Revision of the weevil genus *Epimechus* Dietz (Coleoptera: Curculionidae: Anthonomini)

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Abstract. *Epimechus curvipes* Dietz is designated as type species of the genus *Epimechus* Dietz. Ten additional species from western North America, including four new species, are assigned to the genus: *E. aemulus* Fall; *E. flavirostris* Fall; *E. mimicus* Dietz; *E. adspersus* Dietz; *E. mobilis* Fall; *E. nevadicus* Dietz; *E. molina*, **new species** (Arizona, Baja California Norte); *E. combustus*, **new species** (Arizona, New Mexico, Utah); *E. signum*, **new species** (Arizona, Coahuila, Colorado, New Mexico, Saskatchewan, Texas, Utah) and *E. hesperius*, **new species** (Arizona, California, Colorado, Guanajuato, Idaho, Nevada, New Mexico, Nuevo León, South Dakota, Texas, Utah, Wyoming). These are distinguished from other Anthonomini by the short, simple tarsal claws. The names *Epimechus modicus* Fall, *E. soriculus* Dietz, and *E. nanulus* Fall are placed in **new synonymy** under *E. curvipes*. **Lectotypes** are designated for *E. adspersus* and *E. nevadicus*. Two species formerly in *Epimechus* are transferred the subgenus *Cnemocyllus* Dietz in *Anthonomus* Germar: *E. arenicolor* Fall as *Anthonomus arenicolor* (Fall), **new combination**, and *E. canoides* Fall as *Anthonomus canoides* (Fall), **new combination**. Adults of species of *Epimechus* have been collected on plants in the genera *Baccharis*, *Chrysothamnus*, *Ericameria*, *Gutierrezia*, *Haplopappus*, *Senecio* and *Tetradymia* (all Asteraceae).

Introduction

The genus *Epimechus* Dietz (1891) was established for five species of Anthonomini based on having "simple, divaricate claws." The validity of this character was called into question by Fall (1901) and Burke (1968), however, both of whom pointed out that some anthonomines with simple claws have close affinities to species of *Anthonomus* assigned to the subgenus *Cnemocyllus* Dietz. Burke (1968) asserted that "a comprehensive study will be necessary before the relationships of these species can be determined." This revision is a contribution toward such a study providing a rationale for delimitation of *Epimechus*, descriptions of each of the species, and a key for identification of the species.

Materials and Methods

Specimens of 814 adult weevils were examined. These are deposited in the collections of the following individuals and institutions (letter codens identify the collections in the text): **AMNH,** American Museum of Natural History, New York, New York, U.S.A.; **BYUC**, Brigham Young University, Provo, Utah, U.S.A.; **CASC,** California Academy of Sciences, San Francisco, California, U.S.A.; **CDAE,** California State Collection of Arthropoda, Sacramento, California, U.S.A.; **CHAH,** Collection of H. A. Hespenheide, Los Angeles, California, U.S.A.; **CISC**, California Insect Survey, University of California, Berkeley, California, U.S.A.; **CMNC,** National Museum of Natural Sciences, Ottawa, Ontario, Canada; **CNCI**, Canadian National Collection of Insects and Archnids, Ottawa, Canada; **CWOB,** Collection of C. W. O'Brien, Tallahassee, Florida, U.S.A.; **ELSC,** Collection of E. L. Sleeper, Long Beach, California, U.S.A.; **HAHC,** Collection of H. and A. Howden, Ottawa, Canada; **ICCM,** Carnegie Museum, Pittsburgh, Pennsylvania, U.S.A.; **INIA**, Colección de Insectos, Instituto Nacional de Indestigaciones Agrícolas, México, D.F., México; **MCZC**, Museum of Comparative Zoology, Cambridge, Massachusetts, U.S.A.; **OSUC**, Ohio State University, Columbus, Ohio, U.S.A.; **OSUO,** Entomological Museum, Oregon State University, Corvallis, Oregon, U.S.A.; **TAMU,** Texas A&M University, College Station, Texas, U.S.A.; **UCDC,** University of California Davis, Davis, California,

U.S.A.; **USNM,** National Museum of Natural History, Washington, D. C., U.S.A..

The largest and smallest specimens available were measured with an ocular micrometer in a dissecting microscope as follows: total length is the distance from anterior edge of eye to elytral apex in lateral view; width is the distance across elytra at widest point, in dorsal view; length of pronotum, dorsally, is the distance from anterior to posterior margins. Exact label data are cited for types. Separate labels are indicated by brackets ([]), each separate line by a slash (/).

Epimechus Dietz

Epimechus Dietz 1891:257. **Type species**: *Epimechus curvipes* Dietz (here designated). Fall 1901:256; 1907:267; 1913:59-63; 1928:239. Blatchley 1916:277. Kissinger 1964:52, 56. Burke 1968:69. Hatch 1971:344-345. O'Brien and Wibmer 1982:111-112.

Diagnosis. The species of *Epimechus* are Anthonomini with short, simple tarsal claws (Fig. 33) that are fairly stout in most species, but are slender in *E. mimicus*. The metatibia of the male is curved in the type species and one other species (Figs. 24, 23), but it is straight in most of the species (Figs. 25-32). The antennal funiculus has 7 segments in some species and 6 in others. The profemur is minutely toothed or unarmed. The metafemur is unarmed and narrower than the profemur.

Plant associations. Species of *Epimechus* are associated with plants in the family Asteraceae. Meager label data indicating collection of adults on plants other than Asteraceae probably do not represent actual host associations. The site of larval development is known for only *E. curvipes*, which is reported by Boldt and Robbins (1992; 1994) to develop in galls on *Baccharis salicifolia* and other species of *Baccharis*, probably as inquilines in galls incited by other insects.

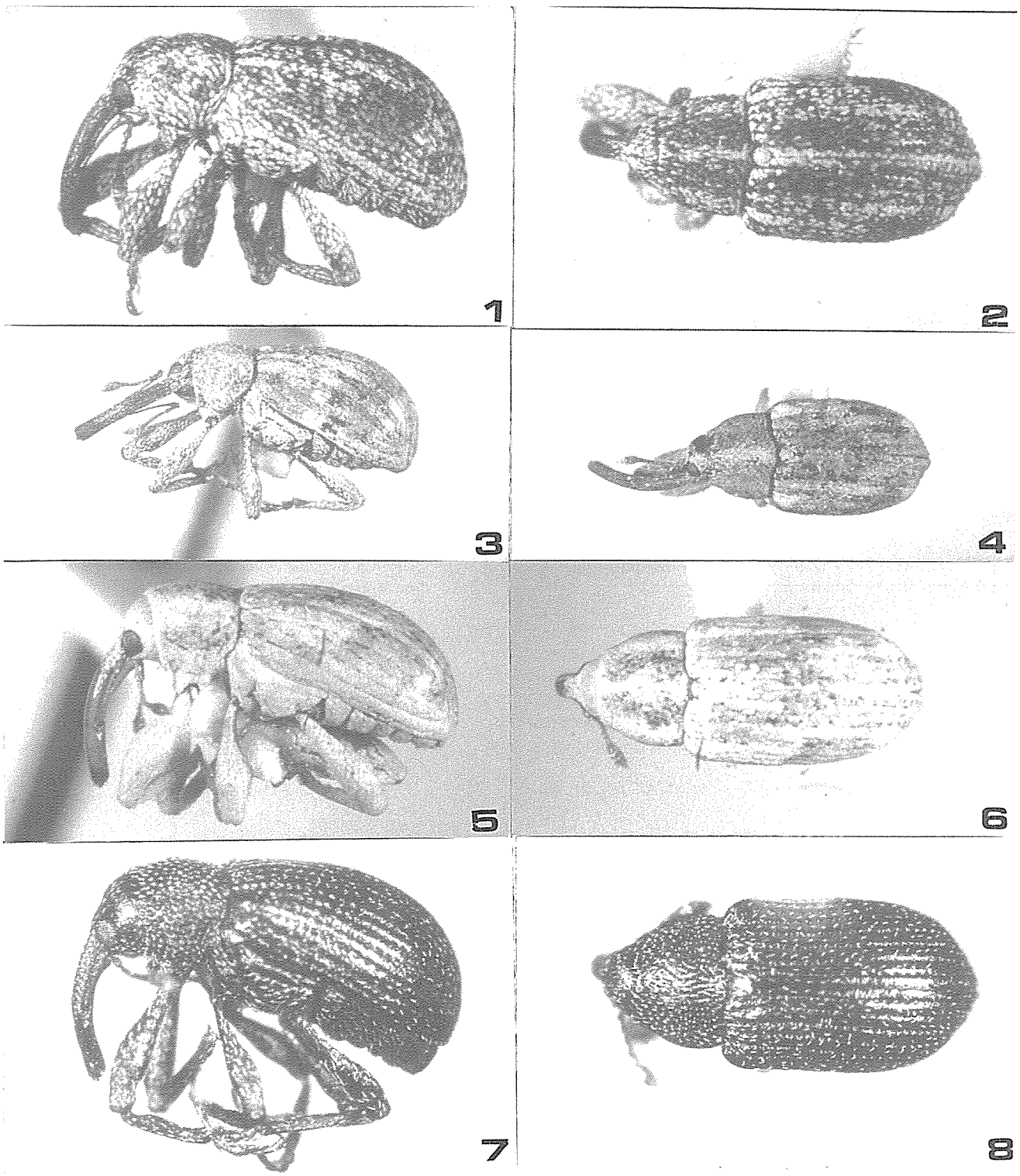
Taxonomic History. Without designating a type species, Dietz (1891) placed five species in *Epimechus*: *E. mimicus* Dietz, *E. soriculus* Dietz and *E. adspersus* Dietz from California, *E. nevadicus* Dietz from Nevada, and *E. curvipes* Dietz from Nevada and New Mexico. Fall (1901) added *E. arenicolor* Fall from Arizona and *E. aemulus* Fall from California; Fall (1907) described *E. nanulus* Fall and *E. stragulus* Fall from New Mexico; and Fall (1913) added *E. gracilis* Fall from Nevada and New Mexico, *E. canoides* Fall from Texas, *E. modicus* Fall from Arizona and *E. mobilis* Fall from Calfornia. Fall (1928) also described *E. flavirostris* from California. Later, Fall (1934) stated that *Anthonomus baccharidis* Pierce "... is an *Epimechus* and seems to be identical with *arenicolor* Fall." Fall's equivocation would seem to account for Kissinger's (1964) statement that *Epimechus* contained 15 species, though the species were not listed by name. O'Brien and Wibmer (1982) listed the species of *Epimechus* by name. Their list of 14 species includes *A. baccharidis* as synonym of *E. arenicolor*, as well as *E. gracilis* as synonym of *Anthonomus tenuis* Fall (Burke 1975), along with the anthonomine from Oregon described as *E. alutaceus* by Hatch (1971). The name applied by Blatchley (1916) to an anthonomine from Florida, *Epimechus nivosus* Blatchley, was placed in synonymy under *Anthonomus disjunctus* LeConte by Burke (1971). More recently, *E. stragulus* was transferred to *Chelonychus* Dietz, and *E. alutaceus* was placed in *Magdalinops* by Clark and Burke (2001).

Kissinger (1964) separated *Epimechus* from most other anthonomines by the simple tarsal claws. The problem with this arrangement was summed up by Burke (1968:69) who noted that adults of *E. arenicolor* "have simple tarsal claws, but otherwise resemble members of the subgenus *Cnemocyllus* of *Anthonomus*."

Fall (1901) asserted that *E. arenicolor* Fall "must by the simple claws be placed in *Epimechus*," although "in every other respect it is closely allied to the members of the subgenus *Cnemocyllus*." Similarly, Burke (1968:69) noted that some of the species "have simple tarsal claws while others have a small tooth at the base of each claw" and concluded that these " ... are clearly not congeneric." Although all examined *E. arenicolor* and most *E. canoides* Fall have simple tarsal claws like those of *E. curvipes*, these two species are more closely related to *Anthonomus jacobinus* and its allies than to the other species of *Epimechus*. This is indicated by close similarity in general appearance, the structure of the metatibia of the male, and especially the male genitalia. These are thus removed from *Epimechus* and transferred to the subgenus *Cnemocyllus* in *Anthonomus* as *Anthonomus arenicolor* (Fall), **new combination**, and *Anthonomus canoides* (Fall), **new combination**.

Key to species of *Epimechus*

1. Antennal funiculus with 7 segments 2



Figs. 1-8. *Epimechus* spp., habitus, lateral and dorsal views. 1) *E. curvipes*, male, 8 mi. E Flagstaff, Arizona. 2) *E. curvipes*, male, 8 mi. E Flagstaff, Arizona. 3) *E. aemulus*, female, holotype. 4) *E. aemulus*, female, holotype. 5) *E. flavirostris*, male, Tucson, Arizona. 6) *E. flavirostris*, male, Tucson, Arizona. 7) *E. mimicus*, male, 6 mi. S Dune Lakes, California. 8) *E. mimicus*, male, 6 mi. S Dune Lakes, California.

