271-308.

Received August 31, 1988; accepted September 19, 1988.