Revision of the subgenus *Cnemocyllus* Dietz of the weevil genus *Anthonomus* Germar (Coleoptera: Curculionidae, Anthonomini)

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Abstract. *Anthonomus (Cnemocyllus) decipiens* Dietz is designated as type species of *Cnemocyllus* Dietz. The twenty-three North American species assigned to the *Anthonomus* subgenus *Cnemocyllus* include ten previously placed in the subgenus: *A. albus* Hatch, *A. decipiens* LeConte, *A. dorothyae* Hatch, *A. elongatus* LeConte, *A. jacobinus* Dietz, *A. juncturus* Fall, *A. ligatus* Dietz, *A. pictus* Blatchley, *A. quesnelensis* Sleeper, and *A. tenuis* Fall; three species formerly in *Anthonomus* but not in *Cnemocyllus*: *A. stolatus* Fall, *A. inermis* Boheman, and *A. ornatulus* Dietz; two species once in *Epimechus* Dietz but subsequently transferred to *Anthonomus*: *A. arenicolor* (Fall) and *A. canoides* (Fall); and eight new species: *A. californiensis*, **new species** (California and Baja California); *A. bajaensis*, **new species** (Baja California); *A. intermedius*, **new species** (Utah); *A. extensus*, **new species (**British Columbia, California, Idaho, Oregon, and Washington); *A. deserticolus*, **new species (**Arizona, Baja California, California, Guerrero, New Mexico, Sonora, and Texas); *A. schuhi*, **new species** (California and Oregon); *A. latus*, **new species** (California); and *A. squamoerectus*, **new species** (California and Oregon). The species of *Anthonomus* in the subgenus *Cnemocyllus* are distinguished from other Anthonomini by the combination of having vestiture of more-or-less broad, dense scales, 6 or 7 antennal funicular articles, a slender endophallic transfer apparatus and, in most, the slightly to strongly curved metatibia of the male. The tarsal claws are variable, toothed or untoothed.

The names *Anthonomus cycliferus* (Fall), *A. malkini* Hatch and *A. summeri* Hatch are placed in **new synonymy** under *A. jacobinus* Dietz; *A. cretaceus* (Champion) is placed in **new synonymy** under *A. decipiens* LeConte; *A. imbricus* Hatch is placed in **new synonymy** under *A. quesnelensis* Sleeper; *A. mannerheimi* Dieckmann (*A. brunnipennis* Mannerheim, not Curtis) and *A. subvittatus* LeConte are placed in **new synonymy** under *A. inermis* (Boheman); *A. minutus* Hatch is placed in **new synonymy** under *A. dorothyae* Hatch. Adults of many of the species of the subgenus *Cnemocyllus* have been collected on plants in the family Asteraceae. The larvae of several of the species are known to develop on these plants.

Introduction

This revision of the species of the subgenus *Cnemocyllus* is part of an ongoing attempt to determine the relationships of all of the squamose species of Anthonomini. The revisions of *Epimechus* (Clark and Burke 2001) and *Magdalinops* and *Chelonychus* (Clark and Burke 2002) left a large number of squamose species to be considered. For the most part, these species are presently in the subgenus *Cnemocyllus* of *Anthonomus* and the *A. squamosus* group of the nominate subgenus *Anthonomus*. They may represent either a single subgenus within *Anthonomus* or a genus separate from *Anthonomus*, namely *Cnemocyllus*. We retain *Cnemocyllus* as a subgenus for the present. Study of the species in the *A. squamosus* group is under way. It is hoped that completion of this study will place us in a better position to make decisions concerning the relationships of the *A. squamosus* group to *Cnemocyllus* and *Epimechus* and to propose a revised classification of the groups within the Anthonomini.

Materials and Methods

The 7,578 adult weevils examined are deposited in the following collections (letter codens identify the collections in the text): **AMNH,** American Museum of Natural History, New York, New York;

AUEM, Auburn University Entomological Museum, Auburn, Alabama; **BMNH**, The British Museum (Natural History), London; **BYUC**, Brigham Young University, Provo, Utah; **CASC,** California Academy of Sciences, San Francisco, California; **CDAE,** California State Collection of Arthropods, Sacramento, California; **CISC**, California Insect Survey, University of California, Berkeley, California; **CMNC,** Canadian Museum of Nature, Ottawa, Ontario; **CNCI**, Canadian National Collection of Insects and Arachnids, Ottawa; **CUIC**, Cornell University, Ithaca, New York; **CWOB,** Collection of C. W. O'Brien, Green Valley, Arizona; **ELSC,** Collection of E. L. Sleeper, Elk Grove, California; **FSCA**, Florida State Collection of Arthropods, Gainesville, Florida; **HAHC,** Collection of H. and A. Howden, Ottawa; **INHS**, Illinois Natural History Survey, Champaign, Illinois; **JBWM,** J.B. Wallis Museum of Entomology, Winnipeg, Manitoba; **MCZC**, Museum of Comparative Zoology, Cambridge, Massachusetts; **NDSU**, North Dakota State University, Fargo, North Dakota; **NHRS**, Naturhistoriska Riksmuseet, Stockholm; **OSUC**, Ohio State University, Columbus, Ohio; **OSUO,** Entomological Museum, Oregon State University, Corvallis, Oregon; **PURC**, Purdue University, West Lafayette, Indiana; **TAMUIC,** Texas A&M University, College Station, Texas; **UAIC**, University of Arizona, Tucson, Arizona; **UCDC,** University of California Davis, Davis, California; **USNM,** National Museum of Natural History, Washington, D. C.

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

Species of *Anthonomus* Germar, subgenus *Cnemocyllus* Dietz

***Anthonomus* (*Cmemocyllus*) *jacobinus* Group**

1. *Anthonomus* (*Cnemocyllus*) *jacobinus* Dietz
   Anthonomus (*Cnemocyllus*) *cycliferus* Fall**, new synonymy**
   Anthonomus (*Cnemocyllus*) *malkini* Hatch**, new synonymy**
   Anthonomus (*Cnemocyllus*) *summeri* Hatch**, new synonymy**
2. *Anthonomus* (*Cnemocyllus*) *californiensis***, new species**
3. *Anthonomus* (*Cnemocyllus*) *bajaensis***, new species**
4. *Anthonomus* (*Cnemocyllus*) *arenicolor* (Fall)
   Anthonomus (*Cnemocyllus*) *baccharidis* Pierce
5. *Anthonomus* (*Cnemocyllus*) *canoides* (Fall)

***Anthonomus* (*Cnemocyllus*) *decipiens* Group**

6. *Anthonomus* (*Cnemocyllus*) *decipiens* LeConte
   Anthonomus affinis LeConte
   Anthonomus nanus LeConte
   Anthonomus (*Cnemocyllus*) *lineatulus* Dietz
   Anthonomus canus LeConte
   Anthonomus (*Cnemocyllus*) *aphanostephi* Pierce
   Pseudanthonomus cretaceus Champion**, new synonymy**
7. *Anthonomus* (*Cnemocyllus*) *ligatus* Dietz
8. *Anthonomus* (*Cnemocyllus*) *elongatus* LeConte

***Anthonomus* (*Cnemocyllus*) *pictus* Group**

9. *Anthonomus* (*Cnemocyllus*) *pictus* Blatchley
10. *Anthonomus* (*Cnemocyllus*) *quesnelensis* Sleeper
    Anthonomus imbricus Hatch**, new synonymy**
11. *Anthonomus* (*Cnemocyllus*) *juncturus* Fall

***Anthonomus* (*Cnemocyllus*) *stolatus* Group**

12. *Anthonomus* (*Cnemocyllus*) *stolatus* Fall
    Anthonomus mimicanus Fall
13. *Anthonomus* (*Cnemocyllus*) *intermedius***, new species**
14. *Anthonomus* (*Cnemocyllus*) *tenuis* Fall
    Epimechus gracilis Fall

***Anthonomus* (*Cnemocyllus*) *inermis* Group**

15. *Anthonomus* (*Cnemocyllus*) *inermis* Boheman
    Anthonomus (*Cnemocyllus*) *mannerheimi* Dieckmann (new name for *Anthonomus brunnipennis* Mannerheim, not Curtis)**, new synonymy**
    Anthonomus subvittatus LeConte**, new synonymy**
16. *Anthonomus* (*Cnemocyllus*) *extensus***, new species**
17. *Anthonomus* (*Cnemocyllus*) *deserticolus***, new species**
18. *Anthonomus* (*Cnemocyllus*) *dorothyae* Hatch
    Anthonomus minutus Hatch**, new synonymy**
19. *Anthonomus* (*Cnemocyllus*) *schuhi***, new species**
20. *Anthonomus* (*Cnemocyllus*) *latus***, new species**
21. *Anthonomus* (*Cnemocyllus*) *squamoerectus***, new species**
22. *Anthonomus* (*Cnemocyllus*) *albus* Hatch
23. *Anthonomus* (*Cnemocyllus*) *ornatulus* Dietz
    Anthonomus figuratus Dietz

Subgenus *Cnemocyllus* Dietz

Cnemocyllus Dietz 1891: 239-240.

Type Species (here designated): *Anthonomus* (*Cnemocyllus*) *decipiens* Dietz.

Diagnostic combination. Body elongate-oval, with relatively dense covering of narrow to nearly rounded scales; disc of pronotum with most scales obliquely oriented. Antennal funicle with 6 or 7

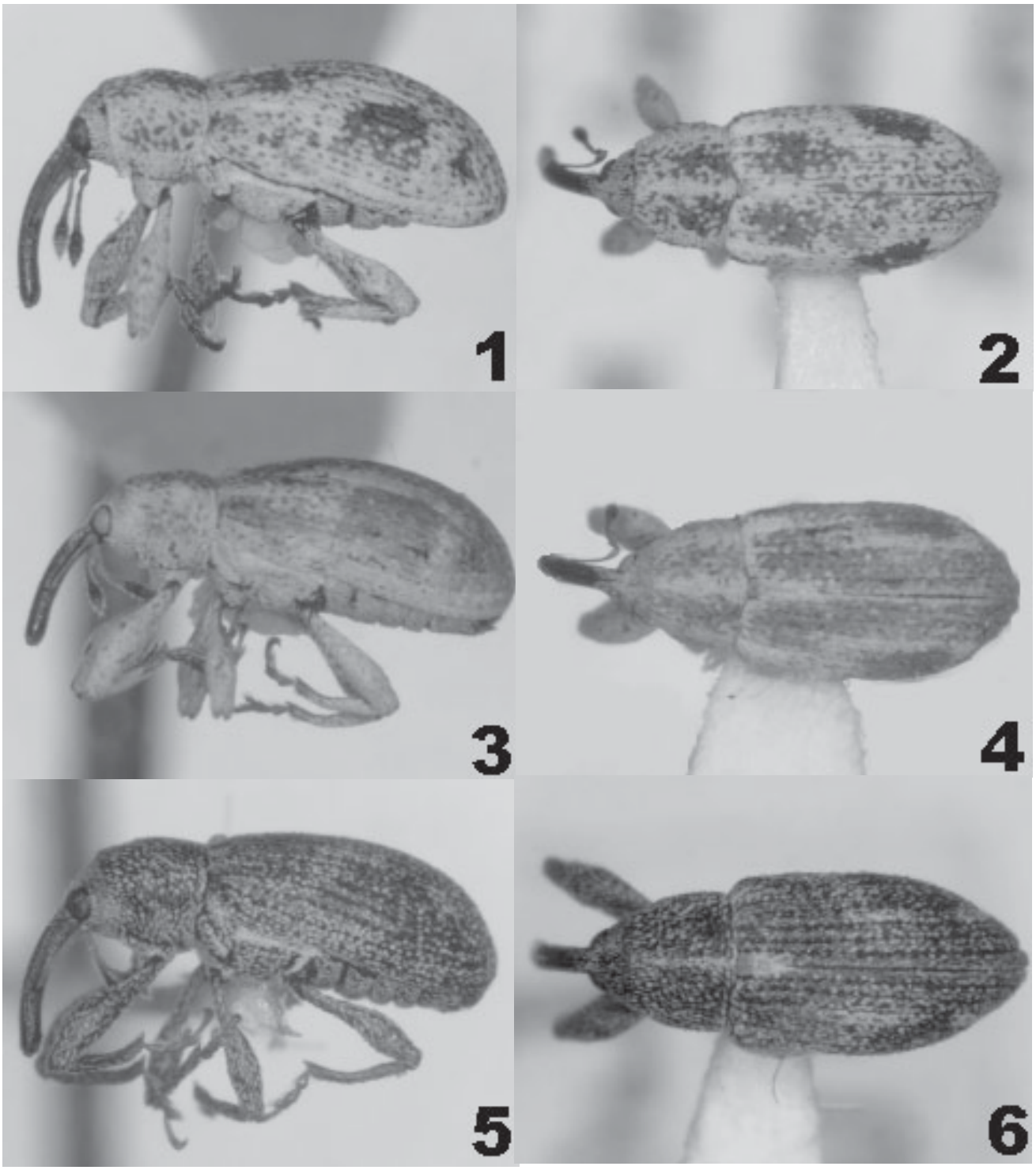
articles. Legs with metatibia of male slightly to strongly curved or bent in most species, straight in a few; tarsal claw with tooth short to absent, not extending past middle of claw except in *A. inermis* group. Hosts Asteraceae.

Remarks. The history of assignment of squamose species of weevils in Anthonomini, and especially in the genus *Anthonomus* Germar, is a convoluted one. LeConte (1876) placed 15 species that are more or less densely covered with scales in *Anthonomus*, 14 of which were described as new, but he did not assign these species to groups within the genus. Dietz (1891) was the first to define North American subgenera and species groups within *Anthonomus* as well as to delimit and describe other genera within the tribe Anthonomini, creating questions about their taxonomic relationships that continue today. Within *Anthonomus*, Dietz described the subgenus *Cnemocyllus* to include squamose species mainly on the basis of the male metatibia being "more or less curved, while in the female they are straight, or nearly so." He also emphasized the "variably toothed" tarsal claws of species in the subgenus as being diagnostic. Whether species had either 6- or 7-segmented funicular articles was also used in combination with other characters to define groups. However, Dietz did not assign all of the squamose species of the tribe known to him to *Cnemocyllus*. Instead, he established the *A. squamosus* group within the nominate subgenus of *Anthonomus* to contain 11 squamose species having the hind tibia of the male straight and the funicle 7-segmented. In addition, he described the genera *Epimechus* Dietz, *Chelonychus* Dietz and *Magdalinops* Dietz to include other species more-or-less densely covered with scales but not having the same combination of characters of *Cnemocyllus* or the *A. squamosus* group.

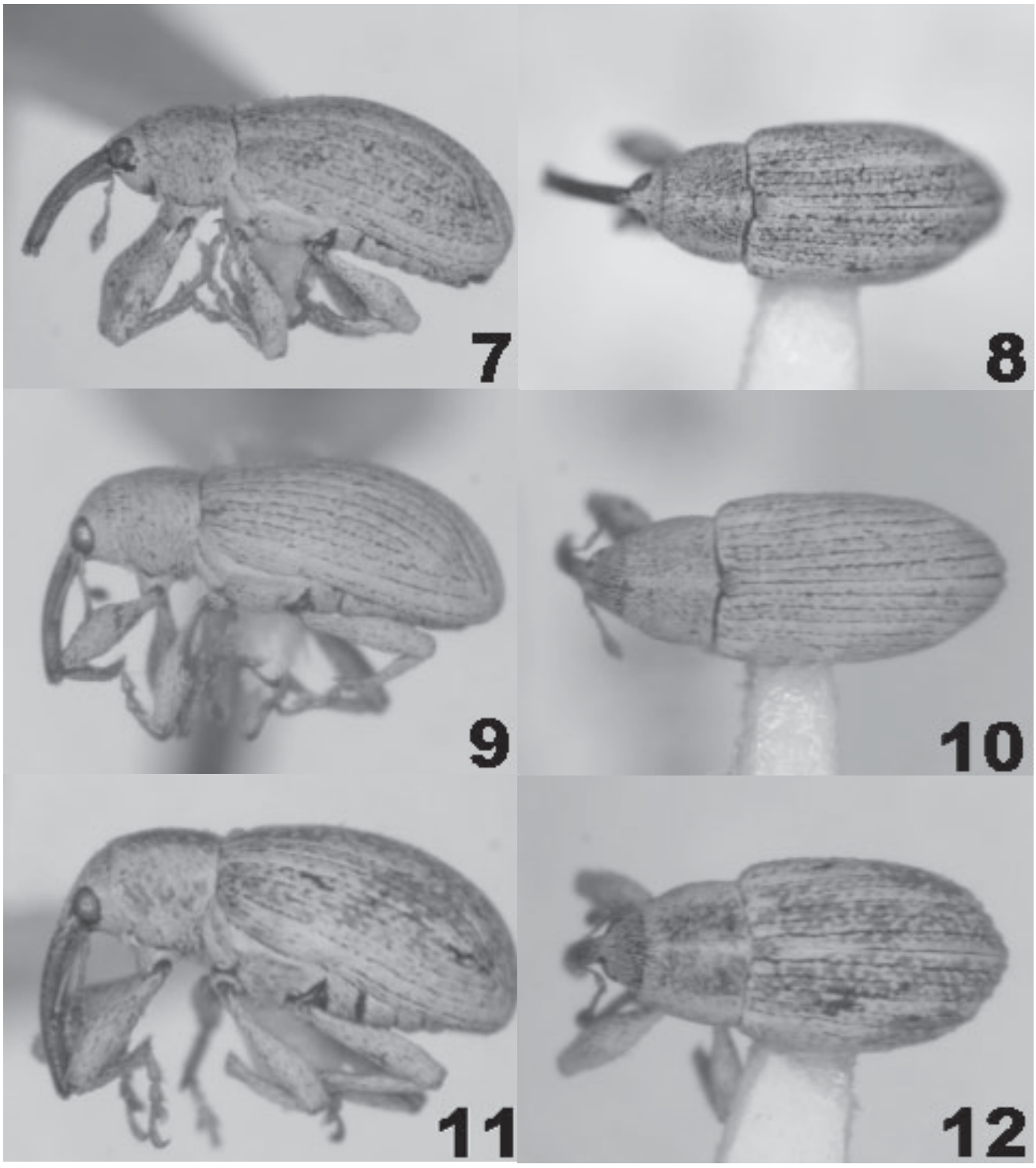
Using curvature of the male metatibia to support placement of species at the subgeneric or generic levels has presented considerable problems. Not only does the metatibia vary greatly from being slightly curved to strongly bent, it may even have an apical expansion that previous authors have used to determine group affiliation. For example, Fall (1913) expressed no doubt about assigning *Anthonomus helianthi* Fall and *A. sphaeralciae* Fall to *Cnemocyllus* because the male metatibia in the two species is "modified." The tibial modification of these species, however, is not like that in *Cnemocyllus* but rather consists of an expansion on the inner margin of the tibia near the apex. Fall (1913) was less certain of the assignments of *A. obesulus* Fall and *A. juncturus* Fall on the basis of the tibial character. He described the metatibia of the male of *A. obesulus* as being slightly incurved at the apex but contended that it was not curved enough to warrant assignment to *Cnemocyllus*. Concerning *A. juncturus*, Fall stated that although the male metatibia is not "visibly bent" the general similarity of the species to those of *Cnemocyllus* in his view indicated that it belonged in this group.