1'. Antennal funiculus with 6 segments 5

2(1). Pronotum and elytra with integument broadly exposed between small, sparse scales (Figs. 7, 8); metatibia of male straight, with small apical mucro (Fig. 25) ..... *E. mimicus*

2'. Pronotum and elytra with integument at most narrowly exposed between scales or concealed beneath broad, dense, imbricated scales (Figs. 1, 2, 5, 6); metatibia of male strongly curved, with large apical mucro (Figs. 23, 24) 3

3(2). Integument of pronotum and elytra completely concealed beneath dense, broadly imbricated scales (Figs. 5, 6); rostrum sparsely punctate basally, smooth and shining throughout, glabrous, except at extreme base, integument pallid; body form elongate (Figs. 5, 6); median lobe of aedeagus abruptly narrowed apically, not strongly constriced basally in dorsal view (Fig. 36), broadly, evenly curved in lateral view (Fig. 37); pygidium of male not channeled middorsally 4

3'. Integument of pronotum and elytra exposed to varying degrees between rows of slightly to non-imbricated scales (Figs. 1, 2); rostrum rugose punctate basally, punctulate distally, with sparse, narrow scales basally, integument dark; body form stout (Figs. 1, 2); median lobe of aedeagus strongly constricted in basal 1/4, not strongly constricted apically in dorsal view (Fig. 34), strongly sinuate in lateral view (Fig. 35); pygidium of male shallowly channeled middorsally ..... *E. curvipes*

4(3). Elytra with dense humeral patch of broad, imbricated scales (Figs. 3, 4); scales on pronotum and elytra without glossy or "lacquered" appearance ..... *E. aemulus*

4'. Elytra without dense humeral patch (Figs. 5, 6); scales on pronotum and elytra with glossy or "lacquered" appearance ..... *E. flavirostris*

5(1). Pronotum and elytra with sparse vestiture of mostly non-imbricated scales, integument broadly visible between scales (Figs. 9, 10) .... *E. adspersus*

5'. Pronotum and elytra with dense vestiture of broadly imbricated scales, integument mostly concealed beneath scales (Figs. 11-22) 6

6(5). Metatibial mucro of male long, extended nearly perpendicular to long axis of tibia in lateral view, strongly curved (Fig. 32); rostrum curved basally, straighter distally (Fig. 21) .... *E. hesperius*

6'. Metatibial mucro of male shorter, more oblique to long axis of tibia in lateral view, not strongly curved (Figs. 27, 29, 30, 28); rostrum more nearly evenly curved (Figs. 11, 13, 15, 17, 19) 7

7(6). Broad, pallid scales forming fairly distinct elytral vittae (Figs. 11, 12); rostrum distinctly stout and fairly straight basally (Fig. 11) .... *E. mobilis*

7'. Broad, pallid scales more generally interspersed among narrower, darker scales, not forming elytral vittae (Figs. 13-20); rostrum not distinctly stout and straight basally (Figs. 13, 15, 17, 19) 8

8(7). Elytra short, broad (Fig. 20); scales on pronotum and elytra narrowly imbricated ..... *E. molina*

8'. Elytra long and narrow (Figs. 14, 16, 18); scales on pronotum and elytra more broadly imbricated 9

9(8). Metatibial mucro extended nearly perpendicular to long axis of tibia (Fig. 31); small, length 1.5-1.8mm; median lobe of aedeagus narrowly extended apically (Fig. 36) ..... *E. signum*

9'. Metatibial mucro more obliquely oriented to long axis of tibia (Figs. 29, 30); larger, length 1.5-2.9mm; median lobe of aedeagus not narrowly extended apically (Figs. 42, 43) 10

10(9). Rostrum narrow, shallowly punctate, smooth, shining (Fig. 15); elytra subparallel-sided in dorsal view (Fig. 16) ..... *E. combustus*

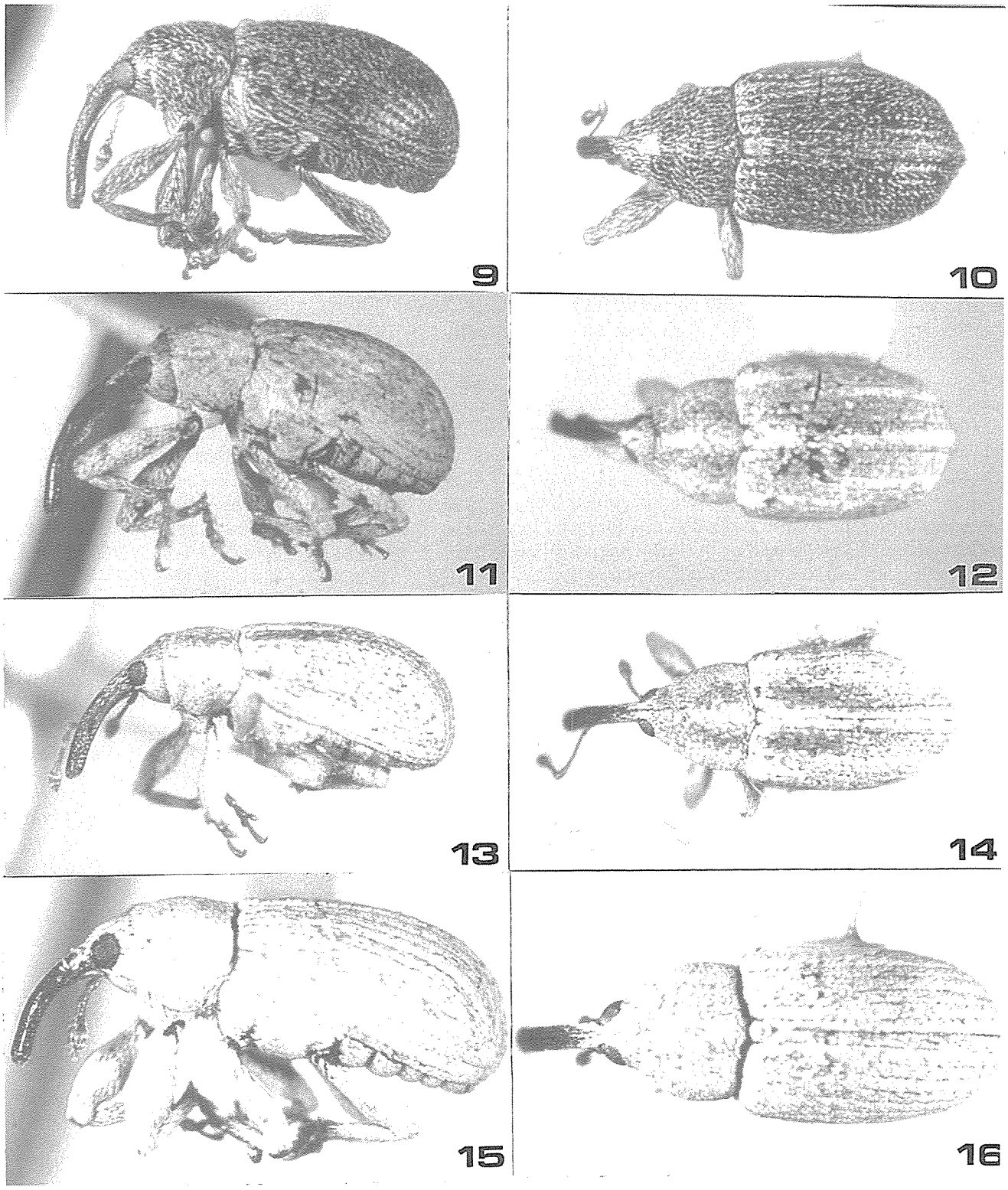
10'. Rostrum stout, deeply punctate (Fig. 13); elytra slightly expanded posteriorly (Fig. 14) .... *E. nevadicus*

Epimechus curvipes Dietz

Figs. 1, 2, 23, 34, 35

Epimechus curvipes Dietz 1891:259, pl. V, Fig. 32. Lectotype (designated by Fall 1913:60). United States. Nevada. [Nev.] [W. G. Dietz/ Coll.] [Type/ 2000] [Epimechus/ curvipes/ Dietz] [LECTOTYPE/ Epimechus/ curvipes/ Dtz./ des. H. R. Burke] (male, MCZC). Paralectotypes (2). United States. Nevada. [Nev.?] [E./ curvipes/ Dtz] [TYPE/ Epimechus/ curvipes/ W. G. Dietz/ 8160] [PARALECTOTYPE/ Epimechus/ curvipes/ Dtz./ des. H. R. Burke] (1 male, MCZC). New Mexico. [N M] [W. G. Dietz/ Coll.] [Type/ 2000] [PARALECTOTYPE/ Epimechus/ curvipes/ Dtz./ des. H. R. Burke] (1 male, MCZC); [N.M.] [Coolidge] [65] [Wickham] [Collection of/ Chas. W. Leng] (1, BYUC).

Epimechus modicus Fall 1913:60-61. Holotype. United States. Arizona. Pima Co.: [Santa Rita Mts./ Ariz. 5 to 8000 ft./ July, F. H. Snow.] [Epimechus/ modicus/ Fall/ type.] [M.C.Z./ Type/ 25186] [H. C. FALL/ COLLECTION] [Epimechus/ modicus/ Fall.] (female, MCZC). New synonymy.



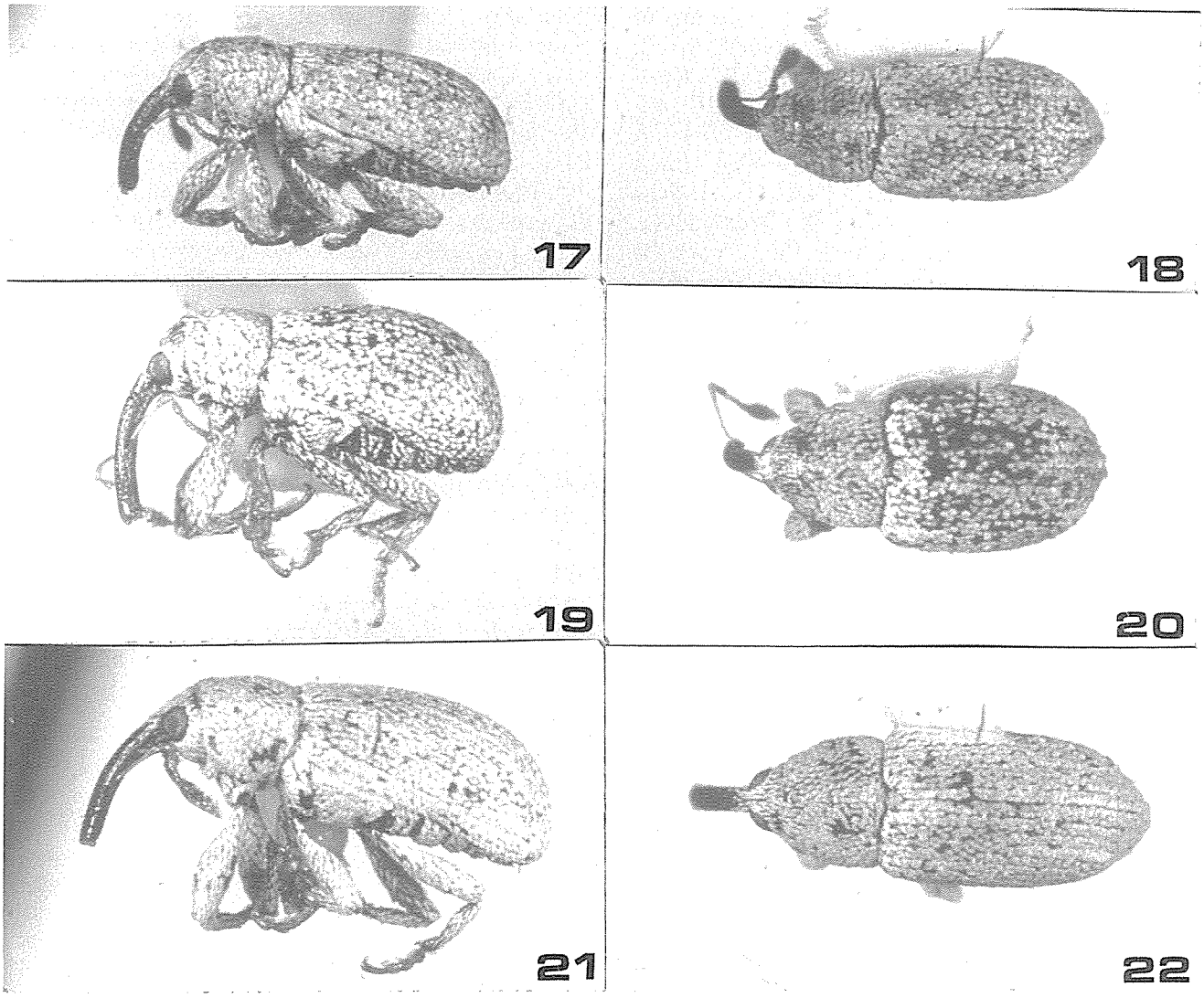
Figs. 9-16. *Epimechus* spp.; habitus, lateral and dorsal views. 9) *E. adspersus*, female, Cuyama, California. 10) *E. adspersus*, female, Cuyama, California. 11) *E. mobilis*, female, 2 mi. S Pine Valley, California. 12) *E. mobilis*, female, 2 mi. S Pine Valley, California. 13) *E. nevadicus*, male, lectotype. 14) *E. nevadicus*, male, lectotype. 15) *E. combustus*, male, Bandelier National Monument, New Mexico. 16) *E. combustus*, male, Bandelier National Monument, New Mexico.

