

**MERINOCAPSUS FROESCHNERI, A NEW SPECIES OF
PHYLINE MIRIDAE FROM WESTERN NORTH AMERICA,
WITH NOTES ON THE GENUS (HETEROPTERA)**

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Abstract.—*Merinocapsus froeschneri* is described as new. *Ankylotylus pallipes* Knight is transferred to *Merinocapsus*. The male genitalia are illustrated and compared and the distributions summarized for the three species currently placed in *Merinocapsus*.

Knight (1968) described *Merinocapsus ephedrae* as one of a number of species of Miridae in western North America recorded as occurring on species of *Ephedra*. Intensive collecting by me and colleagues over the last seven years has revealed that there is an additional undescribed species of *Merinocapsus* on *Ephedra*. In the present paper I describe this species as new, naming it in honor of Richard C. Froeschner, in recognition of his longstanding interest in, and contributions to, the Heteroptera fauna of North America. I also transfer *Ankylotylus pallipes* Knight to *Merinocapsus*.

Merinocapsus Knight

Merinocapsus Knight, 1968:34.

Ankylotylus Knight, 1968:55. **New Synonymy.**

Diagnosis. Recognized by the characteristic phylina-type male genitalia, the pretarsus with setiform parempodia and small pulvilli, the at least partially dark pronotum and scutellum contrasting with the lighter hemelytra which range from completely white to entirely deep red, the short head with weakly bulging eyes, the setiform parempodia, the elongate claws with small pulvilli (Fig. 4), the weak to moderately strong sexual dimorphism with the hemelytra in the males extending well beyond the apex of the abdomen and those of the female shorter and often just covering the abdomen, the metathoracic scent-gland evaporatory area elongate and narrow (Figs. 5-7), and the form of the male genitalia with the vesica slender and sigmoid, the apex bifid terminating with two small apical spines, and the secondary gonopore subapical (Figs. 9, 11, 14, 17).

Similar in general appearance and form of sexual dimorphism to many species of *Europiella* Reuter, but distinguished by the small pulvilli which do not cover most of the ventral claw surface as in *Europiella*, the more slender metathoracic scent gland evaporatory area, and the bifid apex of the vesica.

Discussion. Knight (1968) did not provide differential diagnoses for *Merinocapsus* and *Ankylotylus*. The two genera, which came out in the same couplet in his key, were distinguished by the structure of the tylus in *Ankylotylus pallipes* and the color of the tibial spines. My examination of additional specimens of *pallipes* indicates that Knight's interpretation was in error and that in fact there are no substantial

differences in tylus structure between *pallipes*, *M. ephedra* and *M. froeschneri*. Because of the similarities in the structure of the tylus, pretarsus, metathoracic scent-gland evaporatory area, and the vesica of the male I am treating the two genera as synonymous, *Merinocapsus* having page priority.

The three species here placed in *Merinocapsus* all breed exclusively on *Ephedra*. *Merinocapsus ephedrae* and *froeschneri* have been collected together at the same site on the same host species, as have *froeschneri* and *pallipes*. I am uncertain whether they occurred on the same plant. Known *Ephedra* host species include *aspera* Englem. ex Wats., *cutleri* Peebles, *nevadensis* S. Wats., *torreyana* S. Wats., and *viridis* Coville.

Nearly all known specimens of *Merinocapsus* have been collected on *Ephedra*. Of the approximately 320 specimens examined, only one was recorded from lights, and a few lacked host information. A single specimen recorded from *Astragalus* is obviously not an accurate host record.

Additional species from western North America known to feed exclusively on *Ephedra*, and often occurring with *Merinocapsus* species, include the mirines *Phytocoris becki* Knight, *Phytocoris ephedrae* Knight, and the orthotyline *Ephedrodoma multilineata* Polhemus and Polhemus. Knight (1968) also recorded *Phytocoris pulchricollis* Van Duzee, and *Lopidea scutata* Knight on *Ephedra*. It is not obvious from my field observations that these last two species are obligate *Ephedra* feeders. The Palearctic phyline genus *Nasocoris* Reuter contains 11 species, all of which feed on *Ephedra*.