The structure of the tarsal claws (simple vs. toothed) has also figured into decisions regarding placement of the squamose species of Anthonomini. Dietz (1891) described the tooth of the tarsal claw of *Cnemocyllus* as varying considerably in development, being either long or short, while that of *Epimechus* is simple. Fall (1913) described four species in the genus *Epimechus* and combined them in a key with species previously assigned to the genus by Dietz. Fall's struggle with the problem of assignment of species to *Cnemocyllus* and *Epimechus* was taken up in a more recent revision of *Epimechus* by Clark and Burke (2001). Despite this clearer definition of *Epimechus*, the relationships of the species assigned to *Epimechus* and *Cnemocyllus* remain unsettled. Some of the species assigned to the two groups are quite similar in habitus and there is also considerable variation in the tibial and tarsal characters of the species. While possession of simple tarsal claws serves with other characters to separate *Epimechus* from related taxa (Clark and Burke 2001), reliance on this character alone may result in incorrect assignments of some species. Some of the species assigned to *Epimechus* by Clark and Burke (2001), for example *E. nevadicus* Dietz and *E. hesperius* Clark and Burke, are quite similar in general habitus to species placed in the present paper in *Cnemocyllus*. On the other hand, *A. arenicolor* (Fall), which has simple tarsal claws and *Cnemocyllus* habitus, was formerly in *Epimechus*. It was transferred to *Anthonomus* by Clark and Burke (2001) and is herein assigned to the subgenus *Cnemocyllus*. The same is true for the related *A. canoides* (Fall), likewise formerly in *Epimechus*, but in this species the claws may either be simple or minutely toothed.

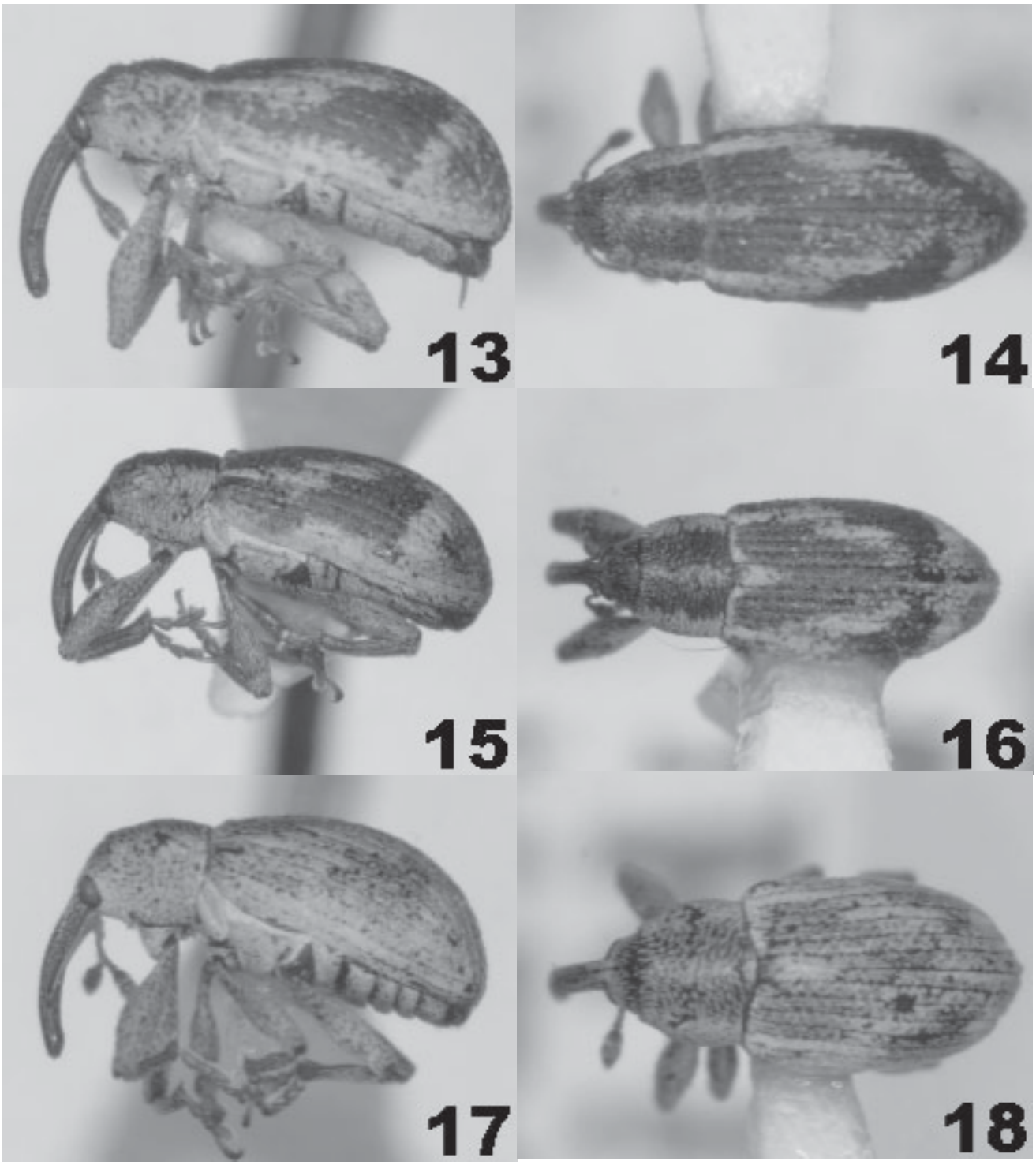
Blatchley and Leng (1916) were ambivalent about placement of eastern squamose species with "hind tibiae dissimilar in the sexes, those of the male more or less curved." These authors concluded that on this basis *Anthonomus elongatus* LeConte and *Anthonomus decipiens* LeConte belong to *Cnemocyllus* yet they placed them in "Group C" of



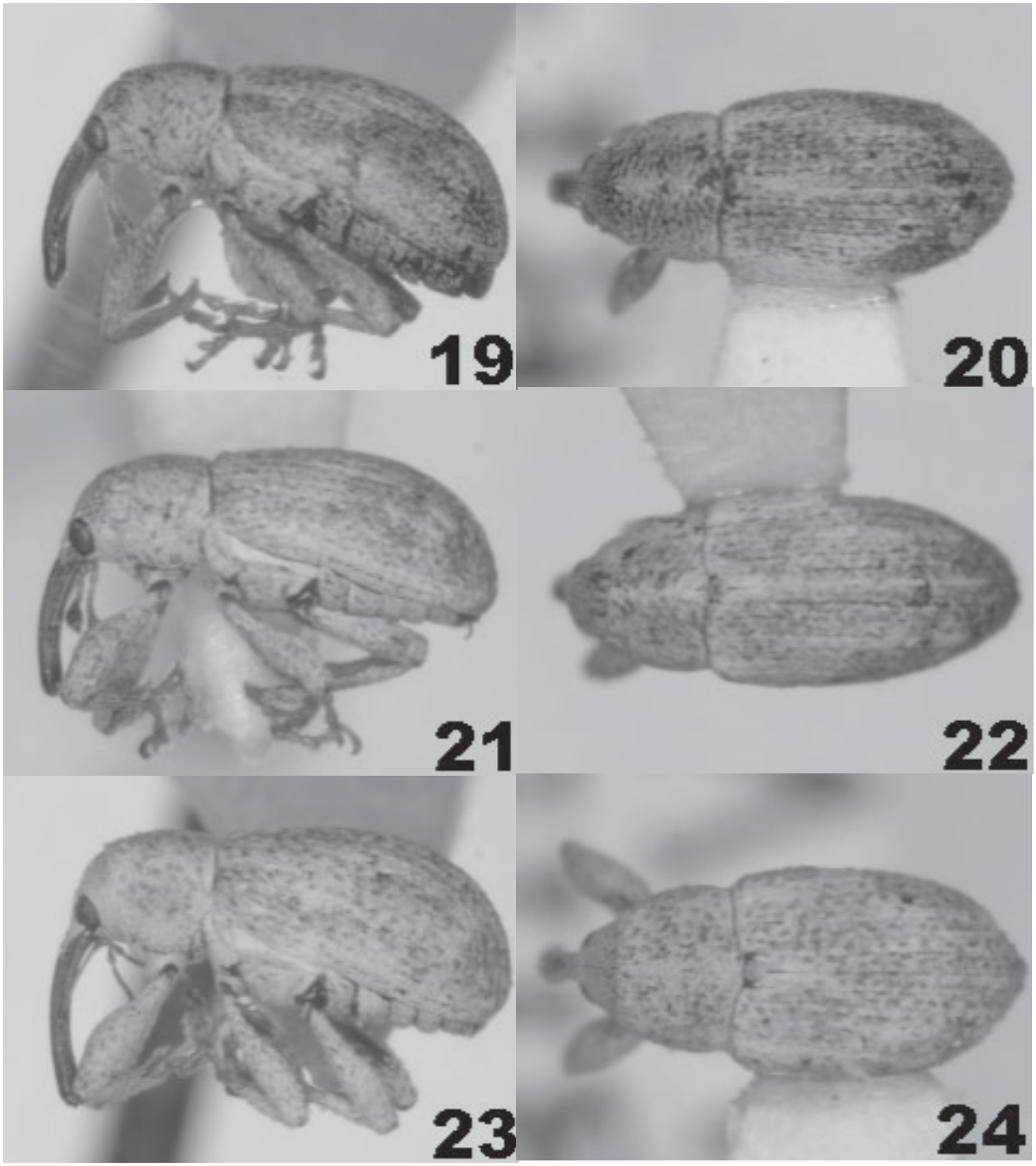
Figs. 1-6. *Anthonomus* (*Cnemocyllus*) spp., habitus, lateral and dorsal views. 1, 2) *A. jacobinus*, female, 24 mi. SW Quemado, New Mexico; 3, 4) *A. californiensis*, male, paratype, 8 mi. SW Mendota, California; 5, 6) *A. bajaensis*, male, paratype, Cedros Island, Baja California.



Figs. 7-12. *Anthonomus* (*Cnemocyllus*) spp., habitus, lateral and dorsal views. 7, 8) *A. arenicolor*, male, Patagonia, Arizona; 9, 10) *A. canoides*, male, Shafter, Texas; 11, 12) *A. decipiens*, female, 6 mi. E Marfa, Texas.



Figs. 13-18. *Anthonomus* (*Cnemocyllus*) spp., habitus, lateral and dorsal views. 13, 14) *A. ligatus*, male, Refugio, Texas; 15, 16) *A. elongatus*, male, Holy Cross, Kentucky; 17, 18) *A. pictus*, male, South Lancaster, Massachusets.



Figs. 19-24. *Anthonomus* (*Cnemocyllus*) spp., habitus, lateral and dorsal views. 19, 20) *A. quesnelensis*, male, Teton Co., Wyoming; 21, 22) *A. juncturus*, male, 7 mi. W Port Mansfield, Texas; 23, 24) *A. stolatus*, female, San Diego Co., California.

Figs. 25-28. *Anthonomus* (*Cnemocyllus*) spp., habitus, lateral and dorsal views. 25, 26) *A. intermedius*, male, holotype; 27, 28) *A. tenuis*, male, Rio Blanco Co., Colorado.

their newly described subgenus *Sexarthrus* Blatchley because both have the funicle with 6 articles. *Sexarthrus* has been listed as a synonym of *Anthonomus* by O'Brien and Wibmer (1982) and others. Most of the other squamose species of *Anthonomus* of eastern North America were assigned by Blatchley and Leng to their "Group G" in the nominate subgenus.

A few other species of squamose Anthonomini have been described since the work of Blatchley and Leng, but there has been little improvement in the understanding of the relationships of the species. Hatch (1971) treated *Chelonychus*, *Epimechus*, and squamose *Anthonomus* from the Pacific Northwest, describing several new species. He recognized the subgenus *Cnemocyllus* on the traditional basis of the bent or curved male metatibia. Eight species were placed in the subgenus, five of which he described as new. Other squamose species of *Anthonomus* were assigned to three different species groups outside of *Cnemocyllus*.

Identification of the species of *Anthonomus* in the subgenus *Cnemocyllus* may be difficult even when a good series of well-preserved specimens is available. Since the most reliable distinguishing characters of the species are the male metatibia and the median lobe of the aedeagus, identification of females may depend upon having an adequate series of specimens associated with males. Determining the identity of unassociated females may be especially difficult, although characteristics of body shape and/or scales may suffice for this purpose. Fortunately, these weevils are often collected in fairly large numbers on a single host, in which case males and females can be reliably associated. However, some populations of *A. californiensis* and *A. quesnelensis* apparently consist of only females. In addition to the considerable variation normally

occurring in species of *Cnemocyllus*, one must be aware that the age of adults may significantly affect the color pattern of scales. Pierce (1908) listed eleven combinations of color variations in a series of *A. decipiens* reared from the same host plant. Newly-ecdysed adults may have fairly distinct color patterns that fade to a more uniform pallid hue as the individual ages (see also Burke 1971).

Plant Associations. Label data on examined specimens and published records (Ahmad and Burke 1972, Burke 1968) indicate that species of the subgenus *Cnemocyllus* are associated with plants in the family Asteraceae. There is no credible evidence that plants in any other family serve as hosts of any of the species. Several species are known to complete larval development in the flower heads in which pupation also occurs. One species is definitely known to be associated with galls made by Diptera on Asteraceae (Burke 1968).

Key to *Anthonomus* (*Cnemocyllus*) Species Groups

1 Antenna with 7 funicular articles ..... ***A. inermis* group**

1' Antenna with 6 funicular articles 2

2 Metatibia of male slightly to strongly curved (Figs. 29, 30, 31) 3

2' Metabibia of male not curved (Figs. 38, 39, 41, 43) (except in *A. tenuis* of the *A. stolatus* group, Fig. 44) 4

3 Metatibia of male with inner margin expanded in basal 1/3 (Figs. 29, 30, 31); median lobe strongly constricted, expanded subapically, narrowed to apex in dorsal view (Figs. 45, 47, 48, 50); abdominal sternum 5 about 2 times longer than sternum 4 ..... ***A. jacobinus* group**

3' Metatibia of male with inner margin feebly prominent in basal 1/3 (Figs. 32, 34); median lobe of aedeagus not so strongly constricted, more distinctly, evenly narrowed from base in dorsal view (Figs. 52, 54); abdominal sternum 5 only slightly longer than sternum 4 ..... ***A. decipiens* group**

4 Elytra with more-or-less distinct middorsal and posterolateral maculae of dark scales (Figs. 18, 20); median lobe of aedeagus strongly narrowed, slightly expanded laterally at extreme apex in dorsal view (Figs. 58, 60) ..... ***A. pictus* group**

4' Elytra without middorsal and posterolateral maculae, dark scales fairly evenly scattered among broader, more pallid scales throughout (Figs. 24, 25, 27); median lobe of aedeagus less strongly narrowed, broader at apex, more distinctly expanded laterally in dorsal view (Figs. 62, 65, 67) ..... ***A. stolatus* group**

The *Anthonomus* (*Cnemocyllus*) *jacobinus* Group

Diagnostic combination. Antennal funiculus with six articles; metatibia of male with inner margin prominent in basal 1/3, strongly concave in apical 2/3, outer margin curved in apical 1/2 (Figs. 29, 30, 31); tarsal claws with well-developed tooth, minutely toothed, or simple; median lobe of aedeagus slightly to strongly expanded subapically in dorsal view (Figs. 45, 47, 48, 50); abdominal sternum 5 about 2 times longer than 4; profemur wider than metafemur, unarmed or minutely toothed; metafemur unarmed (Figs. 29-31); metatibial mucro of male slightly curved in lateral view, excavated (Figs. 29, 30, 31); metatibial mucro of female short, acute.

Remarks. The five species assigned to the *A. jacobinus* group have distributions corresponding to the major biomes of western North America. *Anthonomus jacobinus*, the most widely distributed of the species, occurs throughout the high altitude cold desert regions of the Great Basin and the related provinces in the Rocky Mountain region. It appears to be replaced in southern California by *A. californiensis* which in turn is replaced eastward in California, through Arizona and New Mexico and southward in Mexico west of the Sierra Madre Occidental, by *A. arenicolor*. This species in turn is replaced in the Chihuahuan Desert regions of western Texas and the Mexican High Plateau by *A. canoides*. One additional species, *A. bajaensis*, is known only from Baja California.

The species in the group are most likely to be confused with *A. tenuis* because of the similarly curved male metatibia (cf. Figs. 29, 36, 37). Specimens of *A. tenuis* are smaller and narrower than *A. jacobinus* group members, however, and have the rostrum shorter, less strongly, evenly curved and more nearly completely glabrous (Fig. 27). Furthermore, *A. tenuis* differs in the apically subtruncate rather than narrowed median lobe (cf. Figs. 45, 47, 48, 50, 67).

The species in the *A. jacobinus* group differ from each other in characters of the rostrum, pronotal and elytral vestiture, and tarsal claws, but the

male genitalia provide the most reliable diagnostic characters.

Key to Species of the *A. jacobinus* Group

1 Pronotum and elytra with admixture of ash-colored scales and narrower, sparser, dark brown scales; tarsal claws with well-developed basal tooth; Great Basin and Rocky Mountain region ..... ***A. jacobinus***

1' Pronotum and elytra with admixture of chalky white scales and narrower or subequal, tawny to rusty red-brown scales; tarsal claws with or without basal tooth 2

2 Integument of pronotum and elytra broadly visible between strongly differentiated chalky white scales and narrower, darker, tawny red-brown scales; tarsal claws with well-developed basal tooth; Baja California ..... ***A. bajaensis***

2' Integument of pronotum and elytra narrowly visible between scales or concealed beneath feebly differentiated chalky white scales and narrower, darker, tawny red-brown scales; tarsal claws with or without basal tooth 3

3 Median lobe of aedeagus narrow apically, drawn out to acute apex in dorsal view (Fig. 48), strongly sinuate in lateral view (Figs. 49); tarsal claws with or without basal tooth 4

3' Median lobe of aedeagus broader apically, less strongly narrowed to bluntly rounded apex in dorsal view (Fig. 50), less strongly sinuate in lateral view (Fig. 51); tarsal claws with or without basal tooth; western Texas and the Mexican High Plateau ..... ***A. canoides***

4 Tarsal claws with basal tooth; southern California ..... ***A. californiensis***

4' Tarsal claws without basal tooth; southern California, Arizona, New Mexico and Mexico west of the Sierra Madre Occidental .... ***A. arenicolor***

Anthonomus (*Cnemocyllus*) *jacobinus* (Dietz)
Figs. 1, 2, 29, 45, 46

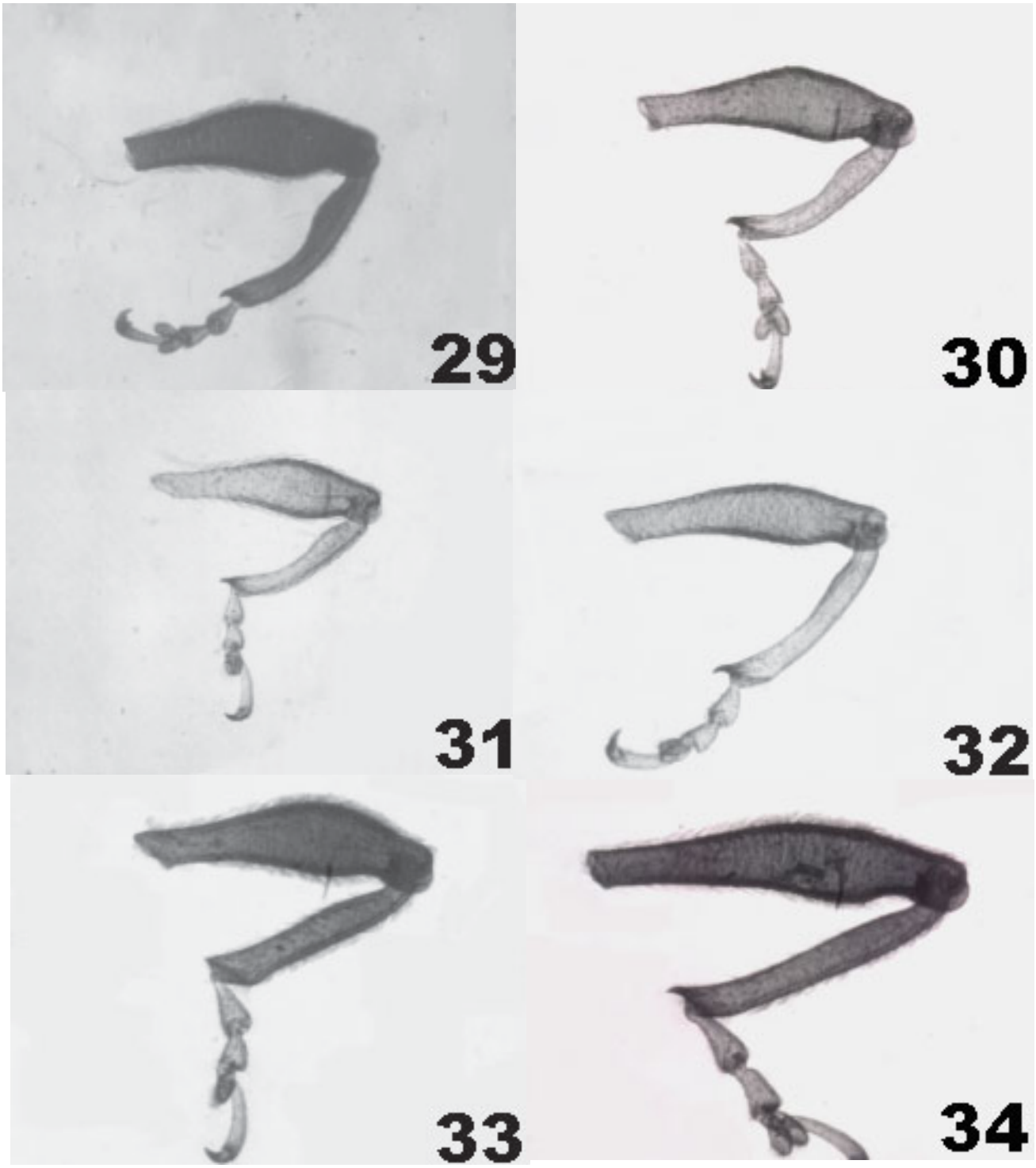
Anthonomus (*Cnemocyllus*) *jacobinus* Dietz 1891:242-243. Lectotype (designated by Burke 1984:260). **Colorado**. [Col.] [Type/ 2059] [LECTOTYPE/ Anthonomus/ jacobinus/ Dietz/ design. by/ H. R. Burke] [Cnemocyllus/ jacobinus/ Dietz] [jacobinus/ Dietz] (female, MCZC).