Epimechus soriculus Dietz 1891:259. Holotype. United States. **California**. *Los Angeles Co.*: [Los Angeles/ Cala] [Coll Hubbard/ & Schwarz] [Dietz/ determ.] [Epimechus/ soriculus/ Dietz] [TYPE/ No. 4558/ U.S.N.M.] [Epimechus/ soriculus/ Dtz.] (female, USNM). **New synonymy.**

Epimechus nanulus Fall 1907:267. Holotype. United States. **New Mexico**. *Bernalillo Co.*: [Albuq./ N. M.] [nanulus/ TYPE] [M.C.Z./ Type/ 25187] [H. C. FALL/ COLLECTION] [Epimechus/ nanulus/ Fall] (female, MCZC). **New synonymy.**

Male (Figs. 1, 2). *Length*: 1.6-2.3mm. *Width*: 0.8-1.1mm. *Head*: with dense, rounded scales on vertex, broader, more pallid, imbricated scales on frons and beneath. *Rostrum*: slightly,evenly curved; proximal portion rugose, with dense, imbricated scales at base replaced by increasingly narrower scales toward antennal insertions; distal portion glabrous. *Antenna*: funiculus with 7 segments. *Prothorax*: pronotum with dense, apically rounded, scales; broad, imbricated, cretaceous scales predominant medially and laterally on dorsum, in most specimens replaced by or intermixed with narrower, less broadly imbricated, fuscous scales; fuscous scales also present on pleuron in most specimens. *Elytra*: narrow, subparallel-sided, slightly produced apically; striae narrow, punctures with minute, inconspicuous setae; interstriae with apically rounded, slightly imbricated, multiseriate, recumbent scales; each interstria also with diffuse median row of narrower scales; pallid cretaceous scales dense basally on sutural interstriae and interstria 6 and on longer median and posteromedian portions of interstria 4; in most specimens, pallid scales interspersed on remainder among darker fuscous scales; sutural interstriae prominent, turgid at extreme apices. *Pygidium*: shallowly channeled middorsally. *Abdomen*: sterna 1-4 with dense, imbricated, pallid scales laterally, with sparser, narrower scales medially; sternum 5 convex, with elongate, setiform scales medially. *Legs* (Fig. 23): profemur unarmed; protibia with inner margin prominent in basal 1/2, broadly concave apically, without preapical tooth; protibial uncus stout; metatibia of male with inner margin strongly prominent in basal 1/2, strongly concave in apical 1/2, outer margin strongly curved in apical 1/2; metatibial mucro slightly curved in lateral view, expanded midlaterally in dorsal view, acute apically; metatibia of female slender, slightly expanded at extreme apex in lateral view, with inner margin slightly prominent in basal 1/2, slightly concave in apical 1/2, outer margin straight; metatibial mucro short, slightly curved, acute, oblique. *Genitalia* (Figs. 34, 35): median lobe of aedeagus constricted in basal 1/3, broadly, subtruncately rounded apically in dorsal view, sinuate, narrowed apically in lateral view; endophallus with one slender, acute sclerite.

Specimens examined. In addition to the types of *E. curvipes* and its synonyms from Arizona, California, Nevada and New Mexico, 157 specimens of the species from the following localities were examined. Mexico. **Coahuila**. 6 mi. NE Saltillo (1, CWOB); 12 mi. E Saltillo (1, CWOB). **Durango**. 5 mi. W Durango (1, CNCI). **México**. 3 mi. N Atlacomulco (8700', 1, CWOB); 1 mi. S Ixtapan (2, TAMU). **Michoacán**. La Huerta (1, INIA). **Nayarít**. 24 mi. SE Tepec (1, ELSC). **Nuevo León**. 14 mi. W Monterrey (3800', 1, CWOB); 23 mi. W Monterrey (3, CWOB); Rancho Alamillos, E slope Cerro La Silla, 660m (1, CWOB); 25 mi. E San Roberto (2, CWOB). **Oaxaca**. 8 mi. SE Tamazulpan (1, CWOB). United States. **Arizona**. (6, MCZC). *Coconino Co.*: Cameron (1, OSUC); 8 mi. E Flagstaff (6800', 2, CWOB); 4 mi. N Redlake (2, CWOB); 2.5 mi. S Tuba City (1, CMNC). *Cochise Co.*: Bisbee (1, CWOB); Chiricahua Mountains (1, HAHC); Miller Canyon, Huachuca Mountains (1, WECC); 1 mi. W Pomerene ("on oak", 1, CWOB); Portal ("white clover", 1, TAMU). *Navajo Co.*: Winslow (2, BYUC). *Pima Co.*: Madera Canyon, Santa Rita Mountains (1, CWOB). *Santa Cruz Co.*: 2 mi. SE Canelo (1, CWOB). **California**. *Fresno Co.*: Ciervo Hills, 18 mi. SW Mendota (1, CISC). *Kern Co.*: Shafter (1, CASC). *Kings Co.*: 2 mi. SW Kettleman City (1, "*Haplopappus linearifolius*", CUIC). *Lassen Co.*: 9 mi. W Termo (1, CDAE). *Mariposa Co.*: Mariposa (6, CDAE). *Mono Co.*: 1 mi. W Tom's (1, CISC); 1 km. E Sulfur Pond, Mono Lake (1, "*Chrysothamnus viscidiflorus*", CDAE). *San Bernardino Co.*: Victorville (1, MCZC). *Santa Barbara Co.*: Cuyama ("ex. *Gutierrezia californica* (DC). T&G (= *G. bracteata* Abrams) Sn Joaquin matchweed", 2, CDAE). *Siskiyou Co.*: Modoc Lava Beds National Monument (1, AMNH). *Tulare Co.*: 19 mi. SE Kennedy Meadows Campground, 9 Mile Canyon (6600', 5, CWOB). **Colorado**. *El Paso Co.*: Colorado Springs (1, MCZC; 1, USNM). *Larimer Co.*: Fort Collins (1, TAMU). *Montezuma Co.*: (1, OSUC). *Montrose Co.*: 4 mi. W Cimarron (1, CWOB). *Rio Blanco Co.*: ("Greasewood-Sage", 14, CWOB); 15 mi. W Meeker (1, TAMU. *San Miguel Co.*: 1 mi. NE Placerville (1, TAMU). **Idaho**. *Bannock Co.*: 4 mi. E Pocatello (1, TAMU). *Blaine Co.*: 2 mi. W Carey ("Reared from galls *Chrysothamnus viscidiflorus*", 1, CMNC); 20 mi. N Shoshone (1, CWOB).



Figs. 17-22. *Epimechus* spp.; habitus, lateral and dorsal views. 17) *E. signum*, male, Kaibab Lake, Arizona. 18) *E. signum*, male, Kaibab Lake, Arizona. 19) *E. molina*, female, Molino Basin, Santa Catalina Mountains, Arizona. 20) *E. molina*, female, Molino Basin, Santa Catalina Mountains, Arizona. 21) *E. hesperius*, male, 4 mi. W Cloudcroft, New Mexico. 22) *E. hesperius*, male, 4 mi. W Cloudcroft, New Mexico.

Butte Co.: 6 mi. S Howe ("*Chrysothamnus viscidiflorus*", 5, CMNC). *Lemhi Co.*: Williams Lake (1, CWOB). **Nevada**. *Nye Co.*: Mercury (1, BYUC). *Washoe Co.*: Pyramid Lake (5, CWOB). *White Pine Co.*: Lehman Caves (1, CDAE). **New Mexico**. *Colfax Co.*: Sprinter (1, USNM). *Dona Ana Co.*: 17 mi. NE Las Cruces (1, CWOB). *Eddy Co.*: 32°23'N, 103°51.4'W (1, TAMU). *Lea Co.*: 19 mi. NE Lovington (1, CWOB). *Mckinley Co.*: 1.1 mi. S Thoreau (1, TAMU). *Otero Co.*: 4 mi. E Loco Hills (1, CWOB). **Oregon**. *Benton Co.*: Corvallis (1, OSUO). *Crook Co.*: Prineville (1, OSUO). *Deschutes Co.*: Redmond (4, AMNH); 12 mi. E Redmond (1, AMNH); Tumalo (5, AMNH). *Jefferson Co.*: Grizzly Butte (1, AMNH). *Klamath Co.*: Bly Mountain (2, "*Chrysothamnus*", AMNH); 8 mi. SE Dairy (1, CWOB). *Lake Co.*: Silver Lake (3, AMNH). **Texas**. *Armstrong Co.*: 14 mi. S Claude (1, CWOB). *Bailey Co.*: Muleshoe (1, CWOB). *Brewster Co.*: 7 mi. E Alpine ("D-Vac *Xanthocephalum sarothrae*", 1, TAMU); Big Bend National Park: Chisos Basin (1, CWOB), The Basin, (2, TAMU; 5500', 1, CMNC), Pine Canyon, 4, CWOB). *Culberson Co.*: Guadalupe Mountains National Park, Dog Canyon (1, CWOB). *Gaines Co.*: 4 mi. S Seminole (1, CWOB). *Kleberg Co.*: FM 1355 S Bishop (2, TAMU). *Lamb Co.*: 10 mi. W Littlefield ("*Gutierrezia*", 1, CWOB); 19 mi. W Littlefield ("*Gutierrezia*", 1, CWOB). **Utah**. Chad's Ranch (3, MCZC);

Willow Creek (1, BYUC). *Duchesne Co.*: 10 mi. W Duchesne (1, "*Chrysothamnus viscidiflora*", CWOB). *Garfield* Co.: Henrieville (1, BYUC). *Kane Co.*: 4 mi. W Alton (1, TAMU); Kanab (1, BYUC); mi. SE Mount Carmel Junction, 6300' (1, CWOB). *Utah Co.*: 2 mi. S Birdsey (1, CMNC); Hobble Creek Canyon (1, TAMU). *Tooele Co.*: SE end Cedar Mtns (1, BYUC). *Wasatch Co.*: 6 mi. W Fruitland (1, CMNC). *Washington Co.*: Beaver Dam Wash (1, CWOB); 6 mi. W Hurricane (1, TAMU); 6 mi. N St. George (1, CWOB); Santa Clara (1, BYUC); Toquerville (1, TAMU). **Washington**. *Benton Co.*: Hanford Site, Snively Ranch (1, CWOB). Zion National Park (1, BYUC).

Plant associations. Label data indicate that some adults of *E. curvipes* were collected on *Chrysothamnus viscidiflorus* (Hook.) Nutt., *Ericameria linearifolia* (DC.) Urbatsch & Wussow (as *Haplopappus linearifolius* DC.), *Gutierrezia californica* (DC). T&G, and *G. sarothrae* (Pursh) Britt. & Rusby (as *Xanthocephalum sarothrae*). Boldt and Robbins (1992) reported that larvae of *E. curvipes* develop in galls of *Baccharis bigelovii* Gray and *B. pteronioides* DC. in Arizona, New Mexico, and Mexico, and Boldt and Robbins (1994) listed the species as "occasional" on leaves and on stem galls of these and *Baccharis salicina* J. Torr. & A. Gray. Label data also state that one adult was reared from a gall on *C. viscidiflorus*.

Remarks. *Epimechus curvipes* may be most closely related to *E. flavirostris*. Both species have the antennal funicle 7 segmented and the metatibia of the male strongly curved (cf. Figs. 23, 24). Differences between the two species include the shape of the aedeagus. The aedeagus of *E. curvipes* (Figs. 34, 35) does not closely resemble that of *E. flavirostris* (Figs. 36, 37) or of any of the other species assigned to *Epimechus*.

Fall (1913) effectively designated the lectotype of *E. curvipes* by stating that he had seen the two specimens of the species in the Dietz Collection and that the "first, bearing the label and best fitting his description, and hence to be regarded as the type, is from Nevada".

The lectotype of *E. modicus* is a relatively small, teneral, female of *E. curvipes*. Fall (1913) stated that *E. modicus* "may be separated [from *E. curvipes*] by its somewhat denser vestiture, especially on the fourth and sixth elytral intervals, the lack of any trace of a lateral subdenuded area, and the pale legs." The lectotype and several specimens from other localities in Arizona and in Mexico do have relatively dense vestiture. However, as in many anthonomines, the density of elytral vestiture in *E. curvipes* is variable. Some specimens of the latter species have more distinct patches of condensed scales on elytral interstriae 4 and 6.

The holotype of *E. nanulus* is a small female of *E. curvipes*. Recognizing that this might be the case, Fall (1913) stated (in his discussion of *E. modicus*) that "It is not unlikely that Dietz's New Mexico [male] [of *E. curvipes*] is identical with my *Epimechus nanulus* described from the [male] and also from New Mexico", but that the "very small size of *nanulus* make this a little doubtful."

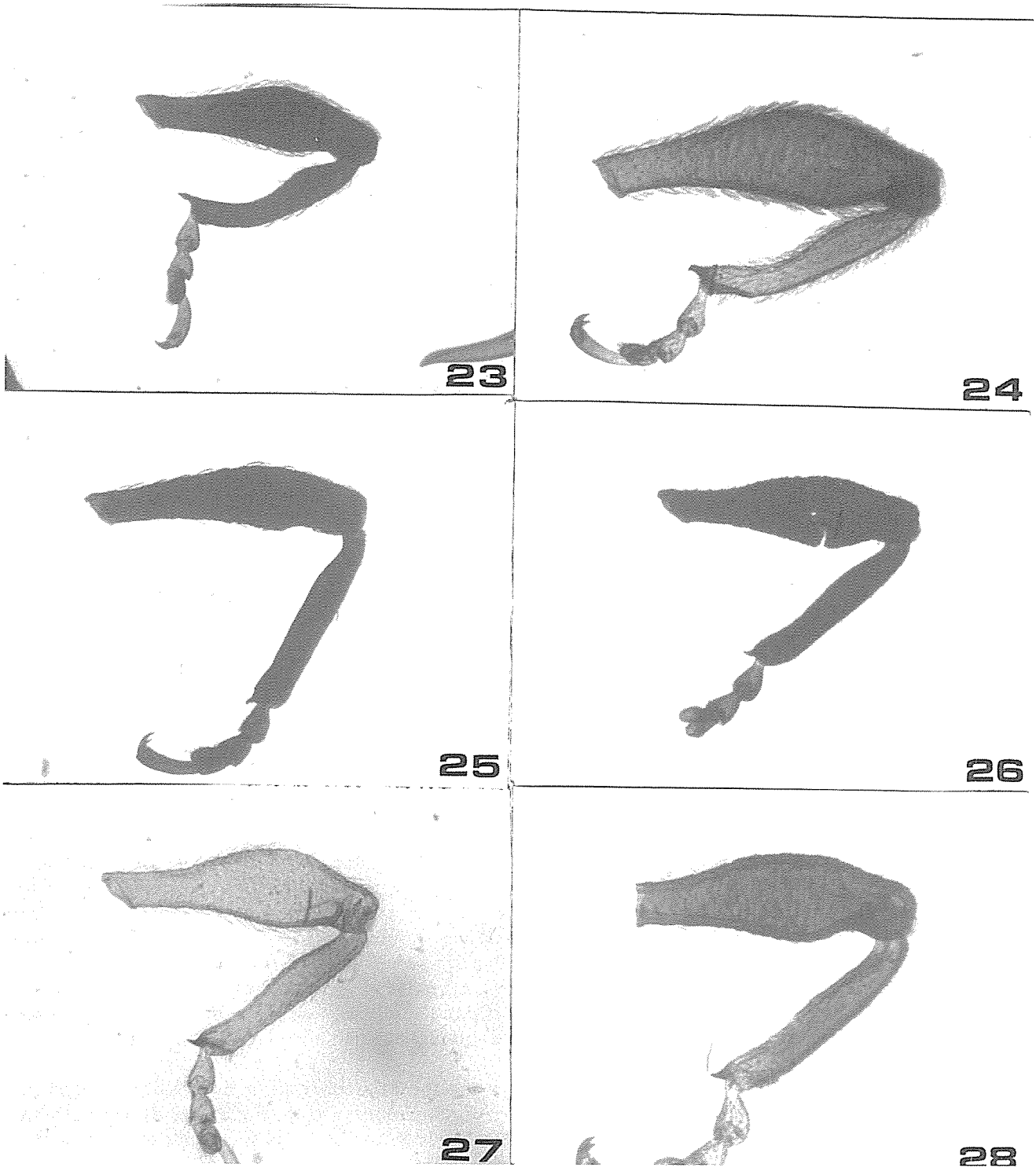
The "sharply defined, narrow, thoracic and elytral vittae" described by Dietz (1891) for the type of *E. soriculus* is characteristic of several other specimens of *E. curvipes* as well. The elytral vestiture of *E. curvipes* varies, however, from pallid scales mostly condensed on interstriae 4 and 6 with fuscous scales prevalent elsewhere, through pallid scales that are more diffuse among darker scales throughout, to the virtual absence of the darker scales.