Merinocapsus ephedrae Knight

Figs. 1, 5, 8-10, 11-13, 20

Merinocapsus ephedrae Knight, 1968:34.

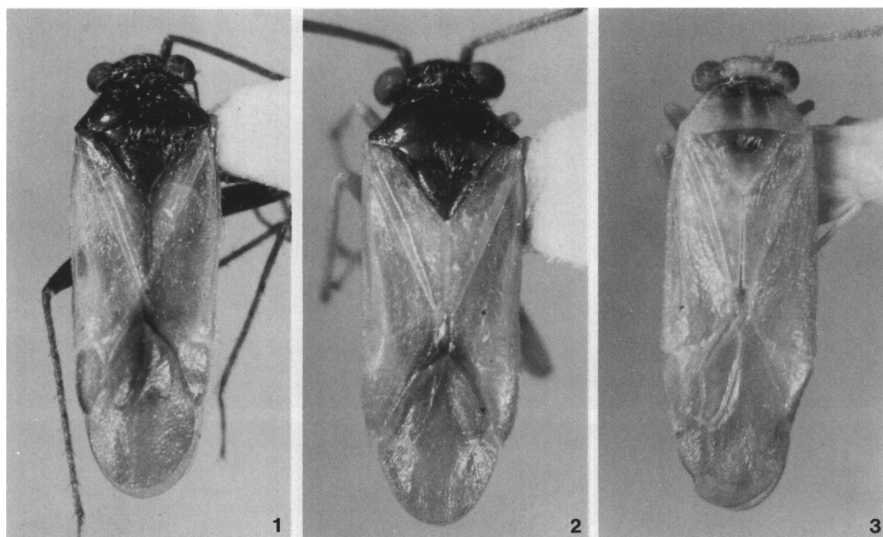
Diagnosis. Distinguished from *froeschneri* by the dull head, pronotum, and scutellum, the more elongate narrow body form, unicolorous dark femora, the generally infusate tibiae, and the structure of the apex of the vesica (Figs. 9-11). Distinguished from *pallipes* by the completely dark head, pronotum, scutellum, venter, and legs, the hemelytral coloration with at least the cuneus reddish, the longer labium reaching to the apex of the mesocoxae, and the structure of the vesica.

Measurements: Total length: ♂, 3.45-4.31; ♀, 2.80-3.24. Length apex tylus-cuneal fracture: ♂, 2.27-2.83; ♀, 2.02-2.37. Width head: ♂, 0.79-0.86; ♀, 0.82-0.93. Width vertex: ♂, 0.37-0.42; ♀, 0.41-0.48. Width pronotum: ♂, 1.00-1.12; ♀, 0.95-1.10. Length pronotum at midline: ♂, 0.35-0.46; ♀, 0.38-0.43. Length second antennal segment: ♂, 0.94-1.18; ♀, 0.76-0.92.

Male genitalia: Figures. 11-13.