Anthonomus (*Cnemocyllus*) *cycliferus* Fall 1913:56-57. Holotype. **Utah**. *Washington Co.*: [Ut.] [St. George] [male] [cycliferus/ TYPE] [M.C.Z./ Type/ 25167] [H. C. FALL/ COLLECTION] (male, MCZC). **New synonymy**.

Anthonomus (*Cnemocyllus*) *malkini* Hatch 1971:352. Holotype. **Oregon**. *Jackson Co.*: [ORE: Siskiyou/ Jackson Co./ July 5, 1951/ Borys Malkin] [Type male/ Anthonomus/ (Cnemocyllus)/ malkini/ 1968 - M. Hatch] [Type male/ Anthonomus/ (Sexarthrus)/ malkini/ 1965 - M. Hatch] (male, USNM). **New synonymy**.

Anthonomus (*Cnemocyllus*) *summeri* Hatch 1971:351. Holotype. Oregon. *Lake Co.*: Not found. The U. S. National Museum and Oregon State University both claim the type is not in their collections. The original description gives "Or., Summer Lake, Lake Co., June 19, 1952, Vincent Roth, in OSU collection" for the type. Two females in the Oregon State collection labeled [Ore., Lake Co./ Summer Lake/ June 16, 1952/ V. Roth, Rabbit brush] fit the description of *A. summeri* and in the absence of the type are cited as justification for placing the name *A. summeri* in synonymy under *A. jacobinus*. **New synonymy**.

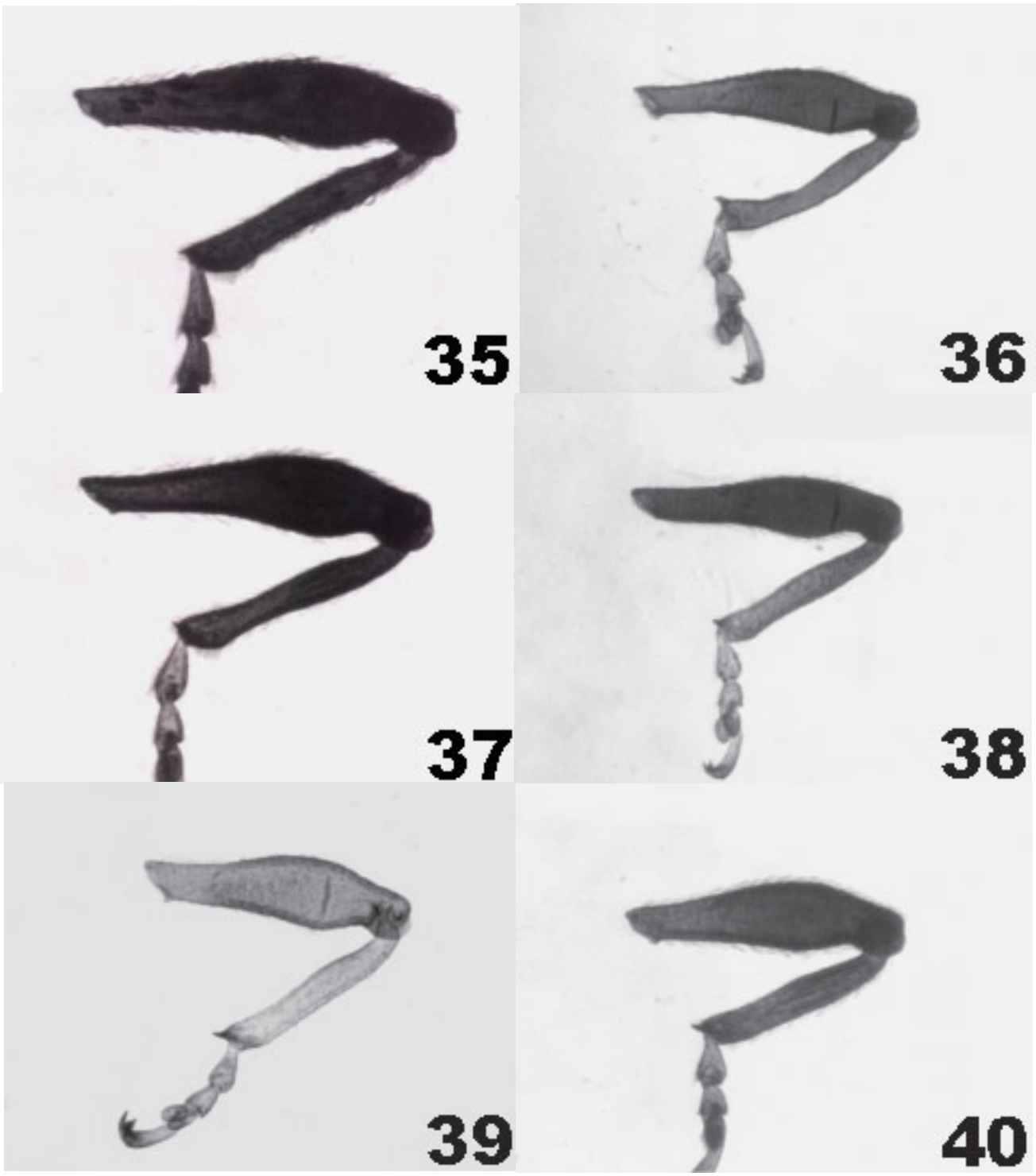
Description (Figs. 1, 2)**.** *Length*: 1.7-3.0 mm. *Head*: vertex with dense, elongate, rounded scales, broader; more pallid, imbricated scales present on frons and beneath. *Rostrum*: in male, distinctly, evenly curved; proximal portion shallowly sulcate; in female, evenly curved or slightly more strongly curved basally; dense, imbricated scales present on basal portion, replaced by narrower, more setiform scales toward antennal insertions. *Prothorax*: pronotum with dense, rounded scales; broad, ash-colored scales predominant medially and laterally on dorsum, anterolateral portions of dorsum with admixture of narrower, dark brown scales; dark brown scales also present on pleuron. *Elytra*: narrow, subparallel-sided; striae narrow, punctures with minute, inconspicuous setae; interstria with dense, rounded, imbricated, multiseriate, recumbent scales; most interstria also with narrower scales in diffuse median row; pallid scales dense basally on sutural interstria and interstria 6 and on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among slightly darker scales; sutural interstria not prominent. *Abdomen*: sterna 1-4 with dense, imbricated, pallid scales; sternum 5 about 2 times longer than sternum 4, subequal in length to sterna 3 and 4 combined, with elongate, setiform scales medially. *Legs*: profemur minutely toothed; protibia with inner margin prominent in basal 1/3, broadly concave in apical 2/3; protibial uncus stout; metatibia with inner margin prominent in basal 1/3, strongly concave in apical 2/3, outer margin curved in apical 1/2 (Fig. 29); metatibia of female with inner margin slightly prominent in basal 1/2, slightly concave in apical 1/



Figs. 29-34. *Anthonomus* (*Cnemocyllus*) spp., metathoracic legs. 29) *A. jacobinus*, male, St. George, Utah; 30) *A. arenicolor*, male, Patagonia, Arizona; 31) *A. canoides*, male, Fort Davis, Texas; 32) *A. decipiens*, male, Brazos Co., Texas; 33) *A. decipiens*, female, Brazos Co., Texas; 34) *A. ligatus*, male, Yuma, Arizona

2, outer margin straight; apical mucro minute; tarsal claw with distinct basal tooth. *Genitalia*: median lobe abruptly narrowed in basal 1/4, subparallel-sided to slight subapical expansion, strongly narrowed to apex in dorsal view (Fig. 45), broadly sinuate in lateral view (Fig. 46).

Specimens examined. In addition to the types of *A. jacobinus* and its synonyms from California, Oregon and Utah, 499 specimens of the species from the following localities were examined. **Alberta**. S Orion (1, CMNC). **British Columbia**. Creston (5, JBWM). **Arizona**. (4, MCZC). Walnut (1, USNM). *Coconino Co.*: Williams (1, USNM). *Cochise Co.*: 8 mi. W Portal (4800', "on *Chrysothamnus*," 1, TAMUIC). *Mohave Co.*: 6 mi. E Kingman (2, CDAE). *Navajo Co.*: Winslow (2, BYUC; 1, MCZC; 3, USNM). *Santa Cruz Co.*: 4.5 mi. N Patagonia (4400', 3, TAMUIC); 8 mi. W Peña Blanca Lake (4100', 1, TAMUIC); 4 mi. N Sonoita (4800', 1, TAMUIC); 5 mi. S Sonoita (2, CDAE). **California**. (1, BYUC). Olancho (1, MCZC). *Butte Co.*: Pulga (1, MCZC). *Inyo Co.*: ("on *Chrysothamnus* sp.," 1, CDAE); Big Pine (2, CWOB); 8 mi. N Big Pine (3, CWOB); Independence (2, BYUC; 5, CASC; 2, CUIC; 2, MCZC; 9, USNM); Lone Pine (6, CASC; 2, CDAE; 1, CISC; 1, CWOB). *Kern Co.*: (1, USNM); Frazier Park ("*Chrysothamnus nauseosus*," 2, CDAE); Havilah (5, CUIC); Lebec (7, CASC); Isabella (1, MCZC); Monolith ("*Chrysothamnus nauseosus*," 1, CDAE) Oak Creek (2, CASC); 7 mi. E Onyx (2, TAMUIC); 14 mi. NE Onyx (3, CWOB); Owens River (4450', 1, CDAE). *Lassen Co.*: Doyle ("*Artemesia tridentata*," 3, CDAE); Janesville ("*Artemesia tridentata*," 1, CDAE); 2 mi. N Milford (1, BYUC). *Los Angeles Co.*: Castaic (2800', "*Chrysothamnus* like plant," 1, CWOB); 25 mi. E Gorman (1, CWOB); Lancaster (1, USNM); Palmdale (1, UCDC; 3, USNM). *Marin Co.*: Point Reyes (1, CWOB); Tocaloma (1, CWOB). *Modoc Co.*: 20 mi. NW Alturas (1, AMNH). *Mono Co.*: Benton Station (1, CDAE); Mono Lake (1, CWOB). *Riverside Co.*: Palms to Pines Highway (3000', "*Juiper* (sic.) *californica*," 5, CUIC); Santa Rosa Mountain (2, OSUC). *San Bernardino Co.*: (1, USNM); 3 mi. NW Cajon (3, CWOB); Desert Springs ("on *Tetradymia spinosa* var. *longispina*," 1, CWOB); Oro Grande (1, OSUC). *Santa Cruz Co.*: Santa Cruz (1, MCZC). *Siskiyou Co.*: 10 mi. NE McCloud (4200', "*Haplopappus bloomeri*," 2, CWOB); Modoc Lava Beds National Monument ("ex terminal woolly galls on *Chrysothamnus nauseosus*," 1, AMNH); Montague (1, CDAE); Weed ("Collected from Sage," 1, CDAE); 10 mi. NE Weed ("*Chrysothamnus viscidiflorus* ssp. *typicus*," 1, CUIC); 30 mi. N Weed (4700', 1, CWOB). *Tulare Co.*: 19 mi. S Kennedy Meadows Campground, 9 Mile Canyon (6600', 23, CWOB); Mount Whitney (1, OSUC). *Toulumne Co.*: Strawberry (2, CWOB). *Ventura Co.*: Grande Valley Camp, Los Padres National Forest (1, CWOB). **Colorado.** (1, CUIC). *Alamosa Co.*: Great Sand Dunes National Monument (1, CASC; 1, CDAE). *Chaffee Co.*: Poncha Springs (1, TAMUIC). *Costilla Co.*: San Luis ("larvae boring in gall of *Chrysothamnus*, 1, TAMUIC). *Durango Co.*: La Plata (1, CASC). *El Paso Co.*: Colorado Springs (3, USNM). *Huerfano Co.*: Walsenburg (2, TAMUIC). *Larimer Co.*: Fort Collins (1, TAMUIC); 54 mi. W Fort Collins (1, CWOB); 6 mi. NW Laporte (1, CWOB). *Mesa Co.*: 2 mi. E Grand Valley (2, TAMUIC); Mack (1, BYUC). *Montezuma Co.*: Cortez (1, TAMUIC). *Rio Blanco Co.*: (2, CWOB). **Idaho**. *Bannock Co.*: Lava Hot Springs (1, BYUC). *Cassia Co.*: 2 mi. W Elba (5200', 37, CWOB). *Fremont Co.*: St. Anthony Dunes (5400', 1, CDAE). *Bannock Co.*: Pocatello (1, USNM). *Cassia Co.*: Albion (3, OSUO). *Oneida Co.*: Stone (2, OSUO). **Montana.** *Jefferson Co.*: (1, USNM). **Nevada**. *Elko Co.*: Carlin (1, USNM). *Esmeralda Co.*: 6 mi. N Goldfield (5300', 7, CWOB). *Humboldt Co.*: Denio ("*Tetradymia canescens*," 12, CDAE). *Lincoln Co.*: Panaca ("on *Chrysothamnus*," 2, TAMUIC). *Nye Co.*: Mercury (1, BYUC). *Washoe Co.*: Reno (2, MCZC). *White Pine Co.*: 31 mi. NW Ely (1, CWOB). **New Mexico**. *Catron Co.*: 24 mi. SW Quemado (1, TAMUIC). *McKinley Co.*: Coolidge (1, USNM). *Otero Co.*: White Sands (3, TAMUIC); White Sands National Monument ("galls collected 16 April 1969 on rabbitbrush, *Chrysothamnus pulchellus*, 1, TAMUIC). *Rio Arriba Co.*: 33 mi. SW Dulce (1, TAMUIC). *Sandoval Co.*: Bandelier National Monument, (1, TAMUIC). **North Dakota**. *Ransom Co.*: 1 mi. SE McLeod (1, CWOB). **Oregon**. (1, CASC). *Baker Co.*: Baker ("Taken on *Chrysothamnus* sp.," 2, OSUO). *Benton Co.*: Blodgett (1, MCZC). Coos *Co.*: Cape Arago (1, CASC). *Crook Co.*: 10 mi. SE Prineville (1, AMNH). *Deschutes Co.*: Terrebonne (1, AMNH). *Grant Co.*: Seneca ("Reared from terminal bud galls of *Chrysothamnus nauseosus*," 2, CASC). *Harney Co.*: 5 mi. E Burns (1, TAMUIC); 7 mi. NE Stinking Water Pass (3, CWOB). *Jackson Co.*: Siskiyou (4, OSUO). *Klamath Co.*: Bly (1, OSUO); 8 mi. SE Dairy (1, OSUO; 2, TAMUIC). *Lake Co.*: Albert (5, AMNH); Paisley (2, OSUO); Silver Lake (4, AMNH); Summer Lake ("Rabbit brush," 2, OSUO). *Sherman Co.*: Biggs (1, OSUO). **South Dakota**. *Custer Co.*: Custer (1, TAMUIC).



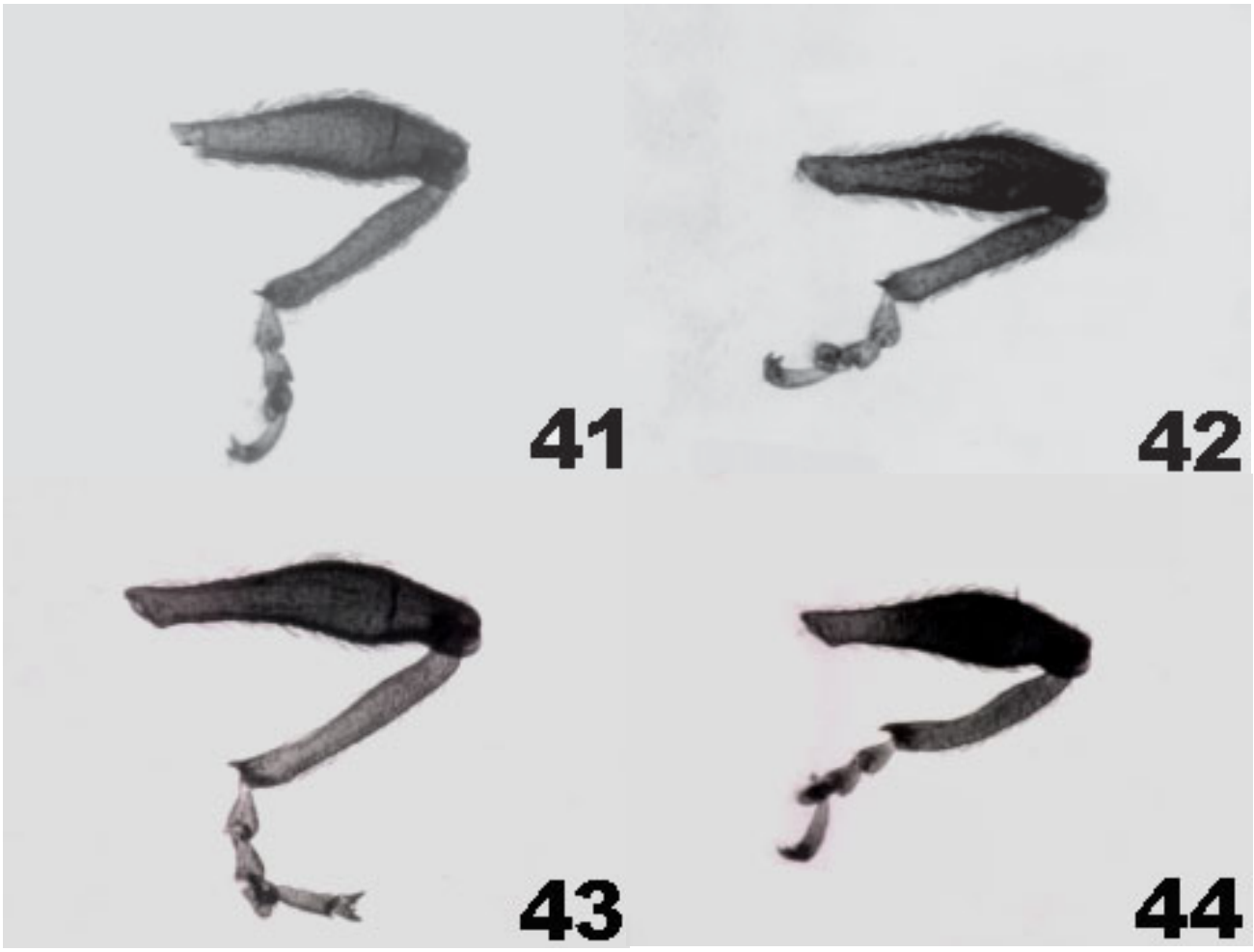
Figs. 35-40. *Anthonomus* (*Cnemocyllus*) spp., metathoracic legs. 35) *A. ligatus*, female, Refugio, Texas; 36) *A. elongatus*, male, Washington, DC; 37) *A. elongatus*, female, Iowa; 38) *A. pictus*, male, Hillsdale, New Jersey; 39) *A. quesnelensis*, male, Santa Fe, New Mexico; 40) *A. quesnelensis*, female, Gunnison, Colorado.