Epimechus aemulus Fall

Figs. 3, 4

Epimechus aemulus Fall 1901:266. Holotype. United States. **California.** *San Diego Co.*: [San Diego/ Co. Cal.] [TYPE] [M.C.Z./ Type/ 25180] [H. C. FALL/ COLLECTION] [Epimechus/ aemulus/ Fall] (female, MCZC).

Description. *Length.*: 3.1mm. *Width*: 1.5mm. *Head*: with dense, rounded scales on vertex, broader, more pallid, imbricated scales on frons and beneath. *Rostrum*: slightly, evenly curved; proximal portion rugose; dense, imbricated scales at base replaced by increasingly narrower scales toward antennal insertions; distal portion glabrous. *Antenna*: funiculus with 7 segments. *Prothorax*: pronotum with dense, apically rounded, scales; broad, imbricated, cretaceous scales dense in broad middorsal vitta and on lateral portions of dorsum, replaced by narrower, less broadly imbricated, darker infuscate scales in broad dorsolateral vittae; infuscate scales also present on pleuron. *Elytra*: narrow, subparallel-sided, slightly produced apically; striae narrow, punctures with minute, inconspicuous setae; interstriae with rounded, imbricated, multiseriate, recumbent scales; each interstria also with diffuse median row of narrower scales;



Figs. 23-28. *Epimechus* spp., metathoracic tibia, male, lateral view. 23) *E. curvipes*; 24) *E. flavirostris*; 25) *E. mimicus*; 26) *E. adspersus*; 27) *E. mobilis*; 28) *E. molina*.

pallid cretaceous scales dense basally on interstria 6 and on longer median and posteromedian portions of interstriae 4, 6, 8 and 10; pallid scales interspersed on remainder among darker infuscate scales; sutural interstriae prominent, turgid at extreme apices. *Abdomen*: sterna 1-4 with dense,

imbricated, pallid scales laterally, with sparser, narrower scales medially; sternum 5 convex, with elongate, setiform scales medially. *Legs*: profemur with one small ventral tooth; protibia with inner margin prominent in basal 1/2, broadly concave apically, without preapical tooth; protibial uncus stout; metatibia with inner margin strongly prominent in basal 1/2, strongly concave in apical 1/2, outer margin strongly curved in apical 1/2; metatibial mucro slightly curved in lateral view, with bulbous midlateral expansion in dorsal view, acute apically.

Specimens examined. *Epimechus aemulus* is known only from the holotype.

Plant associations. Unknown.

Remarks. *Epimechus aemulus* is known only from the female holotype. Fall (1901) described the species as "distinguishable at once from *E. nevadicus*, its nearest ally, by its larger size and seven-jointed funicle." The closest relatives of *E. aemulus* appear to be *E. flavirostris* and *E. curvipes*. However, without males of *E. aemulus*, this remains uncertain. The species is more similar in size and form to *E. flavirostris* (cf. Figs. 3-6) and has a similar acute ventral tooth on the profemur. It also resembles *E. flavirostris* in the dense vestiture of broad scales, but unlike that species it has a broad median vitta of pallid cretaceous scales on the pronotum, the elytra with a dense humeral patch, interstria 4 for most of its length and interstria 6 basally with similar broad, pallid scales. The rostrum of *E. aemulus* is more like that of *E. curvipes*. The rostrum of *E. flavirostris* is sparsely punctate basally and smooth, shining and glabrous throughout, except at the extreme base, the integument pallid, *E. aemulus* and *E. curvipes* have the rostrum rugose-punctate basally, punctulate distally, with sparse, narrow scales basally, the integument dark.

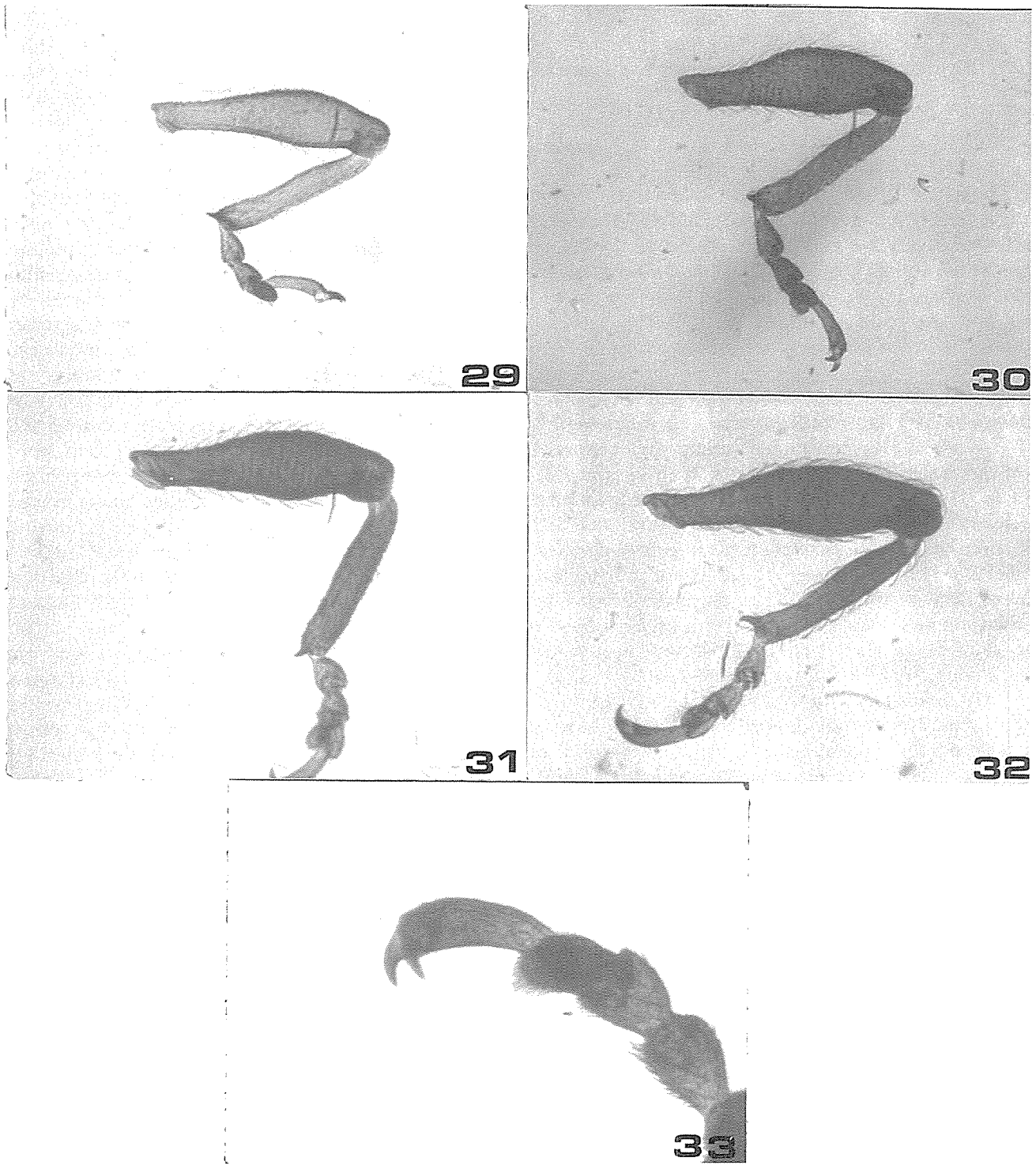
Epimechus flavirostris Fall

Figs. 5, 6, 24, 36, 37

Epimechus flavirostris Fall 1928:239-240. Holotype. United States. **California**. *Los Angeles Co.*: [Fairmont/ L. A. Co./ CAL./ IV-15-28] [A. C./ Davis] [male] [TYPE/ flavirostris] [M.C.Z./ Type/ 25183] [H. C. FALL/ COLLECTION] (male, MCZC).

Male (Figs. 5, 6). *Length.*: 1.8-2.8mm. *Width*: 0.8-1.2mm. *Head*: foveate, with dense, broadly imbricated, apically rounded, pallid scales. *Rostrum*: evenly curved; proximal portion with dense, imbricated scales at extreme base, otherwise smooth, shining, glabrous; distal portion glabrous. *Antenna*: funiculus with 7 segments. *Prothorax*: pronotum with dense, imbricated, apically rounded, scales; broader cretaceous to leucine scales predominant medially and laterally on dorsum, replaced on dorsolateral portions by fuscous or admixed fuscous and lighter fulvous scales; fulvous and fuscous scales also intermixed on pleuron. *Elytra*: narrow, subparallel-sided, rounded apically; striae mostly concealed by scales, punctures with minute, inconspicuous setae; interstriae with dense, apically rounded, imbricated, multiseriate, recumbent scales; each interstria also with diffuse median row of narrower scales; pallid cretaceous to leucine scales dense basally on sutural interstriae and interstria 6 and on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among admixed fuscous and fulvous scales; sutural interstriae not prominent. *Pygidium*: evenly convex. *Abdomen*: sterna 1-4 with dense, imbricated, pallid scales; sternum 5 convex, with elongate, setiform scales medially. *Legs* (Fig. 24): femora stout; profemur minutely toothed; protibia with inner marginal prominent in basal 1/2, concave in apical 1/2; protibial uncus slender, curved; metatibia of male with inner margin prominent in basal 1/3, strongly concave in apical 2/3, outer margin strongly curved in apical 1/2; metatibial mucro stout, slightly curved in lateral view, broadly excavated; metatibia of female with inner margin slightly prominent in basal 2/3, slightly concave in apical 1/3, outer margin straight; metatibial mucro slender, acute, oblique; tarsal claw without basal tooth. *Genitalia* (Fig. 36, 37): median lobe of aedeagus strongly narrowed in apical 1/4, slightly expanded at extreme apex; endophallus minutely denticulate, with one slender, acute sclerite.

Specimens examined. In addition to the holotype from Fairmont, California, 52 specimens of *E. flavirostris* from the following localities were examined. United States. **Arizona**. *Coconino Co.*: Williams (1, OSUC). *Mohave Co.*: Hualpai Mountains (1, OSUC); 18 mi. NW Kingman (1, TAMU). *Pima Co.*: Tucson (1, OSUC). **California**. *Inyo Co.*: Anvil Springs, Butte Valley, Panamint Range (4,200', 1, CDAE); 31 mi. NE Big Pine (2, CWOB); Deep Springs (1, CISC); Independence (1, CASC); 10-20



Figs. 29-32. *Epimechus* spp., metathoracic tibia, male, lateral view. 29) *E. nevadicus*; 30) *E. combustus*; 31) *E. signum*; 32) *E. hesperius*. 33) *E. curvipes*, metatarsus, dorsal view, Williams Lake, Idaho.

mi. S Isabella (1, CWOB); Lone Pine (1, CDAE). *Kern Co.*: 30 mi. NW Taft ("*Haplopappus*", 1, CMNC); Miracle Springs (2, CISC); Walker Pass (2, CISC); 8 mi. W Walker Pass (1, CWOB); Wofford Heights (9, CWOB). *Los Angeles Co.*: 22 mi. W Jct. 138&111 ("*Juniperus californicus*", 1, CWOB); Fairmont (3, MCZC); Littlerock (1, CWOB). *Plumas Co.*: Chester (1, OSUC). *Riverside Co.*: Piñon Flat, San Jacinto

Mountains (1, CASC). *San Bernardino Co.*: Cajon Pass (9, CWOB; 2, TAMU; "*Quercus dumosa*", 1, CWOB); Desert Springs ("on *Tetradymia spinosa* var. *longispina*", 1, CWOB); Wrightwood (1, CDAE). *Santa Barbara Co.*: Cuyama (1, CDAE). *Ventura Co.*: Rancho Nuevo Cp., Tinta Canyon (3, CWOB).

Plant associations. Label data indicate that some adults of *E. flavirostris* were collected on "*Haplopappus*", *Tetradymia axillaris* A. Nels. var. *longispina* (M. E. Jones) Strother (as *Tetradymia spinosa* var. *longispina*) (Asteraceae). The "*Quercus dumosa*" and "*Juniperus californicus*" collection records probably do not denote true host associations.