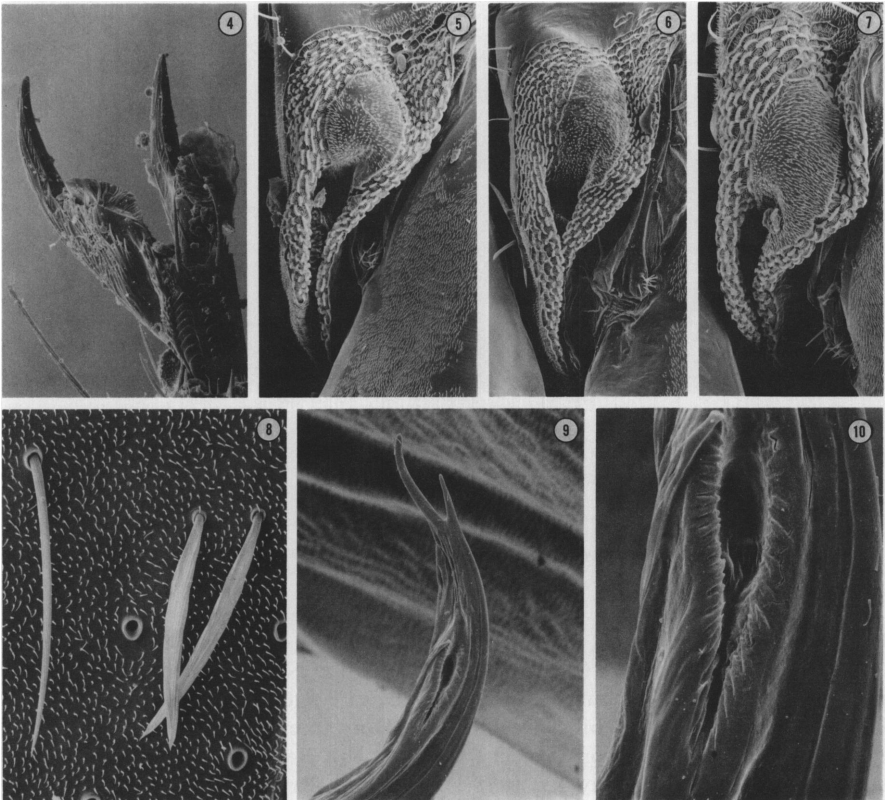
Distribution. Figure. 20. Northern Baja California north to Mono Lake, California, and east to eastern Utah.

Specimens examined. MEXICO. Baja California Norte: 12 mi E of El Rosario, March 25, 1979, John D. Pinto, on *Ephedra* (AMNH, UCR), 7♂♂, 5♀♀; 6 mi E of Ojos Negros, June 9, 1980, Brown, Faulkner (SDNHM), ♀. USA. California: Inyo Co.: Tuttle Creek, 2 mi SW of Lone Pine, May 9, 1969, P. A. Opler (UCB), ♂. 2 mi E of Westgard Pass Summit, White Mts., 2,125 m, July 2, 1980, R. T. Schuh, ex *Ephedra nevadensis* (AMNH), 6♀♀; Inyo Mts., May 25, 1937, D. Little (LACM), ♀.



Figs. 1–3. 1. *Merinocapsus ephedrae* ♂. 2. *Merinocapsus froeschneri* ♂. 3. *Merinocapsus pal-lipes* ♂.

Mono Co.: Wyman Canyon, White Mts., 2 airline mi S of Inyo, 8,500 ft, June 27, 1961, J. Powell, on *Ephedra* (UCB), 4♂♂, 2♀♀; Rt 395 at N edge of Mono Lake, 2,188 m, July 11, 1980, R. T. Schuh, G. M. Stonedahl, ex *Ephedra* sp. (AMNH), 3♂♂, 7♀♀. **Riverside Co.:** ca. 0.8 mi N of jct Deep Cr. and Horsethief Cr., T7S R6E Sec6, 2,960 ft, J. D. Pinto, Deep Canyon Project (UCR), ♂. **San Bernardino Co.:** 10 mi W of Lucerne Valley, 905 m, May 13, 1978, J. D. Pinto, R. T. Schuh, ex *Ephedra* sp. (AMNH, UCR), 6♂♂, 28♀♀; Providence Mts. State Rec. Area, 4,300 ft, May 18, 1982, M. D. Schwartz, ex *Ephedra aspera* (AMNH), 2♂♂, 6♀♀; 23 mi S of Amboy, April 7, 1966, C. W. O'Brien (UCB), 5♀♀; Victorville, April 21, 1935, C. E. Norland (LACM, UCD), 2♀♀. **San Diego Co.:** Anza-Borrego Desert State Pk., Grapevine Canyon, milepost 74 on Co. Rt 52, April 22, 1980, Russell and Schwartz (AMNH), ♂. **Nevada:** **Lincoln Co.:** 5 mi NE of jct of rts 38 and 93, 2,500 ft, May 19, 1982, M. D. Schwartz, ex *Ephedra nevadensis* (AMNH), 26♂♂, 18♀♀. **Nye Co.:** 1 mi NE of Belmont on Rt 82, 2,281 m, July 13, 1980, R. T. Schuh, G. M. Stonedahl, ex *Ephedra* sp. (AMNH), 7♂♂, 16♀♀; 15.5 mi E of Rt 376 on Northumberland Mine Rd, T31N R45E Secs3, 4, 10, 7,000 ft, June 29, 1983, Schuh, Schwartz, ex *Ephedra* sp. (AMNH), 17♂♂, 27♀♀; Mercury, 17M, June 12, 1965, H. Knight, J. Merino, on *Ephedra nevadensis* (USNM), 2♂♂, 6♀♀ [paratypes]; Mercury, TM, June 14, 1965, Beck, H. Knight, J. Merino, on *Ephedra nevadensis* (USNM), ♂, 9♀♀ [holotype, allotype, paratypes]; Mercury, 19M, June 23, 1965, H. Knight, J. Merino, on *Ephedra nevadensis* (USNM), 3♀♀. **Utah:** **Garfield Co.:** Capitol Reef National Park, Grand Wash-Cobab Canyon Trl., 5,350–6,640 ft, June 21, 1983, Schuh, Schwartz, ex *Ephedra viridis* (AMNH), 2♂♂, 4♀♀; 14.3 mi S of Rt 95 on Rt 276 (3.4 mi N of Star Springs turnoff), 5,000 ft, June 19, 1983, R. T. Schuh, M. D. Schwartz, at light (AMNH), ♂. **Washington Co.:** Rt 15 about 10