Utah. Chad's Ranch (1, MCZC); mouth of Escalante River (1, BYUC). *Beaver Co.*: (1, OSUC); Milford (4, MCZC; 3, USNM). *Duchesne Co.*: Duchesne (1, CWOB); 3 mi. W Duchesne (3, BYUC); 10 mi. W Duchesne ("*Chrysothamnus nauseosus*," 3, CWOB). *Emery Co.*: Woodside UT (1, BYUC). *Garfield Co.*: Panguitch, UT (1, BYUC). *Grand Co.*: Cisco (1, BYUC). *Iron Co.*: Cedar City (3, BYUC); 26 mi. S Cedar City (1, TAMUIC); Iron Co.: Parowan Creek (5, BYUC). *Juab Co.*: Nephi (1, BYUC); Chicken Creek Reservoir (1, TAMUIC) . *Kane Co.*: Kanab (2, TAMUIC); 7 mi. W Mount Carmel Junction (4, CWOB); 2 mi. N Orderville (1, TAMUIC). *Millard Co.*: Fillmore (1, BYUC). *Piute Co.*: 2.6 mi. S Sevier/ Piute Co. line (5600', 1, TAMUIC). *Rich Co.*: Garden City (1, TAMUIC). *Sanpete Co.*: Axtell ("*Chrysothamnus nauseosus*," 2, TAMUIC); Fayette (1, TAMUIC). *Summit Co.*: 1 mi. E Echo (1, CWOB). *Tooele Co.*: 4 mi. NE Camel Back Mt. (8, BYUC); Davis Mtn. (9, BYUC); Dugway Proving Ground (25, BYUC); SW end Cedar Mts. (1, BYUC); Knolls (3900', "*Chrysothamnus nauseosus*," 2, CWOB); 5 mi. S James Ranch Gov't Creek (3, BYUC). *Utah Co.*: American Fork Canyon (1, BYUC); Goshen ("*Chrysothamnus nauseosus*," 2, TAMUIC); Hobble Creek Canyon (2, CWOB; 1, BYUC); Orem (3, TAMUIC); Provo (3, BYUC); Pleasant Grove (1, BYUC); Provo (Rock Canyon) ("*Chrysothamnus nauseosus*," 2, CWOB; 23, TAMUIC); 0.5 mi. S Springdell (8, CWOB); Spanish Fork (5, BYUC); Diamond Fork, Spanish Fork Canyon 3, BYUC). *Washington Co.*: (3, OSUC); Central (2, BYUC, 1, CASC; 1, MCZC); Santa Clara (1, BYUC); St. George (1, MCZC; 2, USNM). *Wayne Co.*: Hanksville ("sunflower," 1, HAHC); 13 mi. S Hanksville (12, HAHC); Notom (4, HAHC); 2 mi. E Torrey (6500', 3, HAHC). Zion National Park (2, BYUC). **Washington**. (1, OSUO). *Grant Co.*: Dry Falls (1, OSUO). *Kittitas Co.*: Vantage (1, OSUO). *Walla Walla Co.*: 5 mi. W College Place (1, CWOB). **Wyoming**. *Lincoln Co.*: 4.5 mi. E Opal (1, TAMUIC). *Park Co.*: 20 mi N Cody, WY (1, BYUC). *Teton Co.*: Gros Ventre River, N Jackson (1, CWOB).

Plant associations. Label data indicate that adults of *A. jacobinus* occur on the following Asteraceae: *Artemesia tridentata* Nutt.; *Chrysothamnus nauseosus* (Pall.) E. L. Greene; *C. pulchellus* (A. Gray) E. L. Greene; *C. viscidiflorus* (Hook.) Nutt.; *Haplopappus bloomeri* A. Gray; *Tetradymia canescens; T. spinosa* Hock. & Aran.; and on "sage" and "sunflower." Labels specifying "ex terminal woolly galls on *Chrysothamnus nauseosus*," "larvae boring in gall of *Chrysothamnus*," "galls on rabbitbrush, *Chrysothamnus pulchellus*," and "reared from terminal bud galls of *Chrysothamnus nauseosus*," confirm the observations of Burke (1968) who asserted that *A. jacobinus* (as *Anthonomus cycliferus*) "has an interesting association with a dipterous gall on *Chrysothamnus nauseosus*" in which the larvae feed and pupate. For more on the gall assoications of the species see Gates and Burke (1972).

Remarks. The scales of *A. jacobinus* are ash-colored to dark brown rather than tawny to rusty red-brown as in *A. californiensis*, *A. arenicolor* and *A. canoides*. The dark scales are condensed into mid-dorsal and posterolateral elytral maculae in some, but may be diffuse and scattered along the median rows of the elytral interstriae. In some specimens, including the lectoype, even these are indistinct. The species is more reliably distinguished from the other members of the *A. jacobinus* group by the shape of the median lobe of the aedeagus. In *A. jacobinus,* this is abruptly narrowed in basal 1/ 4, subparallel-sided to slight subapical expansion, then strongly narrowed to apex in dorsal view (Fig. 45), and broadly sinuate in lateral view (Fig. 46). The median lobe of *A. bajaensis* is more strongly narrowed in the basal 1/4 and more bluntly rounded at the apex (Fig. 47), whereas in *A. canoides*, it is slightly constricted, then more distinctly widened subapically and more acute apically (Fig. 50). In *A. arenicolor* and *A. californiensis*, on the other hand, the median lobe is less abruptly narrowed in the basal 1/4 and the apical 1/3 is long and drawn out in dorsal view and strongly sinuate in lateral view (Fig. 49). The tarsal claws of all specimens of *A. jacobinus* examined are distinctly toothed. The rostrum of most *A. jacobinus* is also somewhat longer and more evenly curved than in the other species in the group.

The lectotype of *A. jacobinus* from Colorado and other specimens from various localities, differ from the types of *A. cycliferus* from Utah and *A. malkini* from Oregon in having the pronotum and elytra somewhat less strongly convex in lateral view (Fig. 1) and the elytra more evenly parallel-sided in dorsal view (Fig. 2). These specimens also exhibit relatively little contrast between pallid ash-colored scales and dark brown scales. Specimens of *A. jacobinus* from Elba, Idaho, are distinguished from most others examined by their smaller size and shorter, less evenly curved rostrum. These also have the extreme apex of the median lobe of the aedeagus more strongly curved in lateral view and



Figs. 41-44. *Anthonomus* (*Cnemocyllus*) spp., metathoracic legs. 41) *A. stolatus*, male, Tucson, Arizona; 42) *A. stolatus*, female, Tucson, Arizona; 43) *A. intermedius*, male, holotype; 44) *A. tenuis*, male, Utah Co., Utah.

resemble *A. tenuis* in their small size and more nearly glabrous rostrum. Some specimens of *A. jacobinus* from Siskyou County, California, have a relatively large proportion of dark brown scales and relatively short rostrum. Regardless of the differences described here, all of these the specimens appear to be assignable to one variable and widespread species.

Anthonomus (*Cnemocyllus*) *californiensis*,
new species
Figs. 3, 4

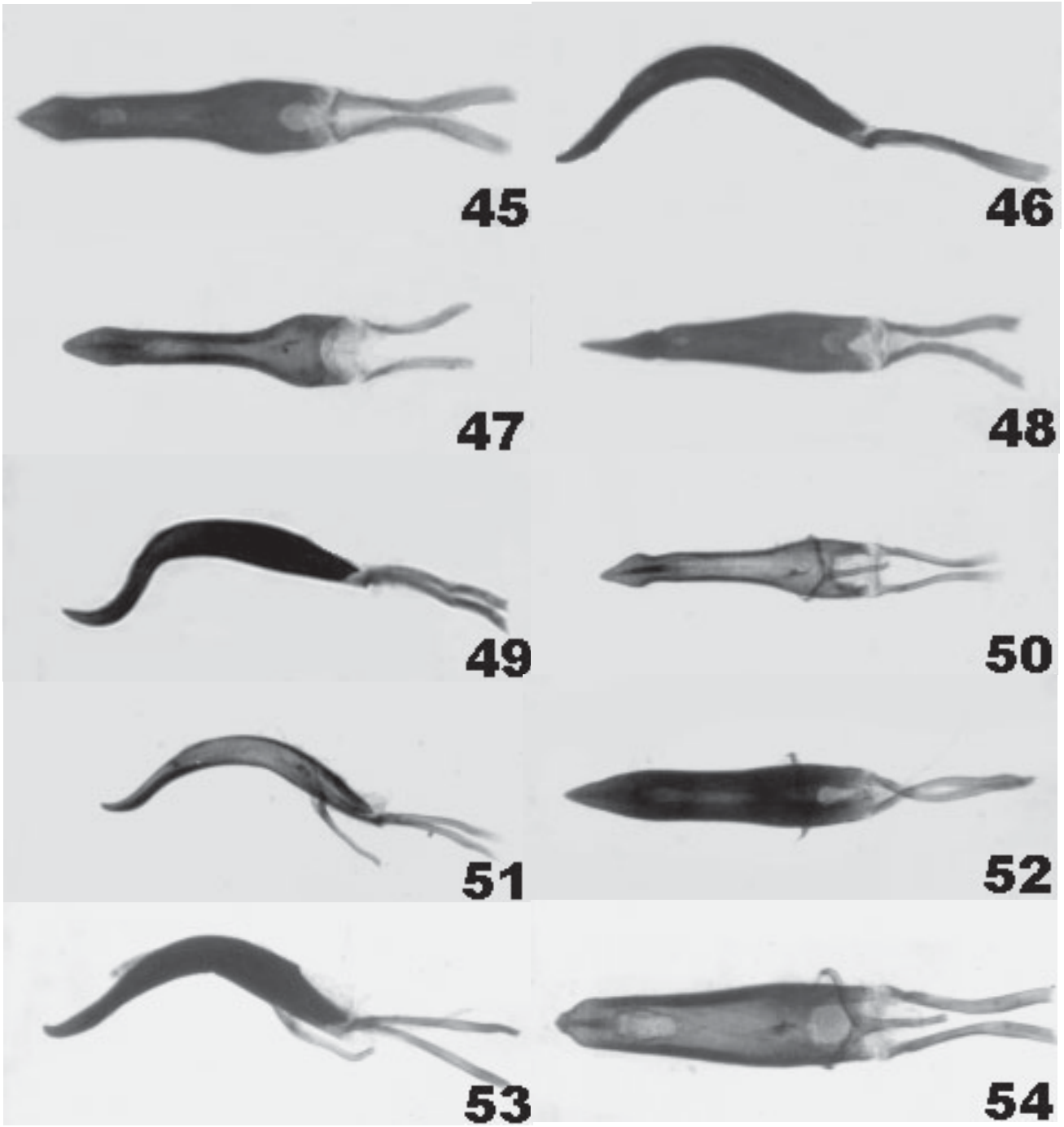
Type series. Holotype. United States. **California**. *San Diego Co.*: [CALIF. Imperial-/ San Diego Cnty./ Mountain Springs/ July 3, 1960] [G. H. Nelson/ on *Gutierrezia*] (male, TAMUIC). Paratypes (107). **Baja California Norte**. [MEX: Baja Cal. (Nor.)/ 23 mi. S. El Rosario/ on hwy 1, IX-4-88/ Coll. E. G. Riley] (1 female, TAMUIC); [MEX: Baja Cal. (Nor.)/ 23 mi. S. El Rosario/ on hwy 1, IX-22-88/ Coll. E. G. Riley] (2 males, 17 females, TAMUIC). **Baja California Sur**. [MEXICO: Baja Cal.Sur/ Isla San Jose, 1 mi/ S. Punta Colorado./ 8-9, IV.1974/ John T. Doyen] (1 female, CASC). **California**. [S. Cal.] [From coll/ of Chas./ Schaeffer] (2 females, BYUC). *Fresno Co.*: [CALIF: Fresno Co./ Ciervo Hills, 18/ mi. SW Mendota/ I-24-76/ J. Doyen] [Berlesed/ ex litter/ *Atriplex*] (1 male, 2 females, CISC). *Imperial Co.*: [CAL. Imperial/ Co. Mt. Sprs/ VII-3-1960/ G. H. Nelson] [Sweeping/ *Gutierrezia*] (1 male, 1 female, CWOB); [CALIF. Imperial/ Co. 7-VI-1961/ G. H. Nelson] [Mt. Sprs. E/ of Jacumba] [On *Acacia*/ *gregii*] (1 male, CWOB). *Los Angeles.*: [Littlerock, Mo-/ jave Dert. CAL/ 14 August 1927/ JCBradley, coll] (1 female, BYUC). *Riverside Co.*: [CALIF. Riverside Co/ 2 mi. S. Palm Desert/ VI-13-1961/ G. H. Nelson] (2 males, CWOB). *San Bernar-*

dino Co.: [Desert Springs/ VIII-11-57 Calif./ G. H. Nelson] [San B'n'dino/ Co. Calif.] [on *Tetradymia*/ *spinosa* var./ *longispina*] (2 females, CWOB); [San Bernardino/ Mts. 4,000 ft./ 4 mi. S Camp] [Angeles Calif/ 8VI58 Acc 299/ D. G. Kissinger] (1 female, TAMUIC); [Victorville Cal/ August 1915/ C. H. Kennedy] [Cornell Univer'y/ Lot 822/ Sub 210/ Det. L. L. Buchanan] (1 female, CUIC). *San Diego Co*.: [Calif: San Diego/ Co., Buckman/ Spr. X-3-64] [J. Powell/ Collector] (1 male, CISC); [Jacumba,/ VI-19-51, Cal.] [D J. & J. N./ Knull Collrs.] (1 male, OSUC); [CALIF., San/ Diego Co., 5 mi./ E Julian VII-29-64] [E. L. Sleeper/ Collr.] [E. L. Sleeper/ Collection] (ELSC); [Lee Valley/ San Diego Co./ Calif. X-4-67] [*Baccharis*/ *sarothroides*] [P. A. Rude/ Collector] (1 male, CUIC); [CALIF. Imperial-/ San Diego Cnty./ Mountain Springs/ July 3, 1960] [G. H. Nelson/ on *Gutierrezia*] [PHOTO] (1 male, TAMUIC); [Mt. Springs/ V-27-60 Cal.] [J. J. & J. N./ Knull Collrs.] (9 males, 7 females, OSUC); [CALIF. Imperial-/ San Diego Cnty./ Mountain Springs/ July 3, 1960] [G. H. Nelson/ on *Gutierrezia*] (12 males, 9 females, TAMUIC); [Calif. S.D. Co. 9 mi./ N. Ramona, Black Cyn,/ Camp. VII-2-65] [Taken by/ sweeping] [Amorpha/ fruticosa] [C. D. Johnson/ collector] (1 female, CWOB); [Calif. San Diego/ Co., Sunshine/ Summit IX-7-69] [E. L. Sleeper/ Collection] (1 male, ELSC). *Santa Barbara Co*.: [CAL: Santa Barbara Co./ Ballinger Cyn. rd., 3.5/ mi. S. jct. hwy 166,/ Cuyama, IX-13-1988/ T. Seeno & J. Davidson] [ex: *Gutierrezia*/ *californica* (DC) T&G/ (= *G. bracteata* Abrams)/ Sn Joaquin matchweed] (33 females, TAMUIC); [New Cuyama/ Calif./ III-1-1960] [R. P. Allen/ Collector] (1 female, CDAE).

Description (Figs. 3, 4). *Length*: 2.0-2.5 mm. *Head*: vertex with dense, imbricated, rounded, chalky white to pallid tawny scales. *Rostrum*: male, slightly, evenly curved; glabrous except for dense scales at extreme base; female evenly curved or slightly more strongly curved basally. *Prothorax*: pronotum with dense, imbricated, rounded, pallid tawny scales dorsomedially and laterally; slightly narrower, rounded to subtruncate, slightly to much darker, tawny red-brown scales present lateromedially on dorsum and on sides. *Elytra*: narrow, slightly widened to posterior 1/3, slightly produced posteriorly; striae narrow, punctures with minute, inconspicuous setae; interstria with rounded, dense, broadly imbricated, multiseriate, recumbent, tawny scales and admixed tawny red-brown scales; most pallid scales dense basally on sutural interstria and interstria 6 and on longer posteromedian portion of interstria 4; sutural interstria slightly prominent, slightly turgid at extreme apices. *Abdomen*: sterna with dense, imbricated, pallid scales laterally, glabrous medially; sternum 5 about 2 times longer than sternum 4, subequal in length to sterna 3 and 4 combined. *Legs*: profemur unarmed or minutely toothed; protibia with inner margin prominent in basal 1/3, broadly concave apically; protibial uncus stout; male metatibia with inner margin prominent in basal 1/3, strongly curved in apical 2/3, dorsal margin strongly curved in apical 1/2; metatibia of female with inner margin slightly prominent in basal 1/2, slightly concave in apical 1/2, outer margin straight; apical mucro minute; tarsal claws with distinct basal tooth. *Genitalia*: median lobe slightly widened distad of base, narrowed from there to slight subapical constriction, drawn out from there to acute apex in dorsal view, strongly sinuate in lateral view.

Plant associations. Label data indicate that adults of *A. californiensis* have been collected on *Baccharis sarothroides* A. Gray and *Gutierrezia californica* (DC) T&G (Asteraceae).