Remarks. *Epimechus flavirostris* appears to be most closely related to *E. curvipes*, as indicated by the 7 segmented antennal funicle and strongly curved metatibia of the male of both species (cf. Figs. 24, 23). The larger species is additionally distinguished from *E. curvipes*, by the pallid, smooth, shining rostrum, the more densely imbricated scales (cf. Figs. 1, 2, 5, 6), and by the shape of the median lobe of the aedeagus (cf. Figs. 34, 35, 36, 37). The scales on the pronotum and elytra of most specimens of *E. flavirostris* have a glossy or "lacquered" appearance not evident in *E. curvipes*.

The curved metatibia of the male of *E. flavirostris* is similar to that in *Anthonomus subvittatus* LeConte and its allies, as is the median lobe of the aedeagus. Unlike *E. flavirostris*, however, *A. subvittatus* and its allies have a well-developed basal tooth on the tarsal claws.

Epimechus mimicus Dietz

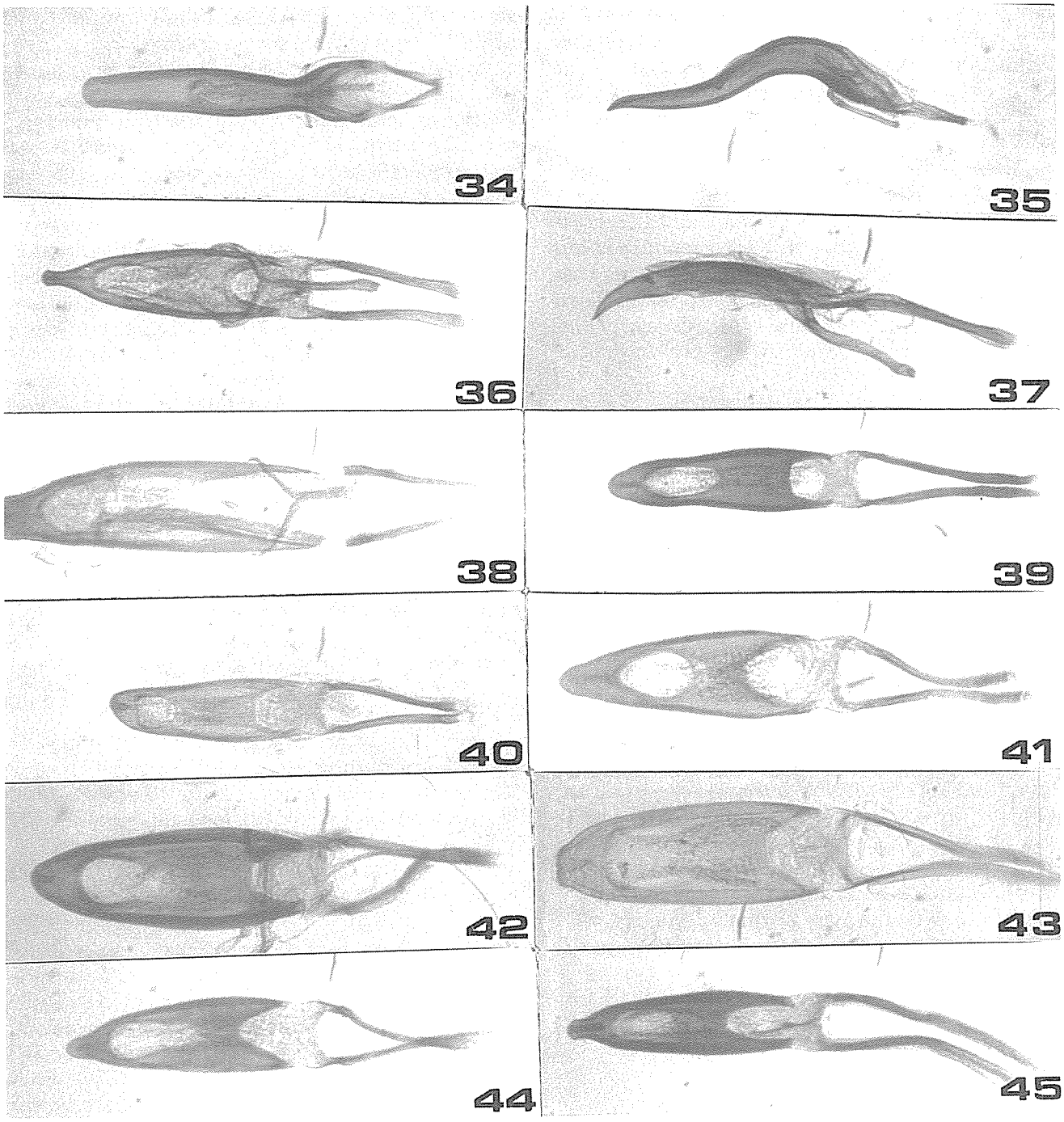
Figs. 7, 8, 25, 38

Epimechus mimicus Dietz 1891:258. Holotype. **California**. [Cal] [(blank red square)] [Epimechus/ mimicus/ Dtz.] (male, ICCM). Hatch 1971.

Male (Figs. 7, 8). Integument black, broadly exposed. *Length.*: 1.8-2.2mm. *Width*: 0.9-1.1mm. *Head*: vertex impunctate, minutely granulate, with sparse, narrow, cretaceous scales. *Rostrum*: distinctly curved proximally, straighter distally; proximal portion rugulose, glabrous; distal portion punctulate, glabrous. *Antenna*: funiculus with 7 segments. *Prothorax*: pronotum densely, coarsely punctate; long, slender, cretaceous scales predominant laterally, broader scales forming broad middorsal vitta, small to minute, darker cretaceous to fuscous scales present on sides, laterally on dorsum and on pleuron. *Elytra*: subparallel-sided in dorsal view, flattened on disc and rounded posteriorly in lateral view; striae slightly impressed, each puncture with one minute, inconspicuous, fuscous setae; interstriae subequal in width and slight convexity, sparsely clothed with setiform, fuscous scales and broader, more abundant, pallid cretaceous scales, interstria 4 in some specimens and interstriae 3 and 5 in some with median and posteromedian patches of broad cretaceous scales; sutural interstriae not prominent. *Scutellum*: with dense cretaceous scales. *Pygidium*: punctate, setose. *Abdomen*: sterna 1-4 with narrow, pallid scales laterally, with sparser, narrower scales medially; sternum 5 not impressed medially. *Legs* (Fig. 25): profemur slender, unarmed or minutely toothed; protibia narrow, straight, with slight inner-marginal prominence in basal 1/4 and with slight preapical prominence; protibial uncus short, slender, acute; metatibia of male with outer margin straight, inner margin slightly prominent in basal 1/4, slightly concave in apical 3/4, with slight preapical convexity; metatibial mucro straight, subacute, oblique in lateral view; metatibia of female slender, slightly expanded at extreme apex in lateral view, inner margin slightly prominent in basal 1/2, slightly concave in apical 1/2, outer margin straight; metatibial mucro short, oblique; tarsal claws without basal prominence or tooth. *Genitalia* (Fig. 38): median lobe of aedeagus abruptly narrowed subapically, with slight apicomedian prominence in dorsal view; endophallus with small transfer apparatus.

Specimens examined. In addition to the holotype from an unspecified locality in California, 20 specimens of *E. mimicus* from the following localities were examined. United States. **California**. *Inyo Co.*: Argus Mountains (1, CASC). *Los Angeles Co.*: Long Beach (1, MCZC); Pomona (5, MCZC). *San Bernardino Co.*: 2 mi. NE Baldwin Lake, ("on Senecio", 1, CWOB). *San Diego Co.*: (6, CASC); 2 mi. S Pine Valley, (1, CWOB). *San Luis Obispo Co.*: Dune Lakes, 6 mi. S Oceano, (2, CWOB). *Santa Clara Co.*: Arroyo Mocho, Mount Hamilton (1, CWOB). *Shasta Co.*: 5 mi. N Delta (1, CMNC). *Tulare Co.*: ("on cotton", 1, CDAE).

Plant associations. The only indications of plant associations of *E. mimicus* are labels designating collection of adults on *Senecio* (Asteraceae) and on cotton. The *Senecio* record may represent a true host association, but the latter one almost certainly does not.



Figs. 34-45. *Epimechus* spp., aedeagus (35 and 37 lateral views; all others dorsal views). 34) *E. curvipes*, Williams Lake, Idaho. 35) *E. curvipes*, Williams Lake, Idaho. 36) *E. flavirostris*, Tucson, Arizona. 37) *E. flavirostris*, Tucson, Arizona. 38) *E. mimicus*, Dune Lakes, California. 39) *E. adspersus*, Cuyama, California. 40) *E. mobilis*, Hurkey Creek, California. 41) *E. molina*, holotype. 42) *E. nevadicus*, Weed, California. 43) *E. combustus*, holotype. 44) *E. signum*, holotype. 45) *E. hesperius*, holotype.

Remarks. Some specimens of *E. mimicus* have small patches of dense pallid scales on slightly depressed sections of interstria 4 and in some, pallid scales are also present on adjacent portions of interstriae 3 and 5. These scales and depressions are lacking in other specimens (Figs. 7, 8), including the holotype. The profemur is minutely toothed in some specimens but unarmed in the holotype and others.

Epimechus mimicus closely resembles and has been confused with *Magdalinops falli* Clark and Burke (2001). Both species have dark integument broadly exposed between sparse, narrow scales, the rostrum long and slender, strongly curved, slightly more strongly so basally, and the antennal funiculus 7-segmented. The *Magdalinops* is larger, however, has the rostrum broader at the base and more narrowed apically in lateral view, and lacks the apicomedian prominence of the median lobe of the aedeagus and the endophallic transfer apparatus exhibited by *E. mimicus*. Further, the tarsal claws of *M. falli* are longer and more widely divergent and have a small, acute basal prominence or slender tooth lacking in *E. mimicus*.

Hatch's (1971:345) brief description of *E. mimicus* (as *E. mimicrus*) was apparently based on a specimen in the Hatch Collection (OSUO) with the label [Epimechus/ nr. mimicrus (sic.)/ Dietz/ Burke-1968]. The description, placed opposite that of *E. alutaceus* Hatch in a key, attributed to *E. mimicus* elytral vestiture "of inconspicuous decumbent setae, nearly colorless, sparse, usually separated by their own width or more and interspersed with or replaced by vestiture portions of which are so narrow as virtually to be setae", whereas *E. alutaceus* was described as having the vestiture "squamose, dense on undenuded areas where it is separated by the width of the scales or less, without setae among the scales." This specimen does in fact differ from the type of *E. alutaceus* in these characters and in addition has broader elytra and a stouter, more densely punctate rostrum. These features vary in specimens of *E. alutaceus*, however, and Hatch's *E. mimicus* is almost certainly conspecific with the type of that species. As discussed above, *E. alutaceus* belongs in *Magdalinops*.

Epimechus adspersus Dietz

Figs. 9, 10, 26, 39

Epimechus adspersus Dietz 1891:260. Lectotype (here designated). United States. **California**. [Cal] [W. G. Dietz/ Coll.] [Type/ 2012] [Epimechus/ adspersus/ Dietz] [LECTOTYPE/ Epimechus/ adspersus/ Dtz./ des. H. R. Burke] (male, MCZC).

Description. Integument black, broadly exposed between mostly non-imbricated, pallid, cretaceous scales. *Length.*: 1.8-2.1mm. *Width*: 0.8-0.9mm. *Head*: vertex punctate, integument narrowly exposed between broad, non-imbricated, cretaceous scales. *Rostrum*: distinctly, evenly curved from base to apex; proximal portion rugose, with sparse, cretaceous scales; distal portion rugulose, punctate, glabrous. *Antenna*: funiculus with 6 segments. *Prothorax*: pronotum densely, coarsely punctate; dorsum with broad cretaceous scales laterally and medially, intermixed among narrower, fuscous scales lateromedially. *Scutellum*: slightly prominent, with dense cretaceous scales. *Elytra*: subparallel-sided in dorsal view, flattened on disc, rounded posteriorly in lateral view; striae distinctly impressed, each puncture with one minute, inconspicuous setae; interstriae subequal in width and slight convexity, with admixture of broad, cretaceous scales and narrower, fuscous scales; sutural interstriae not prominent. *Pygidium*: punctate. *Abdomen*: sterna 1-4 with narrow, pallid scales laterally, with sparser, narrower scales medially; sternum 5 not impressed medially. *Legs* (Fig. 26): profemur moderately stout, unarmed; protibia narrow, straight, with broad inner-marginal prominence in basal 2\3, without preapical prominence; protibial uncus short, slender, acute; metatibia of male with outer margin straight, inner margin broadly prominent in basal 2/3, with slight preapical convexity; metatibial mucro uncinate, acute, oblique in lateral view; metatibia of female slender, slightly expanded at extreme apex in lateral view, with inner margin slightly prominent in basal 1/2, slightly concave in apical 1/2, outer margin straight; metatibial mucro short, oblique, acute. *Genitalia* (Fig. 39): median lobe of aedeagus slightly constricted subapically then abruptly narrowed and more gradually narrowed to bluntly rounded apex in dorsal view; endophallus minutely denticulate.

Specimens examined. In addition to the lectotype from California, 18 specimens of *E. adspersus* from the following localities were examined. United States. **California**. *Monterey Co.*: Carmel (6, CASC; "*Bigelovia*", 4, CASC; "greasewood", 3, CASC; "wax myrtle", 1, CASC); Monterey (1, MCZC). *Santa Barbara Co.*: Cuyama ("ex. *Gutierrezia californica* (DC). T&G (= *G. bracteata* Abrams) Sn Joaquin matchweed, 2, CDAE); Guadalupe (1, TAMU).

Plant associations. Label data indicate that some adults of *E. adspersus* were collected on *Gutierrezia californica* (DC). T&G. (Asteraceae) and the other plants listed above.