Figs. 4-10. 4. Pretarsus of *M. pallipes*. 5-7. Metathoracic scent gland evaporatory area. 5. *M. ephedrae*. 6. *M. froeschneri*. 7. *M. pallipes*. 8. Setal types in *M. ephedrae*. 9. Apex of vesica in *M. ephedrae* showing secondary gonopore. 10. Detail of secondary gonopore.

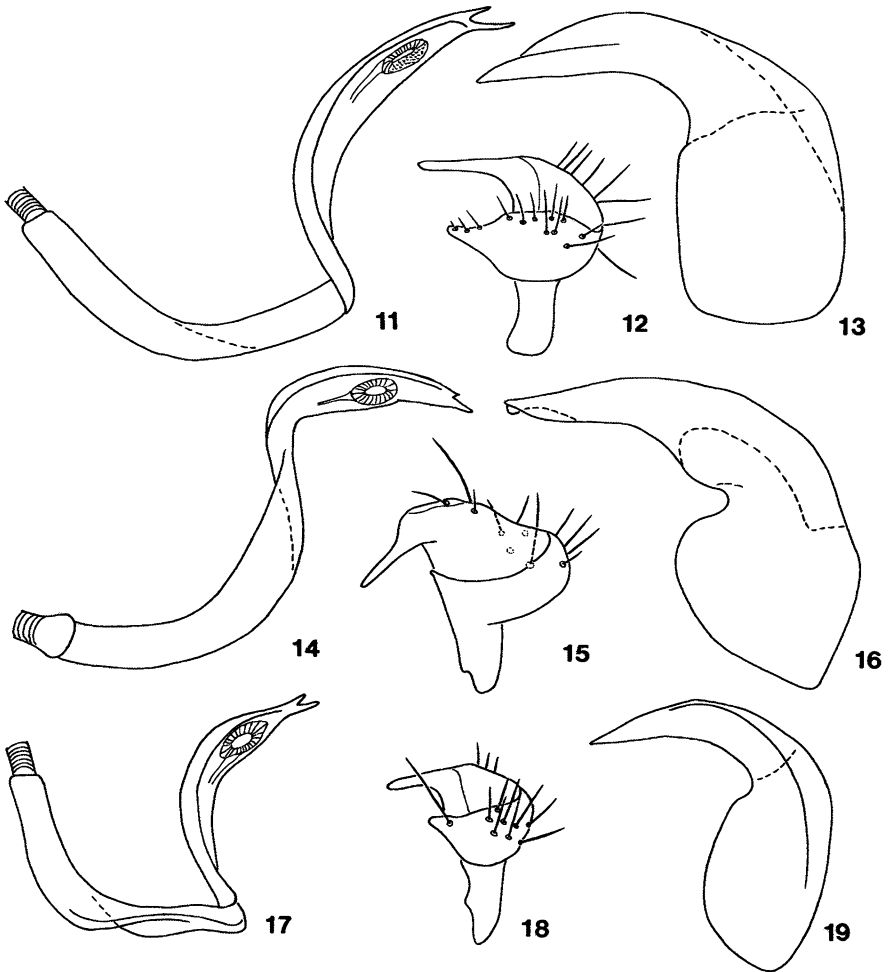
mi W of I-15 (toward Zion Nat. Pk.), 1,095 m, May 18, 1978, R. T. Schuh, ex *Ephedra* sp. (AMNH), 3♀♀.