Remarks. *Anthonomus californiensis* closely resembles *A. jacobinus* and *A. arenicolor*. It has the toothed tarsal claws of the former, and the male genitalia are indistinguishable from those of the latter (Figs. 48, 49). It is distinguished from *A. arenicolor* by having a greater proportion of scales on the pronotum and elytra dark, and from *A. jacobinus* by its shorter, narrower, more nearly glabrous rostrum and the chalky white to tawny red-brown rather than ash-colored to dark brown scales on the pronotum and elytra. In addition, the darker scales are more distinctly condensed into maculae in *A. californiensis* than in *A. jacobinus*. This is especially evident in specimens from Mountain Springs, San Diego County. One female of *A. jacobinus* among several females of *A. californiensis* from that locality has widely interspersed dark scales in contrast to the more condensed dark scales in the specimens of *A. californiensis*. The rostrum is also long and evenly curved in the *A. jacobinus* females, while the *A. californiensis* females have the rostrum shorter, curved at the base and narrowed and more nearly straight in the distal 2/3. These differences are not as evident in the two females of *A. jacobinus* from Desert Springs in which the scales are nearly all pallid. These problematic individuals have the same label data as a male, clearly *A. jacobinus*. These females cannot



Figs. 45-54. *Anthonomus* (*Cnemocyllus*) spp., aedeagus. 45) *A. jacobinus*, dorsal view, St. George, Utah; 46) *A. jacobinus*, lateral view, St. George, Utah; 47) *A. bajaensis*, dorsal view, holotype; 48) *A. arenicolor*, dorsal view, Patagonia, Arizona; 49) *A. arenicolor*, lateral view, Patagonia, Arizona; 50) *A. canoides,* dorsal view, Fort Davis, Texas; 51) *A. canoides*, lateral view, Fort Davis, Texas; 52) *A. decipiens*, dorsal view, Brazos Co., Texas; 53) *A. decipiens*, lateral view, Brazos Co., Texas; 54) *A. ligatus*, dorsal view, Yuma, Arizona.

readily be distinguished from *A. californiensis* females from Ciervo Hills and from Cuyama, California.

The series of *A. californiensis* from Santa Barbara County, California, consists entirely of females. In these, the scales on the pronotum and elytra are nearly all broad and rounded.

Anthonomus (*Cnemocyllus*) *bajaensis*,
new species
Figs. 5, 6, 47

Type series. Holotype. **Baja California Norte**. [Cedros Id./ Lower Cal./ June 4, 1925] [H. H. Keifer/ Collector] (male, CASC). Paratypes (8). **Baja California Norte**. [Cedros Id./ Lower Cal./ Junfe 4, 1925] [H. H. Keifer/ Collector] [PHOTO] (1 male, CASC); [Cedros Id./ Lower Cal./ June 4, 1925] [H. H. Keifer/ Collector] (2 males, 2 females, CASC); [MEX: Baja Norte/ 7.7 mi. NNW Rosarito/ X-4-1983/ D. Faulkner & F. Andrews] (3 females, CDAE).

Description (Figs. 5, 6). *Length*: 2.2-2.7 mm. *Head*: vertex with slightly imbricated, rounded, chalky white scales and narrower, pallid tawny red-brown scales. *Rostrum*: male, distinctly, evenly curved; proximal portion tricarinate, with sparse, narrow to setiform scales; female, slightly, evenly curved. *Prothorax*: pronotum with dense, imbricated, rounded, chalky white scales in narrow, middorsal vitta and laterally on dorsum, interspersed lateromedially and on sides among narrow, tawny red-brown scales. *Elytra*: narrow, slightly widened to posterior 1/3, produced posteriorly; strial punctures distinct, each with one narrow, setiform scale; interstria with broad, rounded, imbricated, chalky white scales and narrower, darker red-brown scales; pallid scales dense basally on sutural interstria and interstria 6 and on longer posteromedian portion of interstria 4, variously interspersed elsewhere among narrower, slightly darker scales; sutural interstria slightly prominent, slightly turgid at extreme apices. *Abdomen*: sterna with dense, imbricated, pallid scales laterally, glabrous medially; sternum 5 about 2 times longer than sternum 4. *Legs*: profemur minutely toothed; protibia with inner margin prominent in basal 1/3, broadly concave apically; protibial uncus stout; male metatibia with inner margin prominent in basal 1/3, strongly curved in apical 2/3, dorsal margin strongly curved in apical 1/2; metatibia of female with inner margin slightly prominent in basal 1/2, slightly concave in apical 1/2, outer margin straight; apical mucro minute; tarsal claws with distinct basal tooth. *Genitalia* (Fig. 47): median lobe strongly narrowed in apical 3/4, expanded subapically then narrowed to blunt apex in dorsal view (Fig. 47), broadly sinuate in lateral view.

Plant associations. Unknown.

Remarks. *Anthonomus bajaensis* is distinguished from the other members of the *A. jacobinus* group by the strongly differentiated rounded, imbricated scales and narrower, darker scales that leave the integument fairly broadly exposed. The median lobe of the male genitalia most closely resembles that of *A. jacobinus* but it is more strongly narrowed in the basal 1/4 in dorsal view (cf. Figs. 45, 47), and the apex is not as sharply pointed.

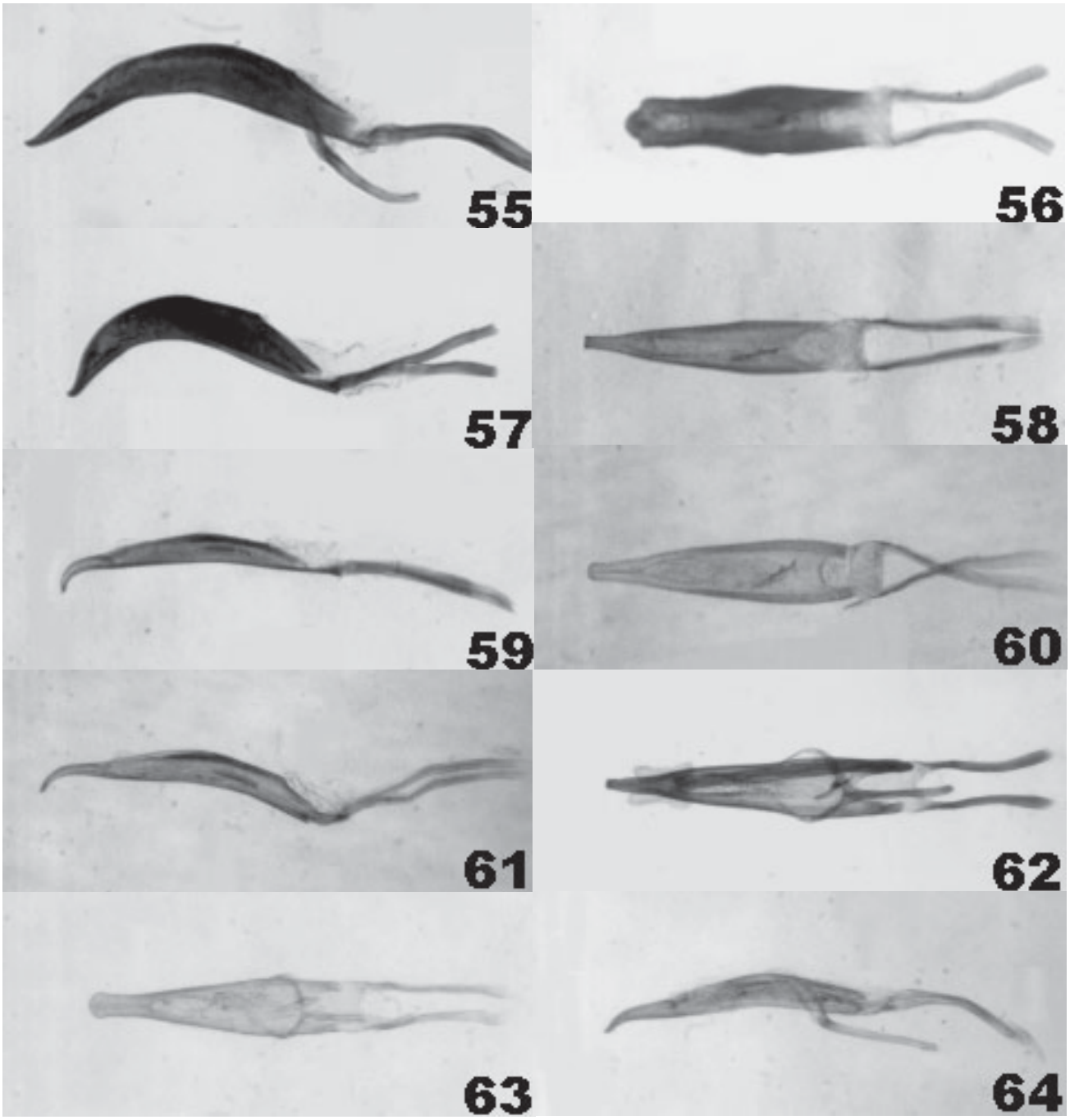
Anthonomus (*Cnemocyllus*) *arenicolor* (Fall)
Figs. 7, 8, 30, 48, 49

Epimechus arenicolor Fall 1901:265. Lectotype (here designated). United States. **Arizona**. *Maricopa Co.*: [Phoenix/ ARIZ. 5/11/94.] [Type/ arenicolor] [M.C.Z./ Type/ 25181] [H. C. FALL/ COLLECTION] [LECTOTYPE/ Epimechus/ arenicolor/ Fall/ des. H. R. Burke] (male, MCZC). Paralectotypes (2). United States. **Arizona**. *Maricopa Co.*: [Phoenix/ Ariz./ 5/11/94.] [H. C. FALL/ COLLECTION] [Epimechus/ arenicolor/ Fall] [PARALECTOTYPE/ Epimechus/ arenicolor/ Fall/ des. H. R. Burke] (1 male MCZC). *Yuma Co.*: [Ari.] [Palomas] [H. C. FALL/ COLLECTION] [Epimechus/ arenicolor/ Fall] [PARALECTOTYPE/ Epimechus/ arenicolor/ Fall/ des. H. R. Burke] (1 male MCZC).

Anthonomus arenicolor (Fall). Clark and Burke 2001:96.

Anthonomus (*Cnemocyllus*) *baccharidis* Pierce 1908:178-179. Holotype. United States. **Arizona**. *Santa Cruz Co.*: [S Rita Mts/ 26.5 Ar] [Coll Hubbard/ & Schwarz] [Anthonomus sp/ near canus] [Type/ No. 10057/ U.S.N.M.] [Anthonomus/ baccharidis/ Type/ Pierce] (male, USNM). Synonymy by Fall 1934:174.

Description (Figs. 7, 8). *Length*: 1.9-2.5 mm. *Head*: vertex with dense, imbricated, rounded, chalky white to pallid tawny scales. *Rostrum*: male, slightly curved, somewhat unevenly in some specimens; glabrous except for dense scales at extreme base; female, evenly curved or slightly more strongly curved basally. *Prothorax*: pronotum with dense, broadly imbricated, rounded, pallid tawny scales dorsomedially and laterally; slightly to distinctly narrower, subtruncate, darker, tawny red-brown scales present lateromedially on dorsum and on sides. *Elytra*: narrow, slightly widened to posterior



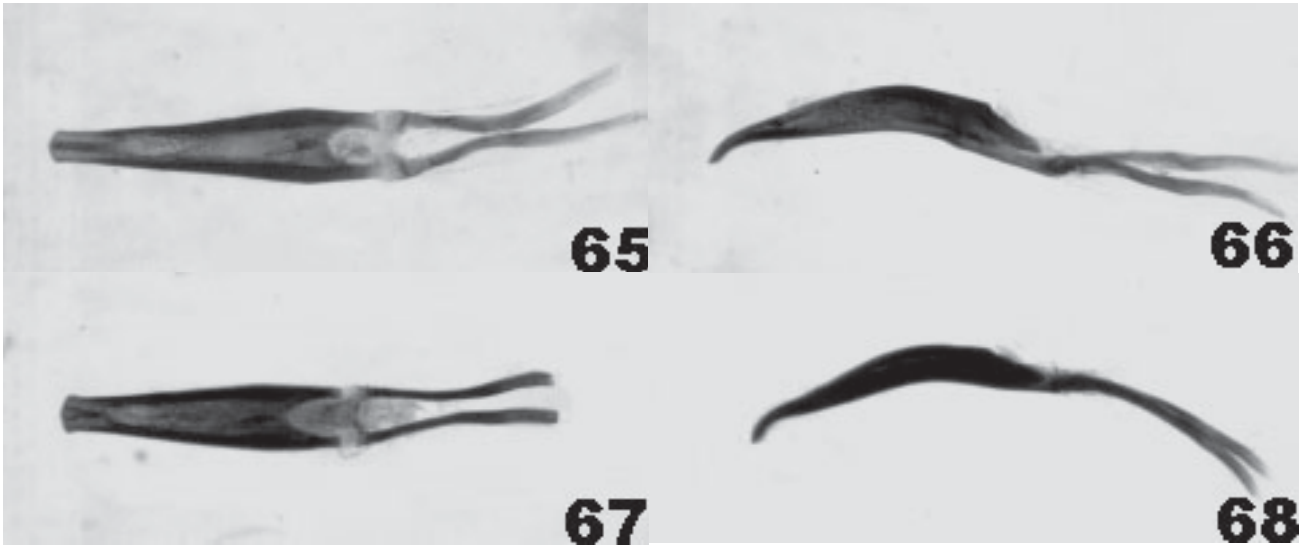
Figs. 55-64. *Anthonomus* (*Cnemocyllus*) spp., aedeagus. 55) *A. ligatus*, lateral view, Yuma, Arizona; 56) *A. elongatus*, dorsal view, Washington, DC; 57) *A. elongatus*, lateral view, Washington, DC; 58) *A. pictus*, dorsal view, Hillsdale, New Jersey; 59) *A. pictus*, lateral view, Hillsdale, New Jersey; 60) *A. quesnelensis*, dorsal view, Santa Fe, New Mexico; 61) *A. quesnelensis*, lateral view, Santa Fe, New Mexico; 62) *A. juncturus*, dorsal view, Pt. Isabel, Texas; 63) *A. stolatus*, dorsal view, Tucson, Arizona; 64) *A. stolatus*, lateral view, Tucson, Arizona.

1/3, slightly produced posteriorly; striae narrow, punctures with minute, inconspicuous setae; interstria with rounded, dense, broadly imbricated, multiseriate, recumbent, tawny scales and admixed tawny red-brown scales, darker scales slightly to distinctly narrower, variously present in diffuse median rows on some interstiae; most pallid scales dense basally on sutural interstria and interstria 6 and on longer posteromedian portion of interstria 4; sutural interstria slightly prominent, slightly turgid at extreme apices. *Abdomen*: sterna with dense, imbricated, pallid scales laterally, glabrous medially; sternum 5 about 2 times longer than sternum 4, slightly shorter than sterna 3 and 4 combined. *Legs*: profemur minutely toothed; protibia with inner margin prominent in basal 1/3, broadly concave apically; protibial uncus stout; metatibia of male with inner margin prominent in basal 1/3, strongly curved in apical 2/3 (Fig. 30); metatibia of female with inner margin slightly prominent in basal 1/2, slightly concave in apical 1/2, outer margin straight, apical mucro minute; tarsal claws simple, without basal tooth. *Genitalia*: median lobe slightly widened distad of base, narrowed from there to slight subapical constriction, extended and narrowed from there to acute apex in dorsal view (Fig. 48), strongly sinuate in lateral view (Fig. 49).

Specimens examined. In addition to the types of *A. arenicolor* and *A. baccharidis* from Arizona, 342 specimens of the species from the following localities were examined. Mexico. "Mex.-Guat. border" (1, USNM). **Jalisco**. Villa Guadalupe (1, CUIC). **Sinaloa**. Mazatlan (1, TAMUIC). **Sonora**. (1, CASC); 10 mi. NE Cananea (4, UAIC); 8 mi. E Imuris, Cocospera Canyon (3, AMNH); Guaymas (1, TAMUIC); Magdalena (1, EMUS). United States. **Arizona**. (6, MCZC). "Bill Wms. F" (11, MCZC). *Cochise Co*.: Cochise Stronghold (1, CWOB). Double Adobe (1, CWOB; 5, TAMUIC); 1 mi. E Douglas (1, TAMUIC); 7.6 mi. E Douglas (3, CDAE); Dry Canyon, Sands Ranch, SE ent Whetstone Mountains ("on *Baccharis glutinosa* Pers." (1, CASC); Fort Huachuca (2, CASC); Miller Canyon, Huachuca Mountains (3, BYUC); Pridham Canyon, Chiricahua Mountains (1, TAMUIC); 6 mi. W Mont. Pass (1, UAIC); Skeleton Canyon, Peloncillo Mountains (2, TAMUIC). *Gila Co*.: Winkleman (2, UAIC). *Graham Co*.: Aravaipa Canyon (19, TAMUIC); 13 mi. E Bonita (4200', 2, CMNC); Bonita Creek (1, CWOB); Pinaleño Mountains (1, TAMUIC). *Maricopa Co*.: Phoenix (1, CUIC; 5, INHS; 13, MCZC); 5, USNM); 16 km. S Sunflower, 550m (1, HAHC). *Pima Co*.: Arivaca (1, CWOB); Box Canyon, Santa Rita Mountains (16, BYUC); 14, CWOB); Brown's Canyon, Baboquivari Mountains (1, CWOB); Molino Basin, Santa Catalina Mountains (4300', 1, CMNC); Quijotoa (1, CUIC); Deserticolus (25, CWOB); San Xavier Mission (17, CASC); Tanque Verdi (3, UAIC); Tucson (2, BYUC; 1, CASC; 2, CWOB; 2, UAIC). *Pinal Co*.: Picacho (1, BYUC). *Santa Cruz Co*.: 15 mi. W Nogales (5, USNM); Patagonia (21, CUIC; 3, CWOB; 1, OSUO; "On *Baccharis glutinosa* Pers. (59, TAMUIC; 2, UAIC); "*Lepidium thurberi*," 2, UAIC; "from *Condalia lycioides* and *Baccharis glutinosa*" (2, UAIC); "*Baccharis glutinosa*" (2, UAIC); "arrow weed" (5, USNM); 9 mi. W Peña Blanca (4100', 2, CMNC); 9 mi. W Sonoita (1, TAMUIC); Sycamore Canyon (2, CWOB; "Reared ex seeds of pressed plant, *Baccharis glutinosa*" (25, CWOB). *Yavapai Co*.: Verde Hot Springs "*Baccharis glutinosa*" (2, CWOB); "*Baccharis glutinosa*" (17, TAMUIC). *Yuma Co*.: Somerton ("on dried willow flowers," 5, USNM); Yuma (2, USNM); "*Baccharis sarothroides*" (1, UAIC); "rosin bush" (5, UAIC). **California**. *Imperial Co*.: (1, USNM); El Centro ("on *Pluchea sericea*" (2, USNM); Westmoreland (3, USNM). *Riverside Co*.: Blythe (1, OSUC). **New Mexico**. Jemez Mountains (2, MCZC).

Plant associations. Label data indicate that adults of *A. arenicolor* have been "Reared ex seeds" *Baccharis glutinosa* Pers., and occur on *Baccharis sarothroides* and *Pluchea sericea* (Asteraceae). Burke (1968) described the pupa of *A. arenicolor* from flower heads of *Baccharis glutinosa*. Boldt and Robbins (1990) listed *A. arenicolor* and the closely related *A. canoides* (both as *Epimechus*) as "common" (more than one per plant) on flower heads and leaves and as monophagous on *Baccharis salicifolia*. They reported that both "flowerhead weevils" feed on leaves and that oviposition occurred on female and male flowers from July to September, producing one generation per year.

Remarks. Fall (1901) asserted that his *E. arenicolor* (now *Anthonomus arenicolor*) "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*." Although all *A. arenicolor* and most *A. canoides* examined have simple tarsal claws like those of *Epimechus curvipes* Dietz, these two species are more closely related to *A. decipiens* and its allies. This is indicated by close similarity in general appearance, the structure of the metatibia of the male, and especially the



Figs. 65-68. *Anthonomus* (*Cnemocyllus*) spp., aedeagus. 65) *A. intermedius*, dorsal view, holotype; 66) *A. intermedius*, lateral view, holotype; 67) *A. tenuis*, dorsal view, Utah Co., Utah; 68) *A. tenuis*, lateral view, Utah Co., Utah.

male genitalia. These two species were removed from *Epimechus* and transferred to *Anthonomus* by Clark and Burke (2001). They are now assigned to the subgenus *Cnemocyllus*.