Remarks. The dark integument, broadly exposed on the pronotum and elytra between narrow, pallid

scales, give *E. adspersus* a superficial resemblence to *E. mimicus*, another species from southern California. It is distinguished from that species by the 6 segmented, rather than 7 segmented antennal funiculus and lacks the apicomedian prominence of the median lobe of the aedeagus and endophallic transfer apparatus of *E. mimicus* (cf. Figs. 38, 39).

Epimechus mobilis Fall

Figs. 11, 12, 27, 40

Epimechus mobilis Fall 1913:62-63. Holotype. United States. **California**. *Los Angeles Co.*: [Pom Cal/ Mts. 4.30.92] [male] [TYPE./ mobilis/ Fall.] [M.C.Z./ Type/ 25185] [[H. C. FALL/ COLLECTION] (male, MCZC).

Description. Integument black, mostly concealed by broad, imbricated scales. *Length*.: 1.8-2.6mm. *Width*: 0.9-1.3mm. *Head*: with dense, elongate, apically rounded scales on vertex, broader, more broadly imbricated scales on frons and beneath. *Rostrum*: evenly curved; proximal portion rugose-punctate; proximal portion with dense imbricated scales at extreme base replaced toward antennal insertions by narrower, sparser scales; distal portion glabrous. *Antenna*: funiculus with 6 segments. *Prothorax*: pronotum with dense, rounded, broadly imbricated scales; pallid cretaceous to fulvous scales predominant medially and laterally on dorsum, anterolateral portions of dorsum with slightly to much narrower, darker fulvous to ferruginous scales; darker scales also present on pleuron. *Scutellum*: slightly prominent, with dense cretaceous scales. *Elytra*: in dorsal view subparallel-sided, rounded apically; striae narrow, punctures with minute, inconspicuous setae; interstriae with rounded, densely imbricated, multiseriate scales; each interstria also with diffuse median row of slightly to distinctly narrower scales; pallid cretaceous scales dense basally on sutural interstriae and interstria 6 and on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among admixture of darker, fulvous scales and slightly narrower, ferruginous scales; sutural interstriae not prominent. *Pygidium*: with narrow, setiform scales. *Abdomen*: sterna 1-4 with dense, imbricated, pallid scales laterally, with narrower scales medially; sternum 5 convex, with elongate, setiform scales medially. *Legs* (Fig. 27): profemur minutely toothed; protibia with inner margin slightly prominent medially, broadly concave subapically, with slight preapical prominence; protibial uncus slender; metatibia of male with inner margin distinctly prominent medially, slightly concave subapically, outer margin straight; metatibial mucro short, straight, acute; metatibia of female with inner margin slightly prominent in basal 2/3, slightly concave in apical 1/3, outer margin straight; metatibial mucro slender, curved, acute, oblique. *Genitalia* (Fig. 40): median lobe of aedeagus gradually narrowed in apical 3/4, broadly rounded at slightly asymetrical apex in dorsal view, apex curved in lateral view; endophallus minutely denticulate, without slender sclerite.

Specimens examined. In addition to the holotype from California, 27 specimens of *E. mobilis* from the following localities were examined. United States. *Los Angeles Co.*: **California**. (4, MCZC); Camp Baldy (1, CUIC; "Compositae", 2, CUIC); Claremont (3, MCZC); Pomona (5, MCZC). *Riverside Co.*: Hurkey Creek, San Jacinto Mountains (3, CASC). *San Bernardino Co.*: 3 mi. NW Cajon (1, CWOB); Etiwanda (2, AMNH); Mill Creek (1, CASC). *San Diego Co.*: (1, MCZC); Oak Grove (1, CUIC); 2 mi. S Pine Valley (3, CWOB).

Plant associations. Label data indicate that some adults of *E. mobilis* were collected on "Compositae."

Remarks. *Epimechus mobilis* differs from *E. adspersus* by the denser vestiture and longer rostrum (cf. Figs. 9, 11), but the male genitalia and hind tibia of the two are virtually indistinguishable (cf. Figs. 39, 40).

Epimechus nevadicus Dietz

Figs. 13, 14, 29, 42

Epimechus nevadicus Dietz 1891:260-261. Lectotype (here designated). United States. **Nevada**. [Nev.] [W. G. Dietz/ Coll.] [Type/ 2013] [Epimechus/ nevadicus/ Dietz] [LECTOTYPE/ Epimechus/ nevadicus/ Dtz./ des. H. R. Burke] (male, MCZC). Paralectotype (1). United States. **Nevada**. [Nev.] [W. G. Dietz/ Coll.] [Type/ 2013] [PARALECTOTYPE/ Epimechus/ nevadicus/ Dtz./ des. H. R. Burke] (male, MCZC).

Description. Integument black, concealed or narrowly visible between mostly imbricated scales. *Length*.: 2.1-2.5mm. *Width*: 0.9- 1.2mm. *Head*: with dense, rounded scales on vertex, with broader, imbricated scales on frons and beneath. *Rostrum*: evenly curved; with dense, imbricated scales at extreme base replaced toward antennal insertions by narrower, sparser scales; proximal portion shal-

lowly sulcate; distal portion glabrous. *Antenna*: funiculus with 6 segments. *Prothorax*: pronotum with rounded scales; broad, cinereous, slightly imbricated scales predominant medially and laterally on dorsum, replaced on anterolateral portions of dorsum by slightly narrower, slightly infuscate scales; fuscous scales also present on pleuron. *Elytra*: narrow, slightly widened posteriorly, rounded apically; striae narrow, punctures with minute, inconspicuous setae; interstriae with rounded, slightly to broadly imbricated, multiseriate, recumbent scales; some interstria also with a few narrower, darker scales; pallid scales dense basally on sutural interstriae and interstria 6 and on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among slightly darker infuscate scales; sutural interstriae slightly prominent, especially at apices. *Pygidium*: with slender, cinereous scales. *Abdomen*: sterna 1-4 with dense, imbricated, pallid scales laterally, with narrower scales medially; sternum 5 convex, with elongate, setiform scales medially. *Legs* (Fig. 29): profemur minutely toothed; protibia with inner margin prominent in basal 1/2, concave in apical 1/2; protibial uncus slender; metatibia of male with inner margin prominent in basal 1/2, broadly concave in apical 1/2, outer margin straight; metatibial mucro straight, oblique in lateral view, excavated; metatibia of female with inner margin slightly prominent in basal 2/3, slightly concave in apical 1/3, outer margin straight; metatibial mucro slender, curved, acute, oblique. *Genitalia* (Fig. 42): median lobe of aedeagus broad, narrowed to bluntly rounded apex in dorsal view, broadly, evenly curved in lateral view; endophallus unarmed.

Specimens examined. In addition to the lectotype and paralectotype from Nevada, 92 specimens of *E. nevadicus* from the following localities were examined. United States. **California**. *Alpine Co.*: 10 mi. SE Markleeville (2, CWOB). *Inyo Co.*: 1 mi. W Tom's Place (1, CWOB). *Lassen Co.*: 37 km. N Susanville (1, CASC). *Mono Co.*: 37 mi. N Bishop (1, CISC); 7.5 mi. W Bridgeport (6900', 1, CWOB); 6 mi. W Lee Yinimo (1, CWOB). *Shasta Co.*: Lassen Park (2, MCZC); Old Station (13, CWOB). *Siskiyou Co.*: Lava Beds National Monument (5, AMNH); McCloud (4200', "*Haplopappus bloomeri*", 96, CWOB); 30 mi. N Weed (28, CWOB). **Nevada**. *Storey Co.*: Geiger Summit (2, CDAE). *Washoe Co.*: Reno (1, MCZC). *White Pine Co.*: Snake Range, Wheeler Peak Trail (1, CDAE). **Oregon**. *Deschutes Co.*: 8 mi. W Bend (3, AMNH). *Jackson Co.*: Siskiyou (1, OSUO). *Klamath Co.*: 8 mi. S Chemult ("sweeping *Eriogonum*", 1, AMNH); Fort Klamath (7, AMNH); 5 mi. N Fort Klamath (5, OSUO); Klamath Falls (2, AMNH); 8 mi. N Klamath Falls ("sweeping rabbit brush", 1, TAMU); Pothole ("*Haplopappus*", 12, AMNH; 1, OSUO).

Plant associations. Label data indicate that some adults of *E. nevadicus* were collected on *Haplopappus bloomeri* A. Gray and "rabbit brush" (Asteraceae).

Remarks. Like *E. mobilis*, *E. nevadicus* is distinguished from *E. adspersus* by the denser vestiture of broader scales. In addition, *E. nevadicus* is broader and stouter in body form and has the median lobe of the aedeagus broader than that in either of those two species(cf. Figs. 39, 40, 42). The rostrum is stouter and more densely punctate in *E. nevadicus* than in *E. mobilis* and *E. adspersus*. *Epimechus nevadicus* appears to be widely distributed on the eastern slope of the Sierra Nevada into the Great Basin region, whereas *E. mobilis* and *E. adspersus* are known only from southern California west of the Sierra Nevada.

Epimechus combustus, new species

Figs. 15, 16, 30, 43

Type series. Holotype. United States. **New Mexico**. *Catron Co.*: [23 mi. E. Quemado,/ Catron Co., N. Mex./ VIII-27-1965. H. R./ Burke & J. R. Meyer] (male, TAMU). Paratypes (49). United States. **Arizona**. [Ari.] [W. G. Dietz/ Coll.] (1 female, MCZC); [Ariz] (1 female, USNM); [Walnut/ Ariz.] [Anthonomus/ n.sp. 3/5 4/ Walnut A.T.] (1 male, USNM); [Walnut/ Ariz.] (1 female, USNM). *Coconino Co.*: [USA Arizona Coconino Co./ Moenkapi Dune Area/ 2.5 mi. S. Tuba City/ 4859' 20.VII.82/ R. S. Anderson] (8 males, 5 females, CMNC). **New Mexico**. [Wickham./ Luna, N. Mex] (1 female, USNM). *Catron Co.*: [23 mi. E. Quemado,/ Catron Co., N. Mex./ VIII-27-1965. H. R./ Burke & J. R. Meyer] (5 males, 1 female, TAMU). *Lincoln Co.*: [N. MEXICO: Lincoln Co/ Sierra Blanca 11,600/ Alpine Aug. 19, 1970/ J. R. and M. H. Sweet] (1 female, CWOB). *Socorro Co.*: [NEW MEXICO: / Socorro Co./ 1 mi. w. Magdalena/ August 14, 1982/ J. C. Schaffner] (2 females, TAMU). *Sandoval Co.*: [Bandelier Natl./ Monument, NM/ June 23, 1964/ H. R. Burke] (7 males, 3 females, TAMU). **Utah**. *Garfield Co.*: [Lonesome Beaver,/ 7500' Henry Mts.,/ Utah. VII-17-1968/ A. T. Howden] (1 female, HAHC); [Lonesome Beaver,/

7500' Henry Mts.,/ Utah. VII-23-1968/ A. T. Howden] (2 males, 2 females, HAHC); [Lonesome Beaver,/ 7500' Henry Mts.,/ Utah. VII-25-1968/ A. T. Howden] (1 male, 1 female, HAHC). *Kane Co.*: [USA UTAH Kane Co./ 2 mi. E. Mt. Carmel/ Junction 16.V.83/ R. Anderson - sweep] (1 male, CMNC); [4 mi. SE Mt./ Carmel Jct.,/ Kane Co. UTAH/ IX-1-1962 6500'] [C. W. O'Brien/ Collector] (4 females, CWOB).

Description. Integument black, mostly concealed beneath broadly imbricated scales. *Length.*: 1.5-2.9mm. *Width*: 0.8-1.0mm. *Head*: with dense, rounded scales on vertex, with broader, imbricated scales on frons and beneath. *Rostrum*: evenly curved; proximal portion rugose-punctate, with dense, imbricated scales at extreme base, otherwise glabrous; distal portion glabrous. *Antenna*: funiculus with 6 segments. *Prothorax*: pronotum with broad, rounded, densely imbricated, cinereous scales; slightly narrower, infuscate scales present on anterolateral portions of dorsum and on pleuron. *Elytra*: not widened posteriorly, slightly extended apically in dorsal view, elevated and convex posteriorly in lateral view; sutural interstriae prominent in apical 1/3; striae narrow, punctures with minute, inconspicuous setae; interstriae with densely imbricated, rounded, recumbent, cinereous scales; slightly narrower, infuscate scales present in diffuse median rows. *Pygidium*: with slender, cinereous scales. *Abdomen*: sterna 1-4 with dense, imbricated, pallid scales laterally, with narrower scales medially; sternum 5 convex, with elongate, setiform scales medially. *Legs* (Fig. 30): profemur unarmed; protibia with inner margin slightly prominent medially; protibial uncus short, stout; metatibia of male straight on outer margin, with inner margin slightly sinuate; metatibial mucro short, nearly straight, extended obliquely to long axis of tibia in lateral view; metatibia of female with inner margin slightly prominent in basal 2/3, slightly concave in apical 1/3, outer margin straight; metatibial mucro conical, curved, acute, oblique. *Genitalia* (Fig. 43): median lobe of aedeagus broad, slightly constricted subapically and broadly rounded apically in dorsal view; endophallus unarmed.

Specimens examined. *Epimechus combustus* is known only from the type series.

Plant associations. Unknown.

Remarks. *Epimechus combustus* appears to replace *E. nevadicus* east of the Great Basin region in Arizona, Utah, Colorado and New Mexico. It is distinguished from *E. nevadicus* by the denser, more broadly imbricated pronotal and elytral vestiture (cf. Figs. 13-16), the narrower, more shallowly punctate, smoother, more shining rostrum (cf. Figs. 13, 15) and the subparallel-sided rather than posteriorly widened elytra (cf. Figs. 14, 16). In addition, the median lobe of the aedeagus is slightly constricted subapically and broadly rounded at the apex in dorsal view in *E. combustus* (Fig. 43), whereas *E. nevadicus* has the apical portion of the median lobe of the aedeagus more gradually narrowed to a more narrowly rounded apex (Fig. 42).