***Merinocapsus froeschneri*, new species**

Figs. 2, 6, 14-16, 20

Diagnosis. Distinguished from *ephedrae* by the polished and shining head, pronotum, and scutellum, the shorter broader body form, the apically pale femora and completely pale tibiae, and the structure of the apex of the vesica. Distinguished from *pallipes* by the completely dark head, pronotum, scutellum, the femora dark on the proximal two-thirds, the longer labium, reaching to about the apex of the mesocoxae, and the structure of the vesica.

Description. Macropterous. Elongate, nearly parallel-sided, total length 3.11-3.23, length apex tylus-cuneal fracture 2.17-2.22, head, pronotum, scutellum, entire pleura



Figs. 11–19. Male genitalia of *Merinocapsus*. 11–13. *M. ephedrae*. 11. Vesica. 12. Left paramere. 13. Phallosome. 14–16. *M. froeschneri*. 14. Vesica. 15. Left Paramere. 16. Phallosome. 17–19. *M. pallipes*. 17. Vesica. 18. Left paramere. 19. Phallosome.

and venter, antennae, coxae, and about proximal two thirds of all femora dark brown to blackish.

Body surface polished, weakly to moderately shining, hemelytra smooth, dull to weakly shining; dorsum covered with pale, reclining, simple setae, and silvery, sericeous, flattened, recumbent setae; anterolateral angles of pronotum with an erect spine; antennae with short, neat vestiture; tibiae with scattered, suberect black spines without black bases; tibiae without rows of tiny black spicules.

Head short, broad, width 0.87–0.90, width vertex 0.40–0.41; posterior margin of

vertex weakly elevated in form of a rounded carina; eyes bulging laterally, occupying about four fifths of height of head; antennae inserted just above ventral margin of eye; antennal segment two cylindrical, length 0.84–0.89; apex of labium not quite attaining apex of mesocoxae; pronotum with distinct calli, occupying anterior one third of pronotum; anterior and posterior pronotal lobes demarcated by a shallow transverse impression, lateral pronotal margin sinuous, posterior margin excavated across broadly exposed mesoscutum; width pronotum 1.00–1.08, length at midline 0.44–0.49; costal margin of hemelytra nearly straight, hemelytral margins nearly parallel-sided; cuneal incisure shallow; parempodia setiform, claws elongate, broadened basally, sharply bent near apex, pulvilli small.

Male genitalia: Figures. 14–16.

Female: Submacropterous. Similar in coloration, texture, and vestiture to male; antennal segment two tapering towards base; hemelytra distinctly shorter than in male, just covering entire abdomen.

Total length 2.94–3.08; length apex tylus cuneal fracture 2.05–2.21; width head 0.88–0.93; width vertex 0.43–0.47; width pronotum 1.01–1.10; length pronotum at midline 0.41–0.47; length second antennal segment 0.79–0.93.

Female genitalia: Not examined.

Etymology. Named in honor of Richard C. Froeschner.

Distribution. Figure. 20. Southern Mojave Desert in California north to White Mountains, and east to eastern Utah.

Holotype. ♂, USA. California: Inyo Co.: 2 mi E of Westgard Pass Summit, White Mts., 2,125 m, July 2, 1980, R. T. Schuh; deposited in the American Museum of Natural History, New York.