Anthonomus arenicolor closely resembles *A. californiensis* from which it is distinguished by the complete absence of a basal tooth on the tarsal claws. The claws on specimens from Imperial County, California, assigned to *A. californiensis*, have a relatively small tooth on the tarsal claws, whereas specimens from the same county without a tooth on the claws are assigned to *A. arenicolor*. Further collecting in this region is needed to determine if it is an area of intergradation.

Anthonomus arenicolor is replaced in the Chihuahuan Desert regions of Texas, Chihuahua and Hidalgo, by the slightly smaller *A. canoides*, individuals of which are also distinguished by the more evenly curved rostrum, the more pallid scales on the pronotum and elytra, and, most reliably by the male genitalia (cf. Figs. 48-51).

Anthonomus (*Cnemocyllus*) *canoides* (Fall)
Figs. 9, 10, 31, 50, 51

Epimechus canoides Fall 1913:60. Holotype. **Texas**. *El Paso Co.*: [El Paso,/ Tex.] [Apr.] [male] [M.C.Z/ Type/ 25182] [Epimechus/ canoides/ Fall/ Type.] [H. C. FALL/ COLLECTION] (male, MCZC).
Anthonomus canoides (Fall). Clark and Burke 2001:96.

Description (Figs. 9, 10). *Length*: 1.8-2.2 mm. *Head*: vertex with dense, elongate, apically rounded scales, broader, more pallid, imbricated scales present on frons and beneath. *Rostrum*: male, evenly curved, proximal portion with dense, imbricated scales at extreme base, otherwise smooth, shining, glabrous; female evenly curved. *Prothorax*: pronotum with dense, apically rounded, scales; broad, chalky white scales predominant medially and laterally on dorsum, replaced on anterolateral portions of dorsum by narrower, pallid tawny brown scales; darker brown scales also present on pleuron. *Elytra*: narrow, subparallel-sided; striae narrow, punctures with minute, inconspicuous setae; interstria with dense, apically rounded, imbricated, multiseriate, recumbent, chalky white to pallid tawny scales; each interstria also with diffuse median row of narrower scales; pallid scales dense basally on sutural interstria and interstria 6 and on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among slightly darker scales; sutural interstria not prominent. *Abdomen*: sterna 1-4 with dense, imbricated, pallid scales; sternum 5 about 2 times longer than sternum 4, slightly shorter than sterna 3 and 4 combined with elongate, setiform scales medially. *Legs*: profemur minutely toothed; protibia with inner margin prominent in basal 1/4, broadly concave in apical 3/4; protibial uncus slender; metatibia of male with inner margin prominent in basal 1/4, strongly concave in apical 3/4, outer margin curved in apical 1/2 (Fig. 31); metatibia of female with inner margin slightly prominent in basal 1/2, slightly concave in apical 1/2, outer margin straight; apical mucro minute; tarsal claw minutely toothed

or without basal tooth. *Genitalia*: median lobe strongly narrowed in apical 3/4, expanded subapically, strongly narrowed to apex in dorsal view (Fig. 50), slightly sinuate in lateral view (Fig. 51).

Specimens examined. In addition to the holotype from Texas, 286 specimens of *A. canoides* from the following localities were examined. Mexico. **Chihuahua**. Ciudad Juárez (1, MCZC); 4 mi. SW Colonia Juárez (1, TAMUIC); 5 mi. N Matamoros (1, USNM). United States. **New Mexico**. *Hidalgo Co.*: Double Adobe Ranch, Animas Mountains (5,500', 1, CASC). **Texas**. *Brewster Co.*: (6, CASC); 5 mi. N Alpine (1, CWOB); 25 mi. S Alpine (1, HAHC); Big Bend National Park: (1, TAMUIC; Boquillas Canyon, "on *Baccharis*," 15, CWOB; 1.7 mi NE Castolón, 1, CMNC; 5 mi. N Panther Junction, 4, CWOB; Rio Grande, 1, USNM; Rio Grande Village 4, CWOB; Santa Elena Canyon 75, CWOB; 1, TAMUIC); Chisos Mountains (1, USNM). *Culberson Co.*: 20 mi. N Van Horn (1, TAMUIC). *El Paso Co.*: El Paso (2, MCZC). *Jeff Davis Co.*: (1, OSUC); Fort Davis (1, TAMUIC); 2 mi. W Fort Davis (7, HAHC); 8 mi. NE Fort Davis (27, TAMUIC); 15 mi. SE Fort Davis (45, TAMUIC); 15 mi. NE Fort Davis (1, TAMUIC); Davis Mountains (1, OSUC); Davis Mountains State Park (5000', 1, CMNC); Limpia Canyon (5, TAMUIC); Limpia Creek, Davis Mountains State Park (4800', 1, CMNC); Madera Canyon, west of Fort Davis (3, TAMUIC). *Presidio Co.*: 11 mi. S Marfa (1, TAMUIC); 44 mi. SW Marfa (1, TAMUIC); Plata (1, TAMUIC); Presidio ("On *Artemisia* sp.," 9, USNM); 2 mi. S Presidio (5, TAMUIC); 5 mi. SE Presidio, Alamito Creek (1, TAMUIC); 6 mi. SE Presidio (5, TAMUIC); 7 mi. N Ruidosa, Hot Springs (2, TAMUIC); Shafter (28, TAMUIC; "Taken on *Baccharis* sp.", 23, TAMUIC).

Plant associations. Adults of *A. canoides* have been collected on *Baccharis* and *Artemisia* (Asteraceae). Boldt and Robbins (1992) reported that adults of *A. canoides* (as *Epimechus*) feed on leaves and flowers of seepwillow, *Baccharis salicifolia* (R.&P.) (Asteraceae), and larvae feed in the flowerheads. These workers also reported making extensive searches of seepwillow and four other species of *Baccharis* in the southwestern United States and finding *A. canoides* only on seepwillow east of the Continental Divide.

Remarks. *Anthonomus canoides* is closely related to *A. arenicolor* and is placed in the *Anthonomus* subgenus *Cnemocyllus* for the reasons outlined in the remarks on the latter species. It is distinguished from *A. arenicolor* by the more pallid scales, the longer, more evenly curved rostrum and by the shape of the median lobe of the aedeagus (cf. Figs. 48-51). Most specimens of *A. canoides* are like those of *A. arenicolor* in lacking a tooth on the tarsal claws, but some of the specimens have a minute basal tooth. The rostrum and aedeagus of *A. canoides* are more like those of *A. jacobinus* which has ash-colored and dark brown rather than chalky white and tawny scales and the latter has a well-developed tooth on the tarsal claws. *Anthonomus canoides* replaces *A. arenicolor* (known from Arizona, California, New Mexico and the Mexican states of Sonora, Sinaloa and Jalisco) in western Texas, and in the Mexican states of Chihuahua and Hidalgo.

Anthonomus (*Cnemocyllus*) *decipiens* Group

Diagnostic combination. Antennal funiculus with six articles; body elongate, narrow (Figs. 11-16); metatibial mucro of male distinctly curved in lateral view (Figs. 32, 34), excavated on outside; tarsal claw with basal tooth; profemur slightly wider than metafemur, minutely toothed; metafemur unarmed.

Key to Species in the *Anthonomus* (*Cnemocyllus*) *decipiens* Group

1 Body stout, about 2.0 times longer than wide (Fig. 12); metatibia of male with inner margin prominent in basal 1/4, broadly concave in apical 3/4, metatibial mucro long, curved (Fig. 32); median lobe of aedeagus slightly constricted medially, evenly narrowed to subacute apex in dorsal view (Fig. 52); western and south-central United States and Mexican High Plateau ..... ***A. decipiens***

1' Body elongate, about 2.2 times longer than wide (Figs. 14, 16); metatibia of male with inner margin less distinctly prominent basally, curved in apical 3/4 (Fig. 36) or less distinctly curved apically (Fig. 34), metatibial mucro shorter (Figs. 34, 36); median lobe of aedeagus bluntly rounded at apex (Figs. 54, 56) 2

2 Metatibia of male with inner margin distinctly curved in apical 3/4, with short apical mucro that extends nearly at right angle to long axis of tibia (Fig. 36); median lobe of aedeagus rather abruptly narrowed in dorsal view (Fig. 56), thick and strongly curved in apical 1/2 in lateral view (Fig. 57); eastern, central and western United States ..... ***A. elongatus***

2' Metatibia of male with inner margin less distinctly curved apically, with oblique apical mucro (Fig. 34); median lobe of aedeagus rather gradually narrowed in dorsal view (Fig. 54), more slender and less strongly curved in apical 1/2 in lateral view (Fig. 55); southwestern United States and Mexican High Plateau ..***A. ligatus***

Anthonomus (*Cnemocyllus*) *decipiens* LeConte
Figs. 11, 12, 32, 33, 52, 53

Anthonomus decipiens LeConte 1876:206, 207. Holotype. **Texas**. [Tex.] [726] [Type/ 2072] [J. L. Leconte/ Coll.] [A./ decipiens/ Lec.] (female, MCZC). Blatchley 1922:106 (locality data). Burke 1968:58 (pupa, as *Anthonomus canus*). Ahmad and Burke 1972:59 (larva). Burke and Gates 1974:317-318 (hosts, life history). Burke 1971:48.

Anthonomus (*Cnemocyllus*) *decipiens* LeConte 1876: Dietz 1891:243.

Anthonomus affinis LeConte 1876:207. Lectotype (designated by Burke 1971:48). **Texas**. [Tex.] [733] [Type/ 2074] [A./ affinis/ Lec.] [J. L. Leconte/ Coll.] [LECTOTYPE/ Anthonomus/ affinis/ LeC./ design. by/ H. R. Burke] (female, MCZC). Paralectotypes (designated by Burke 1984:264). United States. **Texas**. [Tex.] [Type/ 2074] [J. L. Leconte/ coll.] (2 females, MCZC). Fall 1913:58, 59 (= *A. canus* LeConte; = *A. nanus* LeConte). Synonymy by Burke 1971:48.

Anthonomus (*Cnemocyllus*) *affinis* LeConte 1876: Dietz 1891:244.

Anthonomus nanus LeConte 1876:207 (not Gyllenhal 1836:351). Lectotype (designated by Burke 1971:48). **Texas**. [Tex.] [734] [Type/ 2075] [J. L. Leconte/ Coll.] [LECTOTYPE/ Anthonomus/ nanus/ LeC./ design. by/ H. R. Burke] [A./ nanus/ Lec.] (female, MCZC). Fall 1913:58, 59. Fall 1913:58, 59 (= *A. canus* LeConte; = *A. affinis* LeConte). Synonymy by Burke 1971:48. Burke 1984:265.

Anthonomus (*Cnemocyllus*) *nanus* LeConte 1876: Dietz 1891:244.

Anthonomus (*Cnemocyllus*) *lineatulus* Dietz 1891:245-246. Holotype. **Texas**. *Burnet Co.*: [Burnett/ Co Tex] [Coll Hubbard/ & Schwarz] [Cnemocyllus/ lineatulus/ Dietz] [TYPE/ No. 4551/ U.S.N.M.] [Anthonomus/ lineatulus/ Dtz.] (female, USNM). Synonymy by Burke 1971:48.

Anthonomus canus LeConte 1876:207. Lectotype (designated by Burke 1971:48). **Texas**. [741] [Type/ 2073] [J. L. Leconte/ Coll.] [LECTOTYPE/ Anthonomus/ canus/ LeC./ design. by/ H. R. Burke] [A./ canus/ Lec.] (male, MCZC). Fall 1913:58, 59 (= *A. affinis* LeConte; = *A. nanus* LeConte). Synonymy by Burke 1971:48. Burke 1968:58 (pupa). Ahmad and Burke 1972:59 (hosts, larva). Burke 1984:264.

Anthonomus (*Cnemocyllus*) *canus* LeConte 1876: Dietz 1891:243-244.

Anthonomus (*Cnemocyllus*) *aphanostephi* Pierce 1908:177-178. Holotype. **Texas**. *Dallas Co.*: [Dallas Tx/ IV.24.03] [Bred Aster/ head] [W77/ I1b1/13] [Type/ No. 10055/ U.S.N.M.] [Anthonomus/ aphanostephi/ Type/ Pierce] (male, USNM). Synonymy by Burke 1971:48.

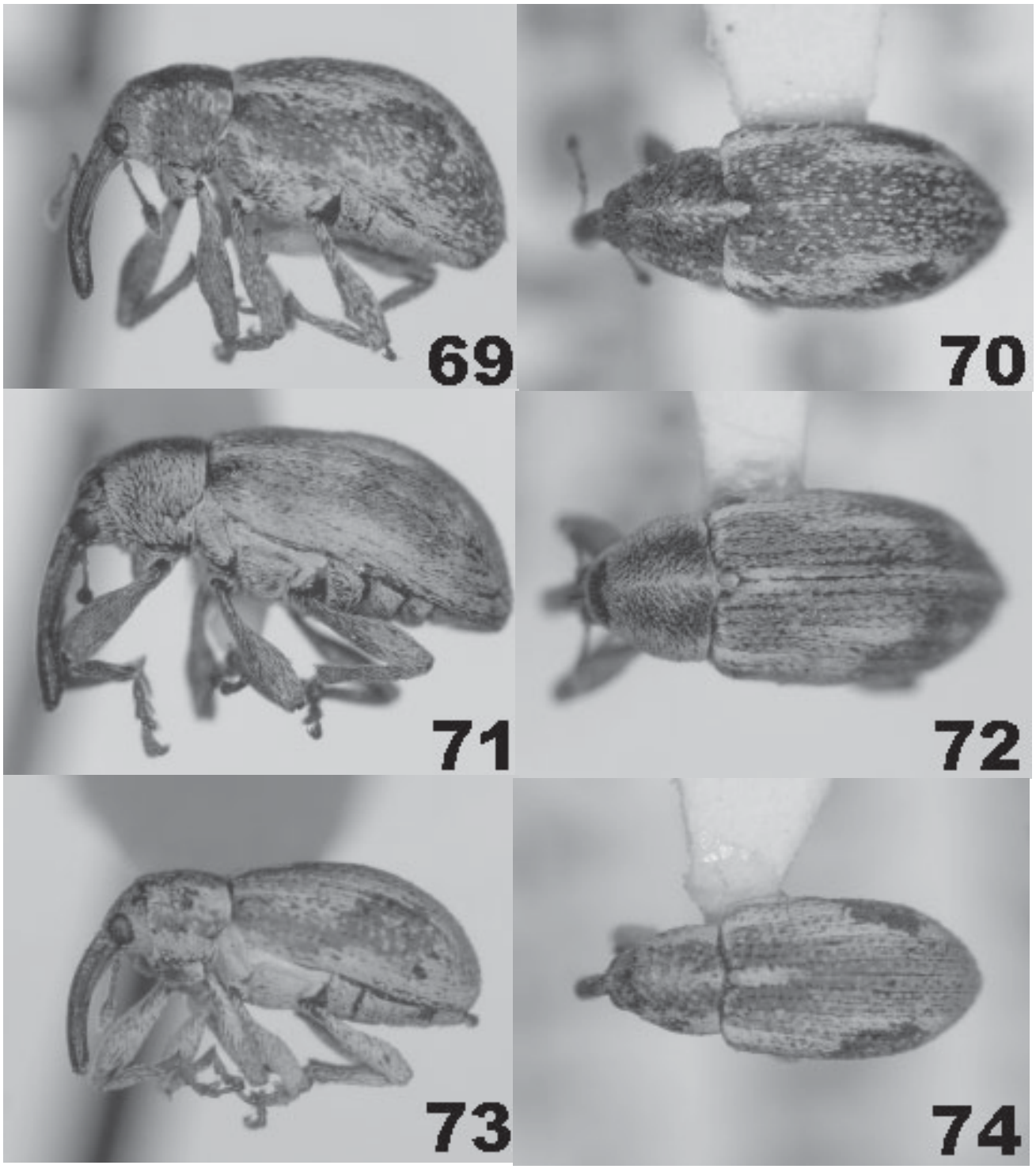
Pseudanthonomus cretaceus Champion 1903:198. **Mexico**. [Sp. figured] [Mexico City,/ May. 88./ H.H.S.] [B.C.A.Col.IV.4./ Pseudanthonomus/ cretaceus,/ Champ.] [Holo./ type] [Type] (female, BMNH). **New Synonymy**.

Anthonomus cretaceus (Champion): Clark 1990:657.

Description (Figs. 11, 12). *Length*: 1.8-2.2 mm. *Head*: rostrum evenly curved, with dense, imbricated scales at extreme base, narrower, sparser scales toward antennal insertions; pronotum with broad, chalky white scales medially and laterally on dorsum, narrower, dark brown scales anterolaterally; elytral interstriae with dense, rounded, imbricated, multiseriate, recumbent scales and with narrower scales in diffuse median row; pallid scales dense basally on sutural interstria and interstria 6 and on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among slightly darker brown scales; sutural interstria slightly prominent, especially at apices; abdominal sternum 5 slightly shorter than sterna 3 and 4 combined, with elongate, setiform scales medially; protibia with inner margin prominent in basal 1/2, broadly concave in apical 1/2; protibial uncus slender; metatibia of male with inner margin prominent in basal 1/4, broadly concave in apical 3/4, outer margin broadly, evenly curved, with long apical mucro (Fig. 32); metatibia of female slightly curved in basal 2/3 on inner margin, slightly expanded at apex, with apical mucro broad at base, slightly oblique, acute (Fig. 33); median lobe of aedeagus broadly constricted medially, strongly narrowed apically in dorsal view (Fig. 52), strongly sinuate, upturned apically in lateral view (53).