E. combustus exhibits variation in squamosity. Examined specimens from Arizona and New Mexico have dense, broadly imbricated scales, whereas the specimens from Utah have smaller, scarcely imbricated scales. The usual variation in the proportion of pallid to dark scales is also evident, but pallid scales are by far the most predominant. The name of this species, Latin for "burned up", is suggested by the name of the type locality, Spanish for "burned."

Epimechus signum, new species

Figs. 17, 18, 31, 44

Type series. Holotype. United States. **Arizona**. [ARIZ: Coconino/ Co., Flagstaff, 14 / mi. W. VIII-14-63] [J. Doyen/ Collector] (male, CWOB). Paratypes (219). Canada. **Saskatchewan**. [CANADA, SASK, Wey-/ burn, 23 km E. ex/ sweeps 28 VI 1982/ I. Askevold coll.] (2 males, CMNC). Paratypes. United States. **Arizona**. *Coconino Co.*: 32 Mi. E. Cameron/ Coconino Co. ARIZ./ VII-19-1957/ C. W. O'BRIEN] (2 males, 2 females, CWOB); [Flagstaff/ Ariz. 8/1/33] [Collector/ E. Maehler] [K L Maehler/ Collection] (1 male, CASC); [ARIZ: Coconino/ Co., Flagstaff, 14 / mi. W. VIII-14-63] [J. Doyen/ Collector] (48 males, 27 females, CWOB); [Ariz. 8 mi. E./ Flagstaff/ 6800' Coco./ Co. IX-9-1964] [Collectors: L&/ C. W. O'Brien] (7 males, 9 females, CWOB); [ARIZ. 11 mi./ E. Flagstaff/ XI-2-1969/ C. W. O'Brien] (1 male, CWOB); [5 mi. S. Flagstaff/ Coconino Co./ ARIZ. IX-5-1962/ C. W. O'Brien (3 males, 1 female, CWOB); [Ft. Valley, ARIZ./Sept. 4, 1959/ W L/ Nutting] (1 female, UAIC); [Kaibab Lake N./ For. Cp. 7000'/ Ariz. Coconino/ Co. IX-7-1964] [Collectors: L&/ C. W. O'Brien] (3 males, 3 females, CWOB); [USA Ariz. Coconino/ Co., Coconino Nat. For., 2 km. w. Sunset/ Crater Nat. Mon./ 2100 m. 23-24.VII./ 1982 J. E. O'Hara (1 male, 1 female, CMNC); [Williams/ Ari/ July 3-5'04] [H. C. FALL/ COLLEC-

TION] 1 male, MCZC). *Gila Co.*: [Gila Riv. Valley/ San Carlos. Ariz/ D. K. Duncan] [Sept] [H. C. FALL/ COLLECTION] (2 males, MCZC); [Gila Valley/ Graham Co. Ariz/ 8.1.24/ D. K. Duncan] [Blaisdell/ Collection] [ANTHONOMUS/ sp./ (subg. Cnemocyllus)/ spec. damaged/ det. HR Burke '68] (1 female, CASC). **Colorado**. *Bent Co.*: Las Animas, Colo./ Aug. 6, 1925/ C. J. Drake] [9] [Epimechus/ sp./ Fall 1932] (1, BYUC). *Chaffee Co.*: [Poncha Springs/ Colo. July 23, 1965/ H. R. Burke collr.] (4 males, 8 females, TAMU). *Eagle Co.*: Wolcott, Colo./ El. 6975 ft./ Aug. 1938] [Vasco M. Tanner/ Collector] (10, BYUC). *El Paso Co.*: [Colo Spgs/ VI Col] [Coll Hubbard/ & Schwarz] (1 female, USNM); [Colo. Spr. Col./ H. F. Wickham] [June 15-30, '96./ 6,000-7,000 ft.] (2 males, USNM); [Colo. Spr. Col./ H. F. Wickham/ June 15-30, '96./ 6,000-7,000 ft.] (1 male, USNM). *Gunnison Co.*: [USA Colorado/ Gunnison Co./ 9.6 km. e. Gunnison/ Hwy. 50 4.VI.1981/ M. Kaulbars] (3 males, 4 females, CMNC). *Larimer Co.*: [Colo. 23 mi./ W. Ft. Collins/ Larimer Co./ 8-26-1966] [Collectors: L&/ C. W. O'Brien] (10 males, 4 females, CWOB); [COLO: Larimer Co./ Poudre Canyon/ June 10-14, 1968/ W. E. Clark] (1 male, TAMU). **New Mexico**. *Catron Co.*: [Aragon, N. M./ GN-119-58/ 7-15-58-12860/ Rabbit Brush] (2 females, USNM); [Luna/ N.M.] [Liebeck/ Collection] [E./ nanulus/ Fall] (1 female, MCZC); [Luna/ N.M.] [Liebeck/ Collection] (3 males, MCZC); [NEW MEXICO:/ Catron Co./ 18 mi. e. Quemado/ August 15, 1982/ J. C. Schaffner] (8 males, 5 female, TAMU); [23 mi. E. Quemado,/ Catron Co., N. Mex./ VIII-27-1965, H. R./ Burke & J. B. Meyer] (7 males, 5 females, TAMU). *Socorro Co.*: 5 mi. w. Magdalena,/ N. M. July 12, 1967/ H. R. Burke (3 males, 5 females, TAMU); 40 mi. NW Magdalena,/ Socorro Co., New Mex./ VIII-27-1965, H. R./ Burke & J. R. Meyer] (1 female, TAMU). **Texas**. *Brewster Co.*: [Brewster Co./ Texas/ May 4, 1927] [J. O. Martin/ Collector] (1 male, CASC). *Culberson Co.*: [2 miles northwest/ Pine Springs, TEX./ Culberson County/ 31° 54'N, 104° 47' W/ August 14, 1965/ J. C. Schaffner] (1 female, TAMU). **Utah**. *Kane Co.*: 4 mi. west Alton,/ Utah, July 15, 1967/ H. R. Burke] (7 males, 4 females, TAMU); [USA: Utah/ Kanab/ 6 Sept. 1989/ N. M. Downie (1 female, CWOB); [2 mi. n. Orderville,/ Utah, July 15, 1967/ H. R. Burke] (1 female, TAMU). *Sevier Co.*: [4 mi. se. Monroe,/ Utah, July 18, 1967/ H. R. Burke] (1 female, TAMU).

Description. Integument black, concealed or narrowly visible between mostly imbricated scales. *Length.*: 1.5-1.8mm. *Width*: 0.6-0.8mm. *Head*: with dense, rounded scales on vertex, with broader, imbricated scales on frons and beneath. *Rostrum*: evenly curved or distal portion slightly less curved; proximal portion rugose-punctate, with dense, imbricated scales at extreme base, otherwise glabrous; distal portion glabrous. *Antenna*: funiculus with 6 segments. *Prothorax*: pronotum with broad, imbricated, cinereus scales; slightly narrower, infuscate scales present on anterolateral portions of dorsum and on pleuron. *Elytra*: narrow, in dorsal view slightly widened posteriorly, rounded apically; flattened on disc, slightly more rounded posteriorly in lateral view; sutural interstriae not prominent; striae narrow, punctures with minute, inconspicuous setae; interstriae with rounded, slightly to broadly imbricated, multiseriate, recumbent, cinereous to fuscocinereous scales; slightly narrower, slightly darker scales variably present in diffuse median rows; broader, more pallid scales dense basally on sutural interstriae, on interstria 6 and on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among darker scales. *Pygidium*: with slender, cinereous scales. *Abdomen*: sterna 1-4 with dense, imbricated, pallid scales laterally, with narrower scales medially; sternum 5 convex, with elongate, setiform scales medially. *Legs* (Fig. 31): profemur unarmed; protibia with inner margin prominent in basal 1/2, concave in apical 1/2; protibial uncus slender; metatibia of male nearly straight on inner and outer margins; metatibial mucro uncinate, acute, extended nearly parallel to long axis of tibia in lateral view; metatibia of female with inner margin slightly prominent in basal 2/3, slightly concave in apical 1/3, outer margin straight; metatibial mucro uncinate, acute, oblique. *Genitalia* (Fig. 44): median lobe of aedeagus broad, sharply narrowed to rounded apex in dorsal view; endophallus unarmed.

Specimens examined. *Epimechus signum* is known from a large number of specimens from widely separated localities in Arizona, New Mexico, Saskatchewan, Texas and Utah.

Plant associations. Unknown.

Remarks. *Epimechus signum* is smaller, narrower, and more flattened in form than *E. combustus* (cf. Figs. 15-18) and has the metatibial uncus acute, extended nearly parallel to long axis of tibia rather than conical, nearly straight, and oblique to the long axis of tibia in lateral view (cf. Figs. 30, 31). It

is further distinguished from *E. combustus* in lacking the elevation of the apical 1/3 of the sutural elytral interstriae and in having the median lobe of the aedeagus more abruptly narrowed and more extended apically in dorsal view (cf. Figs. 43, 44). The name of this species, a Latin noun meaning a sign, mark or flag, is suggested by the name of the type locality.

Epimechus molina, new species

Figs. 19, 20, 28, 41

Type series. Holotype. United States. **Arizona**. *Pima Co.*: [Molino Basin/ Sta. Catalino (sic.)/ Mts. ARIZ./ IX-16-1964] [Collectors: L &/ C. W. O'Brien] (male, CWOB). Paratypes (5). Mexico. **Baja California Norte**. [MEX: Baja Cal. (Nor.)/ 23 mi. S. El Rosario/ on Hwy 1, IX-22-88/ Coll. E. G. Riley (2 females, TAMU). **Arizona**. *Pima Co.*: [Molino Basin/ Sta. Catalino (sic.)/ Mts. ARIZ./ IX-16-1964] [Collectors: L &/ C. W. O'Brien] [PHOTO] (1 female, CWOB); [Molino Basin/ Sta. Catalino (sic.)/ Mts. ARIZ./ IX-16-1964] [Collectors: L &/ C. W. O'Brien] (1 male, 1 female, CWOB).

Description. Integument black, narrowly visible between mostly imbricated scales. *Length.*: 1.7-1.8mm. *Width*: 0.8-0.9mm. *Head*: with dense, rounded scales on vertex, broader, more pallid, imbricated scales on frons and beneath. *Rostrum*: evenly curved; proximal portion rugose, glabrous except for dense, imbricated scales at extrene base; distal portion glabrous. *Antenna*: funiculus with 6 segments. *Prothorax*: pronotum with dense, rounded scales; broad, imbricated, cretaceous scales predominant; slightly narrower, fuscous scales present dorsolaterally and on pleuron. *Elytra*: broad, slightly rounded laterally, more strongly rounded apically; striae narrow, punctures with minute, inconspicuous setae; interstriae with apically rounded, sligltly imbricated, multiseriate, recumbent scales and with diffuse median row of slightly narrower scales; pallid cretaceous scales dense basally on sutural interstriae and interstria 6 and on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among darker fuscous scales; sutural interstriae slightly prominent. *Pygidium*: evenly convex. *Abdomen*: sterna 1-4 with dense, imbricated, pallid scales laterally, with sparser, narrower scales medially; sternum 5 convex, with elongate, setiform scales medially. *Legs* (Figs. 28): profemur minutely toothed; protibia with inner margin prominent in basal 1/2, concave in apical 1/2; protibial uncus slender; metatibia of male nearly straight on inner and outer margins; metatibial mucro short, slightly uncinate, oblique in lateral view; metatibia of female with inner margin slightly prominent in basal 2/3, slightly concave in apical 1/3, outer margin straight; metatibial mucro slender, curved, acute, oblique. *Genitalia* (Fig. 41): median lobe of aedeagus broad, constricted and narrowed to bluntly rounded apex in dorsal view; endophallus unarmed.

Specimens examined. *Epimechus molina* is known only from the type series collected in Arizona and Baja California.

Plant associations. Unknown.

Remarks. *Epimechus molina* is distinguished from *E. signum* by the distinctly stouter, more rounded form, and longer, more slender rostrum (cf. Figs. 19-22). In addition, the scales on the pronotum and elytra are somewhat less broadly imbricated in *E. molina* which also has the apical mucro on the metatibia more conical and more oblique to the long axis of the tibia (cf. Figs. 42, 43). The median lobe of the aedeagus is similar in the two species (Figs. 61, 62). The name of this species, a Latin noun meaning millstone or grindstone, is suggested by the name of the type locality.