Paratypes. Same data as holotype, 7♂♂, 12♀♀ (AMNH). USA: California: Mono Co.: Benton Hot Springs, June 8, 1966, W. Gagne (UCB), 3♀♀. Kern Co.: 20 mi NW of Mojave, on Hiway 58, June 13, 1983, G. M. Stonedahl, ex *Ephedra nevadensis* (AMNH), ♂, 4♀♀; San Bernardino Co.: Yucca Valley, 6.3 mi N on Old Woman Springs Road, May 13, 1978, J. D. Pinto, on *Ephedra* (UCR), ♂, ♀; Providence Mts. State Rec. Area, 4300 ft, May 18, 1982, M. D. Schwartz, ex *Ephedra viridis* (AMNH), 3♂♂; 10 mi N of Yucca Valley, May 28, 1975, J. D. Pinto, on *Ephedra* (UCR), ♀. Los Angeles Co.: Little Rock, Mojave Desert, May 20, 1937, E. P. Van Duzee (CAS), ♂; Mint Canyon, May 17, 1937, E. P. Van Duzee, on *Astragalus* (CAS), ♀. Tehachapi Pass, June 6, 1929, R. L. Usinger (CAS), 5♀♀. Nevada: Lincoln Co.: 5 mi NE of jct. Rts 38 and 93, 2,500 ft, May 19, 1982, M. D. Schwartz, ex *Ephedra nevadensis* (AMNH), 3♂♂. Nye Co.: Nevada Atomic Test Site, Mercury Hwy at Angle Rd (A3), 3,800 ft, June 8, 1983, Schuh, Schwartz, Stonedahl, ex *Ephedra nevadensis* (AMNH), 11♂♂, 28♀♀; Nevada Atomic Test Site, 1 mi S of Cane Springs Rd, at GS 250 on Rd 28-03 (A5), 4,100 ft, June 8, 1983, Schuh, Schwartz, Stonedahl, ex *Ephedra nevadensis* (AMNH), ♂, ♀; Mercury, CU, June 13, 1965, Beck, Knight, Merino (USNM), 4♀♀ [*ephedrae* paratypes]; Mercury, 6M, June 15, 1965, H. Knight, J. Merino, on *Ephedra nevadensis* (USNM), 2♀♀ [*ephedrae* paratype]; Mercury, TM, June 14, 1965, Beck, H. Knight, J. Merino, on *Ephedra nevadensis* (USNM), 3♀♀ [*ephedrae* paratypes]; Mercury, CM, June 13, 1965, Beck, H. Knight, J. Merino, on *Ephedra nevadensis* (USNM), ♀; Mercury, 18M, July 7, 1965, E. Beck, J. Merino, on *Ephedra nevadensis* (USNM), ♀ [*ephedrae* paratype]; Mercury, 40M, June 20, 1965, H. Knight,