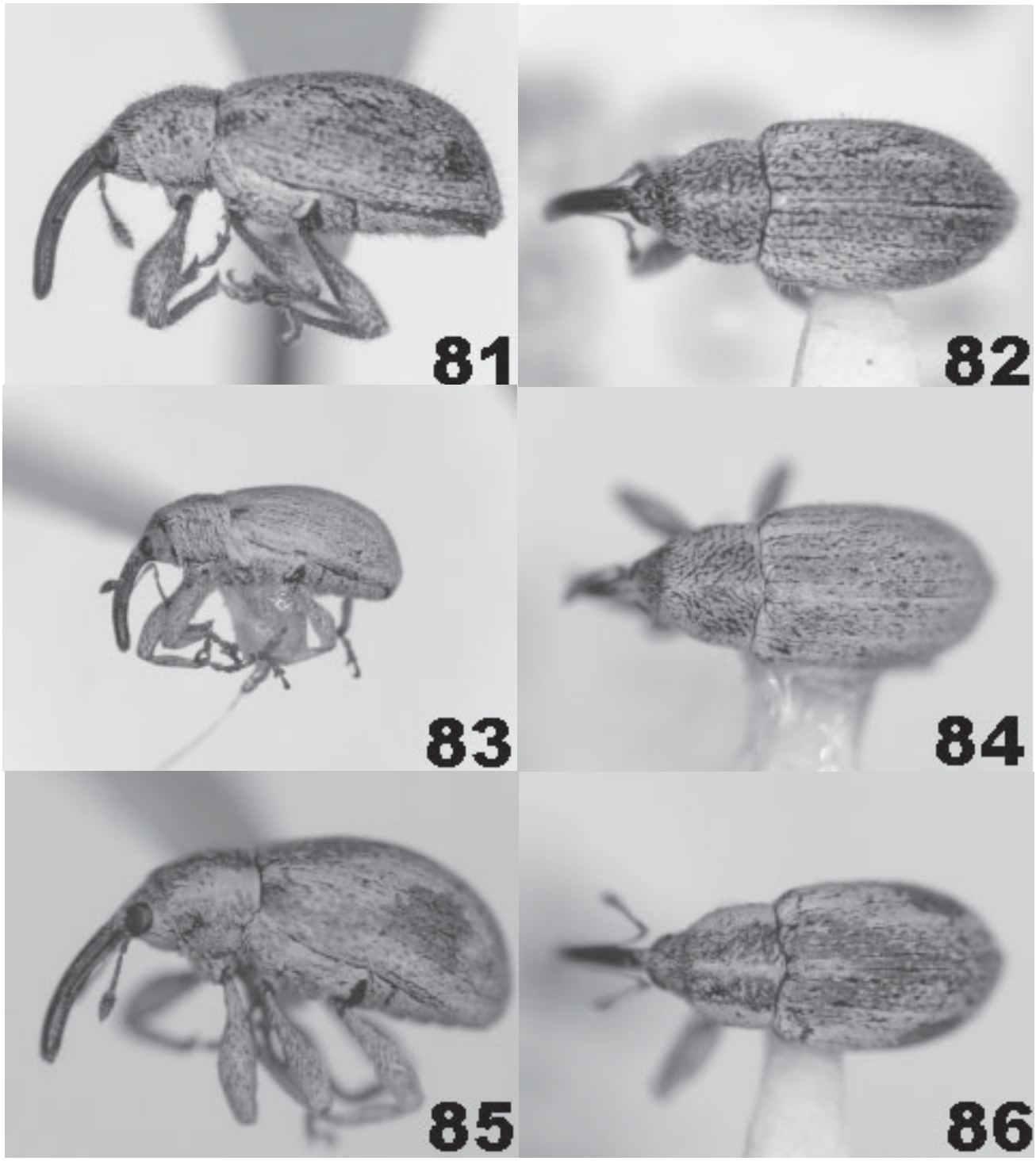
Specimens examined. In addition to the types of *A. decipiens* and its synonyms from Texas and Mexico, 972 specimens of the species from the following localities were examined. Mexico. **Aguascalientes**. 8 mi. N Aguascalientes (2, CWOB). **Chihuahua**. Ciudad Camargo (1, CUIC); La Campana (1, CWOB; 4, ELSC; 1, EMUS). **Distrito Federal**. México (1. USNM). **Durango**. 22 mi. NE Durango (7, TAMUIC); Palos Colorados (1, AMNH). **Guanajuato**. León (1, USNM); 9 mi. SE San Luis de la Paz (1, CUIC). **Hidalgo.** Guadalupe (5, MCZC). **Jalisco**. Guadalajara (5, MCZC); 4 mi. SW Jalosto-

titlan (1, CISC); 13 mi. SE Lagos de Moreno (6700', 1, CWOB). **Mexico**. km 49, near Tecalapa, on Highway 57 (5, TAMUIC); 9 mi. N Tepotzotlan (7, CWOB). **Morelos**. Lago Tequesquitengo (2, TAMUIC). **Nuevo Leon**. Nuevo Laredo (km. 53); Highway 85, 1 mi. N Rio Salado (20, CWOB); 1 mi. N Rio Salario (1, CWOB). **San Luís Potosí**. 30 mi. N Villa Hidalgo (9, TAMUIC); San Luís Potosí (1, TAMUIC). **Tamaulipas**. Nuevo Laredo (1, UAIC). United States. **Arizona**. *Apache Co*.: White Mtns. (1, BYUC). *Cochise Co*.: 1 mi. NE junction 181 and 186 (4,800', 1, CWOB); Bisbee (1, TAMUIC); Chiricahua Mountains (1, CASC); mouth Copper Canyon, Huachuca Mountains (1, TAMUIC); Miller Canyon, Huachuca Mountains (6, OSUC; 3, TAMUIC); Tombstone (1, TAMUIC). *Coconino Co*.: 13 mi. N Sedona, Oak Creek Canyon (1, CWOB). *Graham Co*.: Gila Valley (1, BYUC). *Mohave Co*.: Virgin River (1, BYUC). *Pima Co*.: Tucson (5, BYUC). *Santa Cruz Co*.: Nogales (6, BYUC). **California**. *Amador Co*.: Silver Lake to Ham's Station (Kit Carson Pass) (1, CASC). *Inyo Co*.: 7 mi. S Independence (1, CWOB). *San Bernardino Co*.: Oro Grande (1, OSUC). **Colorado.** *Archuleta Co*.: 10 mi. SE Pagosa Springs (1, TAMUIC). **Kansas**. *Kiowa Co*.: (1, CWOB). *Reno Co*.: (1, CWOB). **New Mexico**. *Eddy Co*.: 14 mi. S Malaga (5, TAMUIC). *Lea Co*.: 32°24.7'N, 103°40.9'W (4, TAMUIC); 19 mi. NE Lovington (4, CWOB). *McKinley Co*.: 4 mi. S Fort Wingate (1, CWOB). **Oklahoma**. Shaine (on A*Erigeron annuus*," 3, USNM). *Cotton Co*.: Randlett (63, USNM). Latimer Co.: (1, CWOB). *Marshall Co*.: 5 mi. W Madil (1, CWOB); 2 mi. E Willis (1, TAMUIC). Pottawatomie Co.: Shawnee ("on *Erigeron annuus*," 1, USNM). **Texas**. (1, BYUC; 11, MCZC; 1, TAMUIC; 1, USNM). *Anderson Co*.: (6, TAMUIC); 10 mi. S Elkhart (10, TAMUIC). *Aransas Co*.: Aransas (1, CUIC); George Island (1, MCZC); Goose Island State Park (1, CWOB; 4, TAMUIC). *Bailey Co*.: Muleshoe (1, CWOB). *Bastrop Co*.: (4, TAMUIC); 2.5 mi. W jct. Highway 95 and Highway 21 (1, CWOB); Bastrop (17, TAMUIC). *Bee Co*.: Beeville (2, USNM). *Bexar Co*.: (5, USNM; 1, TAMUIC); Bexar (5, CUIC); San Antonio (4, CASC; 5, USNM). *Blanco Co*.: 5 mi. E Cypress Mill (3, TAMUIC); Round Mountain (2, TAMUIC). *Bosque Co*.: 2 and 6 mi. S and 2 mi. W Iredell (6, TAMUIC); Laguna Park (1, TAMUIC). *Brazos Co*.: (Brayton School; Bryan; College Station; 12 mi. E, 2 mi. E College Station; Highway 30, Navasota Road; Minter Springs; 2.5 mi. SW Wellborn ("sweeping *Arenaria* sp.," "ex *Erigeron* sp.," "sweeping *Heterotheca* sp.," "sweeping *Rudbeckia* sp.," 25, CWOB; 185, TAMUIC); Millican (2, TAMUIC). *Brewster Co*.: 7 mi. W and 22 mi. S Alpine (5, TAMUIC); 17 mi. S Alpine (1, CWOB); Green Valley (4, MCZC); Big Bend National Park: (Green Gulch, 5300', 2, TAMUIC; Pine Canyon, 1, CWOB, South Rim Trail, Chisos Mountains, 1, TAMUIC); 7 mi. E Marathon (5, TAMUIC); 15 mi. N Marathon (3, TAMUIC); 22 mi. E Marathon (1, CWOB). *Briscoe Co*.: Lake Theo (1, CWOB). *Brooks Co*.: 1 mi. S Falfurrias (1, CWOB). *Brown Co*.: Brownwood (1, TAMUIC). *Burleson Co*.: (1, TAMUIC); 0.5 mi. NW Clay (1, TAMUIC); 3 mi. E Old Dime Box (1, TAMUIC). *Burnet Co*.: Inks Lake State Park (3, TAMUIC). *Cameron Co*.: Brownsville (1, MCZC). *Castro Co*.: 2 mi. N Dimmit (1, CWOB). *Colorado Co*.: (1, TAMUIC); Columbus (1, USNM). *Comal Co*.: Hunter (1, TAMUIC). *Crockett Co*.: 31 mi. Ozona (4, CWOB). *Crosby Co*.: 3 mi. E Crosbyton (1, CWOB). *Culberson Co*.: 17 mi. E Hueco (1, CWOB). *Dallas Co*.: Dallas (1, BYUC; 1, CUIC; 2, USNM; Mesquite (2, TAMUIC). *Dickens Co*.: 8 mi. NE Dickens (19, CWOB); 9 mi. SE Dickens (20, CWOB); 3 mi. SW Dumont (28, CWOB). *Donley Co*.: Clarendon (4, USNM). *Duval Co*.: 2 mi. SW San Diego (7, CWOB). *El* Paso.: Ysleta (1, OSUC). *Erath Co*.: 11 mi. S Stephenville (1, TAMUIC). *Fisher Co*.: (1, TAMUIC). *Floyd Co*.: 12 mi. NE Floydada (3, CWOB). *Gaines Co*.: Seagraves (3, CWOB); 4 mi. S Seminole (5, CWOB). *Gillespie Co*.: (9, TAMUIC); 4 mi. E Goss (1, TAMUIC); Lange's Mill (1, TAMUIC). *Glasscock Co*.: 9 mi. S. Garden City (5, CWOB). *Goliad Co*.: Goliad (10, USNM). *Gonzales Co*.: 4 mi. S Harwood ("ex *Xanthocephalum*," 25, TAMUIC); 6 mi. N Gonzales (6, TAMUIC). *Grayson Co*.: Denison (2, USNM). *Green Co*.: 13 mi. N San Angelo (15, CWOB). *Hall Co*.: 6 mi. SE Turkey (11, CWOB). *Hidalgo Co*.: Bentsen-Rio Grande State Park (1, TAMUIC). *Hill Co*.: 10 mi. W West (3, TAMUIC). *Howard Co*.: 4, 5, and 10 mi. S Big Spring (8, CWOB). *Hudspeth Co*.: 8 mi. E Salt Flat (1, CWOB). *Hutchinson Co*.: Fritch Fortress (1, CWOB). *Irion Co*.: Barnhart (1, CWOB). Jeff Davis Co.: Davis Mountains (1, CWOB); Davis Mountains State Park (5,000', 1, TAMUIC); H. O. Canyon, west of Fort Davis (1, TAMUIC). Jefferson Co.: Port Arthur (1, CASC). *Jim Wells Co*.: 3.3 mi. W Alice (6, TAMUIC); 7 mi. W Alice (2, TAMUIC); 23 mi. N Alice (6, CWOB); Sandia ("Taken on *Xanthocephalum texanum* (DC.) Shinners," 24, TAMUIC). *Kenedy Co*.: 13 mi. S Sarita (6, TAMUIC). *Kerr Co*.: Center Point (1, TAMUIC); Kerrville (15, TAMUIC; 2, USNM), "Taken on *Xanthocephalum texanum* (DC.) Shinners," 30, TAMUIC). *Kimble Co*.: (29, TAMUIC). *Kleberg Co*.: (2, TAMUIC; "*Core-*



Figs. 69-74. *Anthonomus* (*Cnemocyllus*) spp., habitus, lateral and dorsal views. 69) *A. inermis*, male, Marin Co., California; 70) *A. inermis*, male, Marin Co., California; 71) *A. extensus*, male, Boise Co., Idaho; 72) *A. extensus*, male, Boise Co., Idaho; 73) *A. deserticolus*, female, Pima Co., Arizona; 74) *A. deserticolus*, female, Pima Co., Arizona.

Figs. 75-80. *Anthonomus* (*Cnemocyllus*) spp., habitus, lateral and dorsal views. 75) *A. dorothyae*, male, holotype, Benton Co., Oregon; 76) *A. dorothyae*, male, holotype, Benton Co., Oregon; 77) *A. schuhi*, male, Siskiyou Co., California. 78) *A. schuhi*, male, Siskiyou Co., California; 79) *A. latus*, male, Santa Clara Co., California; 80) *A. latus*, male, Santa Clara Co., California.



Figs. 81-86. *Anthonomus* (*Cnemocyllus*) spp., habitus, lateral and dorsal views. 81) *A. squamoerectus*, female, Mendocino Co., California; 82) *A. squamoerectus*, female, Mendocino Co., California; 83) *A. albus*, male, paratype, Mendocino Co., California; 84) *A. albus*, male, paratype, Mendocino Co., California; 85) *A. ornatulus*, male, Newton, California; 86) *A. ornatulus*, male, Newton, California.

opsis cordeminefolia," 1, TAMUIC); King Ranch (2, TAMUIC); Kingsville (4, TAMUIC); Riviera (1, TAMUIC); 4 mi. E Riviera (3, TAMUIC); 3 mi. S Riviera (1, TAMUIC). *Lee Co.*: (1, TAMUIC). *Live Oak Co.*: (5, HAHC). *Llano Co.*: (7, TAMUIC); 2 mi. S Buchanan Dam (1, TAMUIC). *Lubbock Co.*: Lubbock (2, CWOB). *Milam Co.*: 6 mi. S Milano ("sweeping *Coreopsis*," 1, TAMUIC). *Mills Co.*: 23 mi. W Goldthwaite (2, TAMUIC). *Montgomery Co.*: (2, TAMUIC); 5 mi. N Montgomery (1, TAMUIC). *Navarro Co.*: Dawson (1, TAMUIC). *Parmer Co.*: 4 mi. SW Bovina (1, CWOB). Pecos Co.: 5 mi. N Fort Stockton (2, CWOB); 35 mi. SE Fort Stockton (3, CWOB). *Presidio Co.*: (2, TAMUIC); Marfa ("careless weed," 1, TAMUIC; "*Gutierrezia*," 1, TAMUIC); 3, 6, 7, 12, and 18 mi. S Marfa (18, TAMUIC); Plata (1, TAMUIC); Presidio (6, TAMUIC); 3 mi. N Presidio (1, TAMUIC); 5 mi. SE Presidio (1, TAMUIC). *Real Co.*: Camp Wood (1, TAMUIC); 2 mi. N Leakey (3, CWOB); 16 mi. W Leakey (20, TAMUIC). *Red River Co.*: (2, TAMUIC). *Refugio Co.*: Austwell (2, TAMUIC); Highway 77 at Aransas River (1, TAMUIC); 6 mi. N Refugio (1, TAMUIC); 10 mi. SW Woodsboro (4, TAMUIC). *Robertson Co.*: Calvert (1, USNM); 3.2 mi. N jct OSR and FM 1940 ("sweep. *Aphanostephus* sp.," 1, TAMUIC); 8 mi. E Hearne (2, TAMUIC); Southworth Bog (2, TAMUIC). San Diego Co.: 1 mi. SW San Diego (1, TAMUIC). *San Patricio Co.*: Lake Corpus Christi State Park (2, TAMUIC); (Mathis (2, TAMUIC); 3 mi. E Sinton (1, TAMUIC); 7 mi. NE Sinton [Welder Wildlife Refuge] (5, CWOB; 3, TAMUIC). *Sutton Co.*: (10, TAMUIC); 17 mi. E Sonora (2, CWOB). *Tarrant Co.*: Fort Worth (4, INHS). *Terrell Co.*: 13 and 25 mi. SE Dryden (3, CWOB); 6 mi. E Sanderson (5, CWOB); 8 mi. SE Sanderson (2, TAMUIC); 10 mi. W Sanderson (5, TAMUIC); 1 mi. W Sanderson (10, CWOB). *Terry Co.*: Brownfield (1, CWOB). *Travis Co.*: Austin (1, CASC; 13, TAMUIC). *Upton Co.*: 9 mi. W Rankin (2, CWOB). *Uvalde Co.*: (1, USNM; "in fls of *Aphanostephus*," 1, USNM); Frio River and Highway 1050 (4, TAMUIC); Garner State Park, 1400', 11, TAMUIC); Uvalde (5, TAMUIC); 10 mi. N Uvalde (3, TAMUIC). Val Verde Co.: (23, TAMUIC); Comstock (4, "on *Gutierrezia* sp.," TAMUIC); 15 mi. SE Del Rio (7, TAMUIC). Victoria Co.: Victoria (3, TAMUIC; 1, USNM; "on *Helenium*," 1, TAMUIC; "*Amphiacoreopsis dracunculoides*," 10, USNM; "on lupine," 1, USNM). *Webb Co.*: (1, TAMUIC); 37 mi. N Laredo (30, CWOB). *Wharton Co.*: (1, TAMUIC). *Williamson Co.*: (1, TAMUIC). *Yoakum Co.*: 15 mi. NE Plains (3, CWOB). *Zavala Co.*: Nueces River (2, TAMUIC).

Blatchley's (1922) report of *A. decipiens* from Indiana was probably based on a misidentification; the specimen has not been examined.

Plant associations. Label data indicate that adults of *A. decipiens* occur on a wide variety of species of Asteraceae as follows: "*Amphiacoreopsis dracunculoides*" (*Amphiachyris dracunculoides* (DC.) Nutt.?); *Aphanostephus*; *Coreopsis cardaminefolia* (DC.) Torr. & Gray; *Erigeron annuus* (L.) Pers.; *Gutierrezia*; *Helenium*; *Heterotheca*; *Rudbeckia*; *Xanthocephalum texanum* (DC.) Shinners. Ahmad and Burke (1972:59) described the larva of the species, under the name *Anthonomus canus*, "... from flower heads of *Xanthocephalum texanum*." They stated that *X. draculculoides* is probably also a host and cited Burke (1968) that larvae develop in flower heads. Under the name *Anthonomus aphanostephi*, this species was reported to have been reared from the heads of *Aphanostephus skirrobasis* (DC.) Trel. at Calvert, Texas and "blue aster" at Dallas, Texas (Pierce 1908).

Remarks. The distinctive shape of the metatibia and especially of the metatibial mucro of the male (Fig. 32) of *A. decipiens* make males of this species easily recognizable, even if the scales are abraded or otherwise damaged. The shape of the median lobe of the aedeagus is also diagnostic (Figs. 52, 53).

Anthonomus (*Cnemocyllus*) *ligatus* Dietz
Figs. 13, 14, 34, 35, 54, 55

Anthonomus (*Cnemocyllus*) *ligatus* Dietz 1891:245. Lectotype (designated by Burke 1984:261). United States. **Arizona**. [Ari.] [(small yellow square)] [Type/ 2060] [W. G. Dietz/ Coll.] [LECTOTYPE/ Anthonomus/ ligatus/ Dietz/ design. by/ H. R. Burke] [Cnemocyllus/ ligatus/ Dietz] [figuratus/ Dietz] (female, MCZC). Paralectotypes (4). United States. **Arizona**. [Ari.] [Type/ 2060] [W. G. Dietz/ Coll.] [PARALECTOTYPE/ Anthonomus/ ligatus/ Dietz/ design. by/ H. R. Burke] (1 female, MCZC); [Ari.] [A./ ligatus/ Dtz] [TYPE 8154/ Anthonomus/ ligatus/ W. G. Dietz] [PARALECTOTYPE/ Anthonomus/ ligatus/ Dietz/ design. by/ H. R. Burke] (1 male MCZC); [Ariz.] [Type/ 2060] [W. G. Dietz/ Coll.] [PARALECTOTYPE/ Anthonomus/ ligatus/ Dietz/ design. by/ H. R. Burke] (1 male, 2 females MCZC). Fall 1913:58. Pierce 1908:179 (host). Burke 1968:61 (pupa). Ahmad and Burke 1972:60 (larva).