Epimechus hesperius, new species

Figs. 21, 22, 32, 45

Type series. Holotype. United States. **Colorado**. *Weld Co.*: [COLO. Weld Co./ 3 mi. N. Rockport/ 5794' VII-23-1971/ O'Briens & Marshall] (male, CWOB). Paratypes (156). Mexico. **Coahuila**. [MEXICO, Coahuila/ Can. de la Carbonera/ nr. Saltillo VIII-21-65/ Eric M. Fisher, collr.] [E. L. Sleeper/ Collection] (1 male, 4 females, ELSC); [MEXICO: Coahuila/ 12.4 mi S Saltillo/ 4-VII-1985, J. Wooley/ G. Zolnerowich 85/023] (1 female, TAMU); [MEXICO, Coah., Hwy./ 57, 19 mi. SE Saltillo,/ 7200' 12 Sept. 1982 C. & L. O'Brien & G. Wibmer] (1 male, CWOB). **Guanajuato**. [MEXICO: Guanajuato/ 2 mi. W. Dolores Hidalgo/ July 5, 1985/ Wooley & Zolnerowich/ 85/026] (3 males, 2 females, CMNC). **Nuevo León**. [Chipinque Mesa, 5400'/ nr. Monterrey, N. L./ Mex. VII.22, 1963/ A. T. Howden] (1 female, HAHC); [MEX: N. Leon, 3750 m/ Galeana, Cerro Potosi/ 4.vi.83, M. Kaulbars] (5 males, CMNC); [MEXICO Nuevo Leon/ Cerro Potosi/ nr. Galeana 7700'/ 4.vi.83 R. Anderson/ dry oak forest] (1 male,

5 females, TAMU); [MEXICO: Nuevo Leon,/ 3.7 miles west of/ Iturbide/ July 24, 1976/ Peigler, Gruetzmacher, R&M Murray, Schaffner] (1 female, TAMU); [MEXICO, N.L., near/ Laguna de Sanchez/ (Santiago) 26 Feb./ 1977 A. N. Garcia A. (6 males, 12 females, CWOB); [MEX., N. L., 25 mi. E./ San Roberto/ VIII-15-1971 C&L/ O'Brien & Marshall] (1 male, CWOB); [MEXICO., Hwy 57/ 46 mi. NW. San Roberto/ 6800' 12 Dept. 1982 C. &/ L. O'Brien & G. Wibmer] (1 male, CWOB). **Arizona**. *Cochise Co.*: [Douglas,/ 8/1/36 Ar./ W. W. Jones] [Presented by/ W. W. Jones] [50] (1 male, CISC). *Coconino Co.*: [Kaibab Lake N./ For. Cp. 7000'/ Ariz. Coconino/ Co. IX-7-1964] [Collectors: L&/ C. W. O'Brien] (1 male, CWOB); [Ariz. Midgely/ Bridge, Oak/ Ck. Cyn. Coco./ Co. IX-12-1964] [Collectors: L&/ C. W. O'Brien] (1 female, CWOB); [Mormon Lake, ARIZ/ 7000' Jul.8-15/ 1956 F G Werner] (1 male, UAIC); [1 mi W of Sedona/ Coconino Co. Ariz/ 2 August 1962] [*Gutierezia/ sarothrae*] [S. L. Wood &/ J. B. Karen] (1 female, BYUC). [4 mi. SW Sedona/ Coconino Co. Ariz./ July 31, 1960] [S. L. Wood/ J. B. Karren/ H. Shurtleff] [*Gutierrezia/ sarothrae* 4] (1 male, TAMU); [USA Arizona Coconino Co./ Ten X Cpgd. 1 mi. S./ Tusayan 7000' at night/ on *Artemesia*, *Cowania*, *Xanthocephalus* 20.VIII.82/ R. S. Anderson] (2 females, 1 female, CMNC). *Gila Co.*: [Payson Ariz./ IX-2-1927] [1069] (1 male, INHS). *Santa Cruz Co.*: [Madera Cn. Sta. Rita/ Mts. ARIZ. Sep.23,/ 1956 F G Werner sw./ *Aplopappus graci-/ lis* & *Eriogonum* sp.] (1 male, UAIC). *Yavapai Co.*: [Oak Ck. Cañon/ Ariz. VIII.1:36/ Bryant 97.] [Owen Bryant/ Collection 1956] (12, BYUC). **California**. *San Bernardino Co.*: [Santa Ana R./ Cal. Aug 22 '52] [S. Bernardino/ Mts 6400'] [on *Gutierrezia/ californica*] [Timberlake/ Coll.] (1 male, CWOB); [Santa Ana R./ Cal. Aug 22 '52] [S. Bernardino/ Mts 6400'] [on *Gutierrezia/ californica*] [Timberlake/ Coll.] [*Epimechus/* sp./ det. C. W. O'Brien 1995] (1 male, CWOB); [Santa Ana R./ Cal. Aug 23 '52] [S. Bernardino/ Mts 6400'] [on *Gutierrezia/ californica*] [Timberlake/ Coll.] (2 males, 2 females, CWOB). **Colorado**. *Boulder Co.*: [Boulder, Colo/ 6-30-1910] [Bred/ *Chrysothamnus*] [E. Bethel/ Coll] (1 male, USNM). *El Paso Co.*: [Col. Springs/ Col.] [Van Dyke/ Collection] (1 male, CASC). *Larimer Co.*: [COLO. Larimer Co./ 25 mi. W. Poudre Park/ 7100' VII-24-1971/ O'Briens & Marshall] (1 female, CWOB); [COLORADO/ Poudre Canyon/ June 13 1968/ W. E. Clark] (1 male, BYUC). *Montezuma Co.*: [COLORADO: 4 miles/ east Cortez/ August 16, 1973/ J. C. Schaffner] (1 male, TAMU). *Weld Co.*: [COLO. Weld Co. IBP/ Pawnee Grasslands/ 8 mi. N. Nunn/ VII-22-1971 night] [C. W. O'Brien/ G. B. Marshall] (4 males, 2 females, CWOB); [COLO. Weld Co./ 3 mi. N. Rockport/ 5794' VII-22-1971/ O'Briens & Marshall] (10 males, 1 female, CWOB); [COLO. Weld Co./ 3 mi. N. Rockport/ 5794' VII-23-1971/ O'Briens & Marshall] (2 males, 1 female, CWOB); [COLO. Weld Co./ 3 mi. N. Rockport/ 5794' VII-23-1971/ O'Briens & Marshall] [at/ night] (3 males, 1 female, CWOB). **Idaho**. *Cassia Co.*: [2 mi. W. Elba/ Cassia Co./ IDAHO/ VIII-28-1963] [C. W. O'Brien/ Collector] (1 male, CWOB); [2 mi. W. Elba/ Cassia Co./ IDAHO/ VIII-28-1963] [L. B. O'Brien/ Collector] (1 female, CWOB). *Fremont Co*: [USA. ID: Fremont Co./ 19 km NW. St. Anthony/ 25.VI.1992 1500 m/ H. & A. Howden dunes] (2 males, 4 females, HAHC). **Nevada**. *Clark Co.*: [7500', Kyle Cyn./ Chaston Mts. Nev./ Clark Co. VII-5-65] [C. D. Johnson/ collector] (2 females, CWOB). *Washoe Co.*: [Reno, Nev/ July/ Wickham] [F. C. Bowditch/ Coll.] (1 male, 2 females, MCZC). **New Mexico**. *Colfax Co.*: [N. MEX. Colfax Co./ Raton Pass 7800'/ VII-22-1971 L&C/ O'Brien & Marshall] (1 female, CWOB). *Lincoln Co.*: [N. MEX: Lincoln Co./ 19 mi. E Carrizozo/ VII-23-1978/ Hardy & Andrews] (1 female, CDAE). *Otero Co.*: [4 Mi. W. Cloudcroft/ Otero Co. N. M./ VII-26-1957/ C. W. O'Brien] (21 males, 6 females, CWOB). *San Miguel Co.*: [Las Vegas/ N.M. 1.7.02] [H. C. FALL/ COLLECTION] (1 female, MCZC). *Union Co.*: [NM: Union Co./ Des Moines/ VI-9-1990/ D. Richman] [A-10] (1 male, TAMU). **South Dakota**. *Stanley Co.*: [Hayes So./ Dakota/ VII-1-1928/ V. S. Davidson] [Det. by/ H. C. Fall.] [Anthonomus/ tenuis/ Fall] [C. A. Frost/ Collection/ 1962] (1 male, MCZC). **Texas**. *Brewster Co.*: [Brewster Co. Tx/ Chisos Mts./ VI, 10-12-08] [Mitchell and/ Cushman coll] (4 males, 1 female, USNM). *Jeff Davis Co.*: [USA Texas Jeff Davis Co./ Davis Mtns. St. Pk./ 5000' 17-18.VII.82/ G. A. P. Gibson] (1 male, CMNC). **Utah**. *Kane Co.*: 4 mi. west Alton,/ Utah, July 15, 1967/ H. R. Burke] (7 males, 4 females, TAMU). *La Sal Co.*: [La Sal, Ut.] [Vasco M. Tanner/ collector] (2, BYUC). **Wyoming**. *Albany Co.*: [WYO. Albany/ 5 mi. N. E. Albany/ Co. VI-5-1969/ Wayne E. Clark] (1 female, TAMU).

Description. Integument black, concealed or narrowly visible between mostly imbricated scales. *Length.*: 1.6-2.0mm. *Width*: 0.6-0.8mm. *Head*: with dense, rounded scales on vertex, with slightly broader, more pallid, imbricated scales on frons and beneath. *Rostrum*: long, slender, curved in basal 1/3, straight in apical 2/3; proximal portion rugulose,

glabrous except for dense, imbricated scales at extreme base; distal portion glabrous. *Antenna*: funiculus with 6 segments. *Prothorax*: pronotum with dense, rounded, narrowly to broadly imbricated, cretaceous scales; slightly narrower, infuscate scales present dorsolaterally and on pleuron. *Elytra*: narrow, parallel sided, rounded apically in dorsal view; flattened on disc, rounded posteriorly in lateral view; striae narrow, punctures with minute, inconspicuous setae; interstriae with rounded, slightly to broadly imbricated, recumbent scales; pallid cretaceous scales dense basally on sutural interstriae and interstria 6 and on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among slightly to distinctly narrower, slightly to deeply infuscate scales; sutural interstriae slightly prominent. *Pygidium*: evenly convex. *Abdomen*: sterna 1-4 with dense, imbricated, pallid scales laterally, with sparser, narrower scales medially; sternum 5 convex, with elongate, setiform scales medially. *Legs* (Fig. 32): profemur; protibia with inner margin prominent in basal 1/2, concave in apical 1/2; protibial uncus long, slender, slightly curved; metatibia of male straight on outer margin, slightly prominent in basal 2/3 on inner margin; metatibial mucro long, extended nearly perpendicular to long axis of tibia in lateral view, strongly curved; metatibia of female with inner margin slightly prominent in basal 2/3, slightly concave in apical 1/3, outer margin straight; metatibial mucro stout, conical, acute, oblique. *Genitalia* (Fig. 45): median lobe of aedeagus narrow, constricted and narrowed behind slight apical expansion in dorsal view; endophallus with one slender, slightly irregular sclerite.

Specimens examined. *Epimechus hesperius* is known from the type series, a fairly large number of specimens indicating that the species is widespread throughout much of the western United States and northern Mexico.

Plant associations. Label data indicate that some adults of *E. hesperius* were collected on the following Asteraceae: "*Artemesia*", *Haplopappus gracilis* (Nutt.) Gray (as "*Aplopappus gracilis*"), "*Chrysothamnus*", *Gutierrezia californica* (DC). T&G, *G. sarothrae* (Pursh) Britt. & Rusby, and "*Xanthocephalus*". The "Bred *Chrysothamnus*" record indicates that this plant is a true host.

Remarks. Otherwise resembling *E. nevadicus* and *E. combustus* in size and body form, *E. hesperius* is distinguished by the distinctive form of the long, slender, slightly curved apical mucro on the male metatibia (Fig. 44). In addition, *E. hesperius* is distinguished from these and other species of *Epimechus* by the slender, slightly, evenly curved rostrum (Fig. 23), by the long, slender endophallic transfer apparatus (Fig. 45), and by the strong subapical constriction of the median lobe of the aedeagus (Fig. 45). The species name, based on a Greek adjective meaning "western", reflects the distribution of this widespread species

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References Cited

Blatchley, W. S. 1916. [*Epimechus nivosus* sp. nov., p. 277] In: W. S. Blatchley and C. W. Leng, Rhynchophora or weevils of North Eastern America. Nature Publishing Company, Indianapolis, Indiana. 682 pp.

Boldt, P. E., and T. O. Robbins. 1992. Life history of *Epimechus canoides* Fall (Coleoptera: Curculionidae) on seepwillow, *Baccharis salicifolia* (R.&P.) Pers. (Asteraceae). Proceedings of the Entomological Society of Washington 94(3):309-313.

Boldt, P. E., and T. O. Robbins. 1994. Phytophagous insect faunas of *Baccharis salicina*, *B. pteroniodes*, and *B. bigelovii* (Asteraceae) in the southwestern United States and northern Mexico. Environmental Entomology 23(1):47-57.

Burke, H. R. 1968. Pupae of the weevil tribe Anthonominae (Coleoptera: Curculionidae). Texas Agricultural Experiment Station Technical Monograph 5, 92 pp.

Burke, H. R. 1971. New synonymy in North American *Anthonomus*. Journal of the New York Entomological Society 44(1):46-50.

Burke, H. R. 1975. Nomenclatural changes in North American *Anthonomus* (Coleoptera: Curculionidae). Entomological News 86(3-4):57-62.

Clark, W. E., and H. R. Burke. 2001. Revision of the weevil genera *Magdalinops* Dietz and *Chelonychus* Dietz (Coleoptera: Curculionidae, Anthonomini). Coleopterists Bulletin. In Press.

Dietz, W. G. 1891. Revision of the genera and species of Anthonomini inhabiting North Amer-

ica. Transactions of the American Entomological Society 18:177-276.

Fall, H. C. 1901. List of the Coleoptera of southern California, with notes on habits and distribution and descriptions of new species. California Academy of Sciences Occasional Paper 8:1-282.

Fall, H. C. 1907. *In*: H. C. Fall and T. D. A. Cockerell. 1907. The Coleoptera of New Mexico. Transactions of the American Entomological Society 33:145-272.

Fall, H. C. 1913. A brief review of our species of *Magdalis*, with notes and descriptions of other North American Rhynchophora. Transactions of the American Entomological Society 39:23-72.

Fall, H. C. 1928. Miscellaneous notes and descriptions (Coleoptera). Bulletin of the Brooklyn Entomological Society 23(5):236-240.

Hatch, M. H. 1971. The beetles of the Pacific Northwest. Part V: Rhipiceroidea, sternoxi, Phytophaga, Rhynchophora, and Lamellicornia.) University of Washington Publications in Biology, Volume 16. xiv+662 pp.

Kissinger, D. G. 1964. Curculionidae of America north of Mexico. A key to the genera. Taxonomic Publs., South Lancaster, Mass. 143 pp.

O'Brien, C. W., and G. J. Wibmer. 1982. Annotated checklist of the weevils (Curculionidae *sensu lato*) of North America, Central America, and the West Indies (Coleoptera: Curculionoidea). Memoirs of the American Entomological Institute, 34. ix+382 pp.