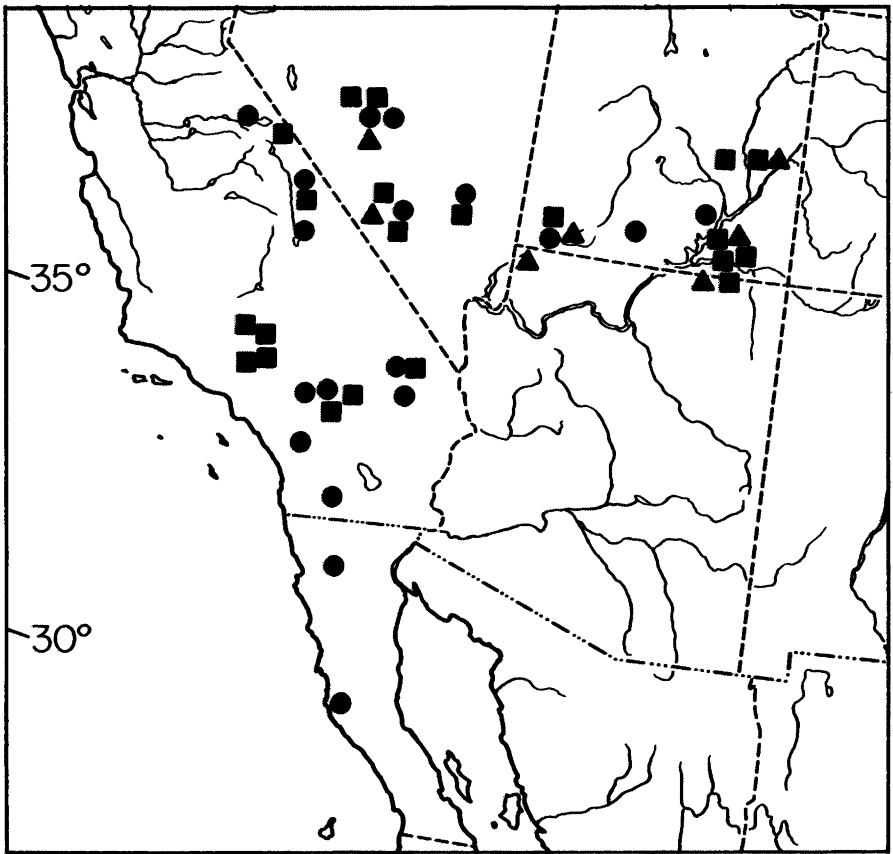


Fig. 20. Distribution of *Merinocapsus* species: ●, *ephedrae*; ■, *froeschneri*; ▲, *pallipes*.

J. Merino, on *Ephedra nevadensis* (USNM), 3♀♀ [*ephedrae* paratypes]; 5 mi E of Gabbs on Rt 844, 5,800 ft, July 1, 1983, R. T. Schuh, M. D. Schwartz, ex *Ephedra* sp. (AMNH), ♂, 6♀♀; Northumbland Canyon Rd, Toquima Mts., T14N R44E Sec31, 6,400 ft, June 28, 1983, R. T. Schuh, M. D. Schwartz, ex *Ephedra* sp. (AMNH), 4♂♂, 6♀♀. Utah: *Emery Co.*: 2.5 mi W of Rt 24 on Goblin Valley Rd, 5,500 ft, June 19, 1983, R. T. Schuh, M. D. Schwartz, ex *Ephedra cutleri* (AMNH), ♂. *Grand Co.*: 11 mi SE of jct. Rts 313 and 163 on Rd 313 (road to Dead Horse Point), 5,200 ft, June 11, 1982, M. D. Schwartz, ex *Ephedra viridis* (AMNH), 13♂♂, 35 ♀♀. *San Juan Co.*: Rt 63 at Arizona border, Monument Valley, 5,200 ft, June 16, 1983, Schuh, Schwartz, ex *Ephedra cutleri* Peebles (AMNH), 13♂♂, 53 ♀♀; 12 mi S of Rt 263, Glen Canyon Nat. Rec. Area, T40S R14E, 4,300 ft, June 17, 1983, R. T. Schuh, M. D. Schwartz, ex Mercury Vapory light (AMNH), ♂; The Goosenecks Overlook, 5,000 ft, June 17, 1983, R. T. Schuh, M. D. Schwartz, ex *Ephedra torreyana* S. Wats. (Ephedraceae) (AMNH), 4♂♂, ♀; Grand Flat, near Collins Canyon, 5,600 ft, May 28, 1978, D. A.

and J. T. Polhemus (AMNH, JTP), 4♂♂, 5 ♀♀; Head of Lake Canyon near Nokai Dome Road, 4,200 ft, May 29, 1978, D. A. and J. T. Polhemus (AMNH), ♂, ♀; 2.7 mi W of Rt 95 on Rt 263, T37S R17E, 6000 ft, June 18, 1983, R. T. Schuh, M. D. Schwartz, ex *Ephedra torreyana* (AMNH), 2♂♂; 7.7 mi N of Mexican Hat on Rt 261, T41S R18E, 5,000 ft, June 17, 1983, R. T. Schuh, M. D. Schwartz, ex *Ephedra* sp. (AMNH), ♀. *Washington Co.*: 2 mi NW of Toquerville on Utah St. Rd 17, 3,800 ft, May 25, 1981, M. D. Schwartz ex *Ephedra viridis* (AMNH), ♀.

Merinocapsus pallipes (Knight), **New Combination**

Figs. 3, 4, 7, 17–20

Ankylotylus pallipes Knight, 1968:56.

Diagnosis. Distinguished from *ephedrae* and *froeschneri* by the pale head, hemelytra, venter and legs, the pronotum and scutellum partially suffused with red-orange, the labium reaching only about midway between the pro- and mesocoxae, and the structure of the vesica (Fig. 17).

Measurements: Total length: ♂, 3.55–3.75; ♀, 2.95–3.26, length apex tylus–cuneal fracture: ♂, 2.37–2.40; ♀, 2.12–2.22. Width head: ♂, 0.84–0.87; ♀, 0.82–0.85. Width vertex: ♂, 0.34–0.35; ♀, 0.40–0.41. Width pronotum: ♂, 0.95–1.00; ♀, 1.01–1.03. Length pronotum at midline: ♂, 0.39–0.44; ♀, 0.39–0.40. Length second antennal segment: ♂, 0.92–0.94; ♀, 0.84–1.04.

Male genitalia: Figures. 17–19.

Distribution. Figure 20. Southern Nevada, northeastern Arizona, east to eastern Utah.

Specimens examined. USA: **Arizona:** *Coconino Co.*: 27 mi E of Jacob Lake on Rt 89 Alt., June 24, 1980, R. T. Schuh, ex *Ephedra torreyana* (AMNH), ♂, 2♀. *Mojave Co.*: Virgin River Canyon, 0.35 mi SW of milepost 24 on Hiway 15, Purgatory Canyon, 2,600 ft, May 24, 1981, M. D. Schwartz, ex *Ephedra* sp. (AMNH), 2♂♂. **Nevada:** 35 mi N of Tonopah, Coyote Hole Spg./Sevier Resrvr., T8N R42E Secs 11, 23, 6,000 ft, June 30, 1983, Schuh, Schwartz, ex *Ephedra* sp. (AMNH), 4♀♀; Northumbland Canyon Rd, Toquima Mts., T14N R44E Sec 31, 6,400 ft, June 28, 1983, R. T. Schuh, M. D. Schwartz, ex *Ephedra* sp. (AMNH), 5♂♂, 6♀♀; *Nye Co.*: Mercury, 401M, June 20, 1965, H. Knight, J. Merino, on *Ephedra nevadensis* (USNM) ♂ [holotype]; Mercury, TM, June 14, 1965, Beck, H. Knight, J. Merino (USNM), ♀ [paratype]. **Utah:** *Grand Co.*: 11 mi SE of jct. Rds 313 and 163 on Rd 313 (road to Dead Horse Point), 5,200 ft, June 11, 1982, M. D. Schwartz, ex *Ephedra viridis* (AMNH), ♂, 2♀♀. *San Juan Co.*: The Goosenecks Overlook, 5,000 ft, June 17, 1983, R. T. Schuh, M. D. Schwartz, ex *Ephedra torreyana* S. Wats. (Ephedraceae) (AMNH), 7♂♂, 11♀♀; 1.2 mi W of Jct of Gooseneck Rd on Co. Rt 244, 5,000 ft, June 16, 1983, R. T. Schuh, M. D. Schwartz, ex *Ephedra torreyana* S. Wats. (Ephedraceae) and ex mercury vapor light (AMNH), 3♂♂, 4♀♀; 12 mi S of Rt 263, Glen Canyon Nat. Rec. Area, T40S R14E, 4,300 ft, June 17, 1983, R. T. Schuh, M. D. Schwartz, ex *Ephedra torreyana* S. Wats. (Ephedraceae) (AMNH), ♂, 5♀♀; Rt 63 at Arizona border, Monument Valley, 5,200 ft, June 16, 1983, Schuh, Schwartz, ex *Ephedra cutleri* Peebles (Ephedraceae) (AMNH), 4♂♂, 7♀♀. *Washington Co.*: 3.5 mi E of La Verkin, June 25, 1980, R. T. Schuh, ex *Ephedra* sp. (AMNH), 2♀♀.

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