Description (Figs. 13, 14). *Length*: 2.3-3.0 mm. *Head*: rostrum curved, in some, somewhat more strongly at antennal insertions; dense, imbricated

scales at extreme base replaced toward antennal insertions by narrower, sparser scales. *Thorax*: pronotum with dense, imbricated, apically rounded, chalky white scales dorsomedially and laterally, with slightly narrower, darker brown scales lateromedially. *Elytra*: elytral interstriae with dense, pallid, apically rounded, imbricated, triseriate to multiseriate, recumbent scales; pallid scales dense basally on sutural interstria and interstria 6 and on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among slightly darker scales; sutural interstria slightly prominent; abdominal sternum 5 slightly shorter than sterna 3 and 4 combined, with setiform scales medially. *Legs*: protibia with inner margin slightly prominent in basal 1/2, broadly concave in apical 1/2; protibial uncus stout; metatibia of male with inner margin feebly prominent in basal 1/3, slightly concave in apical 2/3, outer margin straight; metatibial mucro stout (Fig. 34); metatibia of female slightly curved in basal 2/3 on inner margin, slightly expanded at apex, with apical mucro minute, extended parallel to long axis of tibia, acute (Fig. 35). *Genitalia*: median lobe of aedeagus slightly widened distad of base, narrowed toward apex, abruptly narrowed subapically behind small, angulate apicomedian projection in dorsal view, with dorsal plate open at extreme base and subapically (Fig. 54); broadly curved in lateral view (Fig. 55).

Specimens examined. In addition to the types of *A. ligatus* from Arizona, 624 specimens of the species from the following localities were examined. Mexico. **Chihuahua**. Delicias (1, AMNH). **Coahuila**. 6 mi. E Torreón ("On *Aster spinosus* Benth.," 11, TAMUIC). **Durango**. 12 mi. SW Lerdo (3850' 3, CWOB). **Guanajuato**. 1 mi. E Villagrán (7, TAMUIC). **Jalisco**. 13 mi. SE Lagos de Moreno (6700' 1, CWOB). **Nayarit**. San Blas (1, TAMUIC). **Puebla**. (1, CASC). **Sonora**. 2 mi. E Huatabampo ("On *Aster spinosus* Benth.," 5, TAMUIC); Rio Yaqui, 12 mi. W Cd. Obregón (1, CNCI). **Nuevo León**. 5 km. E Zuazua (1, CWOB). **Tamaulipas**. Matamoros (1, USNM). United States. **Arizona**. (4, BYUC; 1, MCZC). *Apache Co.*: White Mtns. (1, BYUC). *Cochise Co.*: Chiricahua Mts. (1, MCZC); 25 mi. N Douglas (1, TAMUIC). *Gila Co.*: San Carlos (1, BYUC). *Maricopa Co.*: Phoenix (1, USNM). *Navajo Co.*: Forestdale (1, UAIC). *Yuma Co.*: Yuma (8, USNM; 3, TAMUIC; 1, UAIC). **California**. Rawley (2, USNM). *Imperial Co.*: Calexico (1, CDAE; 3, USNM); Heber (1, CDAE). **New Mexico.** (2, MCZC). *Doña Ana Co.*: Mesilla (3, MCZC). **Texas**. Winter Haven (1, TAMUIC). *Brewster Co.*: Rio Grande (3, USNM). *Brazos Co.*: College Station (1, TAMUIC). *Cameron Co.*: Brownsville (2, BYUC); 1, CASC; 1, INHS; 17, MCZC; 54, TAMUIC; 6, USNM); 5 mi. W and 6 mi. NW Brownsville (1, CWOB; 2, TAMUIC); Sabal Palm Grove, 3 mi. SW Southmost (1, CWOB; 1, TAMUIC); 1 mi. S Southmost (1, TAMUIC); Weslaco (1, USNM). *El Paso Co.*: 5 mi. E Ysleta (7, TAMUIC). *Fort Bend Co.*: Jester Prison Unit (1, TAMUIC). *Goliad Co.*: Weser (1, TAMUIC). *Hidalgo Co.*: 6 and 7 mi. S Alamo (7, TAMUIC); Bentsen-Rio Grande State Park (6, TAMUIC); Mission (11, TAMUIC); 3 mi. S Mission (48, TAMUIC); Santa Ana Wildlife Refuge (4, CWOB; 1, TAMUIC). *Jim Wells Co.*: 22 mi. N Alice (3, CWOB); Sandia (1, TAMUIC). *Kleberg Co.*: Riviera (20, TAMUIC). *La Salle Co.*: Cotulla (1, USNM); Fowlerton (5, TAMUIC). *Llano Co.*: Llano (2, TAMUIC). McMullen Co.: 5 mi. W Tilden (1, CWOB). *Nueces Co.*: Corpus Christi (2, TAMUIC). *Presidio Co.*: Alamito Creek (2, TAMUIC); Presidio (15, TAMUIC); 3 mi. SE, 2 mi. S, 3 mi. W and 3 and 4 mi. NW Presidio (6, TAMUIC); 2 mi. E Presidio ("On *Aster spinosus* Benth.," 1, TAMUIC). *Refugio Co.*: 8 and 20 mi. E and 1 mi. S Refugio (28, TAMUIC). *San Patricio Co.*: Lake Corpus Christi State Park (4, HAHC; 6, TAMUIC); Sinton (1, TAMUIC); 7 mi. NE Sinton [Welder Wildlife Refuge] (151, CWOB; 10, HAHC; 1, MCZC; 74, TAMUIC). *Starr Co.*: Roma-Los Saenz (1, CWOB); Salineno (2, CWOB). *Val Verde Co.*: (2, TAMUIC); Devils River (2, USNM). *Webb Co.*: Laredo (1, BYUC; 2, MCZC; 7, USNM). *Zavala Co.*: Nueces (3, TAMUIC). **Utah**. (1, BYUC). *Washington Co.*: St. George (1, BYUC; 6, MCZC; 14, USNM). *Wayne Co.*: Fruita (1, BYUC).

Plant associations. Adults of *A. ligatus* have been collected on *Aster spinosus* Benth (Asteraceae). Pierce (1908) stated that *A. ligatus* "breeds in the stems of *Leucosyris spinosus* forming gall-like swellings." Burke (1968) described the pupa and Ahmad and Burke (1972) described the larva of *A. ligatus* taken from "burrows in stems of *Aster subulatus*." Mitchell and Pierce (1911) reported that the species causes galls on the stems of *Aster spinosus*. Burke (1968) reported *Aster subulatus* as an additional host plant and discussed the feeding habits of the larvae. Larvae of *A. ligatus* usually burrow in the tender terminal stems of the host plants causing slight swellings but they may occasionally feed in the flower heads.

Remarks. *Anthonomus ligatus* is distinguished by the slender body, the generally distinct mid-dorsal and posterolateral elytral maculae (Fig. 13, 14), by the broadly curved metatibia and large, oblique metatibial mucro of the male (Fig. 34), and the median lobe of the aedeagus (Figs. 54, 55). It closely resembles *A. elongatus* which replaces it in eastern North America, but that species has the metatibia of the male distinctly curved (Fig. 36) and has the aedeagus stouter and more strongly curved in lateral view (cf. Figs. 55, 57). In addition, the metatibia of the female of *A. ligatus* is nearly straight on both the inner and outer margins (Fig. 35) but is distinctly constricted in the apical 1/3 in *A. elongatus* (Fig. 37).

Anthonomus (*Cnemocyllus*) *elongatus* LeConte
Figs. 15, 16, 36, 37, 56, 57

Anthonomus elongatus LeConte 1876:204, 205. Lectotype. (designated by Burke 1984:264). United States. **Georgia**. [(orange disc)] [Type/ 2076] [J. L. Leconte/ Coll.] [LECTOTYPE/ Anthonomus/ elongatus/ LeC./ design. by/ H. R. Burke] [A./ elongatus/ Lec.] (male, MCZC).

Anthonomus (*Cnemocyllus*) *elongatus* LeConte 1876: Dietz 1891:244, 245.

Description (Figs. 15, 16). *Length*: 1.8-2.8 mm. *Head*: rostrum curved, in some, somewhat more strongly so at antennal insertions, with dense, imbricated scales at extreme base replaced toward antennal insertions by narrower, sparser scales. *Thorax*: pronotum with dense, imbricated, apically rounded, chalky white scales dorsomedially and laterally, slightly narrower, darker brown scales lateromedially. *Elytra*: elytral interstriae with dense, apically rounded, imbricated, triseriate to multiseriate, recumbent scales; each interstria also with diffuse median row of narrower scales; pallid scales dense basally on sutural interstria and interstria 6 and on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among slightly darker scales; sutural interstria slightly prominent. *Legs*: protibia with inner margin prominent in basal 1/3, broadly concave in apical 3/4, apical uncus stout; metatibia of male with inner margin feebly prominent in basal 1/3, strongly concave in apical 2/3, outer margin slightly curved in apical 1/2, with short, stout apical mucro (Fig. 36); metatibia of female slender, broadly constricted in apical 1/2, expanded at apex, with minute apical mucro (Fig. 37). *Abdomen*: abdominal sternum 5 slightly shorter than sterna 3 and 4 combined, with elongate, setiform scales medially. *Genitalia*: median lobe of aedeagus widened medially, constricted then narrowed toward apex, abruptly narrowed subapically behind small, angulate apicomedian projection in dorsal view, with dorsal plate open at extreme base and subapically (Fig. 56); stout and strongly curved in lateral view (Fig. 57).

Specimens examined. In addition to the lectotype of *A. elongatus* from Georgia, 353 specimens of the species from the following localities were examined. Canada. **Manitoba**. 20 km. E Anola (1, CWOB); 12.5 km. N St. Laurent (1, CWOB). **Ontario**. Grimsby (4, TAMUIC). Prince Edwards Co.: (1, TAMUIC). **Quebec.** Montreal (1, MCZC). **Saskatchewan**. Regina (12, BYUC). United States. **Alabama**. *Madison Co.*: Huntsville (7, TAMUIC); Lincoln (2, TAMUIC). *Sumter Co.*: 5 mi. N York (2, TAMUIC). **Colorado.** (1, MCZC). **Connecticut**. *New Haven Co.*: Mount Carmel (1, CWOB); Prospect (1, CWOB); Wallingford (2, CWOB). *Litchfield Co.*: Litchfield (1, CWOB). Tolland Co.: Storrs (1, CWOB). *Windham Co.*: Putnam (12, CWOB). **District of Columbia**. Washington (5, MCZC; 1, USNM). **Florida**. *Collier Co.*: 6 mi. E Ochopee (2, CWOB). *Dade Co.*: Paradise Key (1, MCZC; 7, USNM). Everglades National Park: Jcn. Pa-ha-okee (2, CWOB); Royal Palm Hammock (1, TAMUIC). **Illinois**. (1, BYUC; 1, MCZC). Funkhauser (1, INHS); Halfday (1, INHS). *Calhoun Co.*: Hardin (1, INHS). *Champaign Co.*: Champaign (1, TAMUIC); St. Joseph (1, AMNH, 1, INHS); Tolono (1, TAMUIC). *Cook Co.*: Beverly Hills, Ill. (1, MCZC); Bridgeview (1, TAMUIC); Chicago (1, UCDC; 1, MCZC); Glenville (1, CWOB); Palos Park (1, INHS; 1, TAMUIC); Tampier Slough (1, CWOB). *Jackson Co.*: Fountain Bluff (1, INHS); Grand Tower (1, INHS); Makanda (1, INHS). *Johnson Co.*: Ozark (1, INHS). *Lake Co.*: Grays Lake (1, INHS). *Morgan Co.*: Meredosia (1, INHS). *Piatt Co.*: White Heath (1, INHS). *Union Co.*: Ware (1, INHS). Vermilion Co.: (1, INHS). **Indiana**. *Kosciusko Co.*: 1 mi. E Lake Wawasee (1, CWOB); 2 mi. E Pierceton (1, CWOB). *Marion Co.*: (2, BYUC). *Tippecanoe Co.*: (2, AMNH; 2, CWOB); West Lafayette (1, TAMUIC). *Wells Co.*: Bluffton (2, CWOB). **Iowa**. (1, BYUC). *Guthree Co.*: Sheeder Prairie (4, TAMUIC). **Kentucky**. *Carroll Co.*: 1, TAMUIC). *Marion Co.*: Holy Cross (1, TAMUIC). **Maine**. *Kennebec Co.*: Wayne (1, TAMUIC). *Oxford Co.*: Bethel (1, MCZC). *Washington Co.*: Machias (1, CASC). **Maryland**. Washington (1, MCZC). *Anne Arundel Co.*: Fort Meade (1, TAMUIC). *Mont-*

gomery Co.: Takoma Park (3, TAMUIC). *Prince George's Co.*: Beltsville (1, CWOB; 1, USNM); Adelphi Mill (1, CWOB). *Washington Co.*: Boonsboro (1, TAMUIC); Keedysville (1, TAMUIC). **Massachusetts**. Boston (5, BYUC). *Middlesex Co.*: Arlington (3, MCZC); Framingham (1, HAHC; 2, MCZC); Hopkinton (1, MCZC); Sherborn (15, BYUC). *Nantucket Co.*: Dover (2, MCZC); Sherborn (2, MCZC). *Norfolk Co.*: Stoughton (1, USNM). *Suffolk Co.*: Forest Hills (1, FSCA). *Worcester Co.*: S. Lancaster (6, TAMUIC). **Michigan**. *Ingham Co.*: East Lansing (2, TAMUIC). *Manistee Co.*: Manistee (1, CWOB). *Oakland Co.*: (1, TAMUIC). *Ottawa Co.*: 8 mi. S Grand Haven (1, CWOB). *Shiawassee Co.*: (1, AMNH). **Minnesota**. Little Winnebegosish (7, USNM). *Traverse Co.*: 7.5 mi. SW Wheaton (1, CWOB). **Mississippi**. *Alcorn Co.*: Corinth (CWOB). *Rankin Co.*: 5 mi. NW Star (1, TAMUIC). **Missouri**. *Cass Co.*: Barton (1, CWOB). *Hickory Co.*: Pomme de Terre (1, TAMUIC). *Howard Co.*: 1 and 6 mi. W Fayette (3, CWOB). *Lawrence Co.*: 4 mi. N Vernon (1, CWOB). *Phelps Co.*: St. James (1, CWOB). *Randolph Co.*: 1 mi. E Moberly (1, CWOB). *St. Louis Co.*: St. Louis (15, MCZC; 7, USNM). *Vernon Co.*: Gay Feather Prairie (1, CWOB). *Warren Co.*: Treloar (1, CWOB). **Montana.** *Jefferson Co.*: (1, USNM). *Powder River Co.*: 7 mi. E Ashland (1, TAMUIC). **New Jersey**. (6, BYUC). Arlington (1, BYUC). *Callaway Co.*: 8 mi. Williamsburg (1, CWOB). *Camden Co.*: Camden (2, MCZC). *Cape May Co.*: Five Mile Beach (1, OSUC). *Essex Co.*: Newark (4, MCZC). *Hudson Co.*: Snake Hill (1, BYUC). *Middlesex Co.*: Boynton (1, USNM). *Morris Co.*: Mountain Lakes (1, MCZC). **New York**. (4, BYUC; 2, MCZC). Long Island (6, USNM). *Albany Co.*: Albany (2, CASC). *Erie Co.*: Buffalo (2, CASC). *Greene Co.*: Plateau Mountain (3500' 1, TAMUIC). *Nassau Co.*: Roslyn (3, FSCA). *St. Law Co.*: Rossie (1, CWOB). *Tompkins Co.*: Ithaca (7, TAMUIC). *Westchester Co.*: (2, BYUC); Harrison (1, BYUC); Peekskill (1, BYUC). **North Carolina**. Black Mountains (1, CASC). *Watauga Co.*: (1, TAMUIC). **North Dakota**. *Richland Co.*: 15 mi. SW Walcott (1, CWOB). **Ohio**. (2, BYUC). *Clinton Co.*: (1, TAMUIC). *Cuyahoga Co.*: Berea (1, CWOB); Cleveland (2, MCZC). *Franklin Co.*: (3, CWOB); Westerville (1, CWOB). *Scioto Co.*: (1, CWOB). *Wyandot Co.*: 4.4 km SW Harapster (1, TAMUIC). **Pennsylvania**. (1, MCZC); Mt Moriah (1, MCZC). *Elk Co.*: Lamont (1, TAMUIC). *Hertford Co.* (1, MCZC). *Montgomery Co.*: Abington (2, MCZC). *Philadelphia Co.*: Roxborough (1, USNM). **South Dakota**. *Brookings Co.*: 7 mi. S Arlington (1, CWOB). **Texas**. (1, MCZC). *Anderson Co.*: 10 mi. SW Elkhart (56, TAMUIC). **Utah.** *Cache Co.*: 2.4 mi. E Ricks Springs (1, CWOB). **Virginia**. Falls Church (2, MCZC). *Madison Co.*: Big Meadows (1, TAMUIC). *Shenandoah Co.*: New Market (1, TAMUIC). *Tazewell Co.*: Burkes Garden (1, USNM). **West Virginia**. *Greenbrier Co.*: White Sulphur (1, CASC). **Wisconsin**. *Dodge Co.*: Beaver Dam (1, MCZC). *Vilas Co.*: Eagle River (1, USNM).

Plant associations. It is surprising that no host has been identified for this widespread species. The E. A. Schwarz record cited in Blatchley and Leng (1916) referring to it developing in a twig-gall on *Bigelovia* in Colorado is surely based on a misidentification. It is likely that the species referred to was *Anthonomus jacobinus* Dietz. Gates and Burke (1972) discuss the gall association of the latter species (under the name *A. cycliferus* Fall). The Blatchley and Leng (1916) reference to the species being common on flowers of *Prunus* probably indicates that adults were attracted to these plants to feed on pollen rather than as sites for egg deposition and larval development. The specimens cited here from 10 miles SW of Elkhart, Texas, were collected by sweeping a wet, low-lying area around a pond. Anderson (1992) lists the habitat as wet prairie and states that specimens were collected by sweeping at night.

Remarks. Widespread in eastern, central and western North America, *A. elongatus* is distinguished from the closely allied *A. ligatus* by the characters mentioned in the remarks on that species. The two species are allopatric throughout most of their ranges but do occur in sympatry at the 10 mi. SW Elkhart locality in eastern Texas.

The *Anthonomus* (*Cnemocyllus*) *pictus* Group

Diagnostic combination. Rostrum evenly curved, with proximal portion rugose; antennal funiculus with six articles; elytra narrow, subparallel-sided (Figs. 17-25); elytral interstriae with dense, rounded, broadly imbricated, multiseriate, recumbent scales and with diffuse, median row of inconspicuous, narrower scales; chalky white scales dense basally on sutural interstria and interstria 6 and on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among darker scales; metatibia of male not curved (Figs. 38, 39); abdominal sternum 5 distinctly shorter

than sterna 3 and 4 combined, with elongate, setiform scales medially; protibia with inner margin slightly prominent medially, broadly concave subapically, without preapical tooth, with stout apical uncus; tarsal claws minutely to strongly toothed; median lobe of aedeagus gradually narrowed in apical 3/4, slightly expanded at extreme apex in dorsal view (Figs. 58, 60, 62), apex abruptly curved in lateral view (Figs. 65, 67); metafemur unarmed; metatibia of female nearly straight, with slightly uncinate apical mucro.

Remarks. The three species assigned to the *A. pictus* group resemble each other quite closely. They appear to replace each other in their respective geographical ranges, so distributional data may be considered along with the morphological characters in the following key to distinguish the species.

Key to Species in the *Anthonomus* (*Cnemocyllus*) *pictus* Group

1 Rostrum distinctly curved (Figs. 17, 19, 23), deeply rugose, scales present between base and antennal insertions; tarsal claws with large, distinct basal tooth 2

1' Rostrum less strongly curved (Fig. 21), glabrous except at extreme base, shallowly rugose, smooth, shining; tarsal claws with minute basal tooth; Baja California, north-central Mexico and extreme southern Texas ..... ***A. juncturus***

2 Scales on pronotum and elytra small, slightly to non-imbricated; metatibial uncus of male short (Fig. 38); northeastern and north-central United States and adjacent portions of Canada .... ***A. pictus***

2' Scales on pronotum and elytra larger, broadly imbricated; metatibial uncus of male slender, oblique (Fig. 39); western United States and western Canada ..... ***A. quesnelensis***

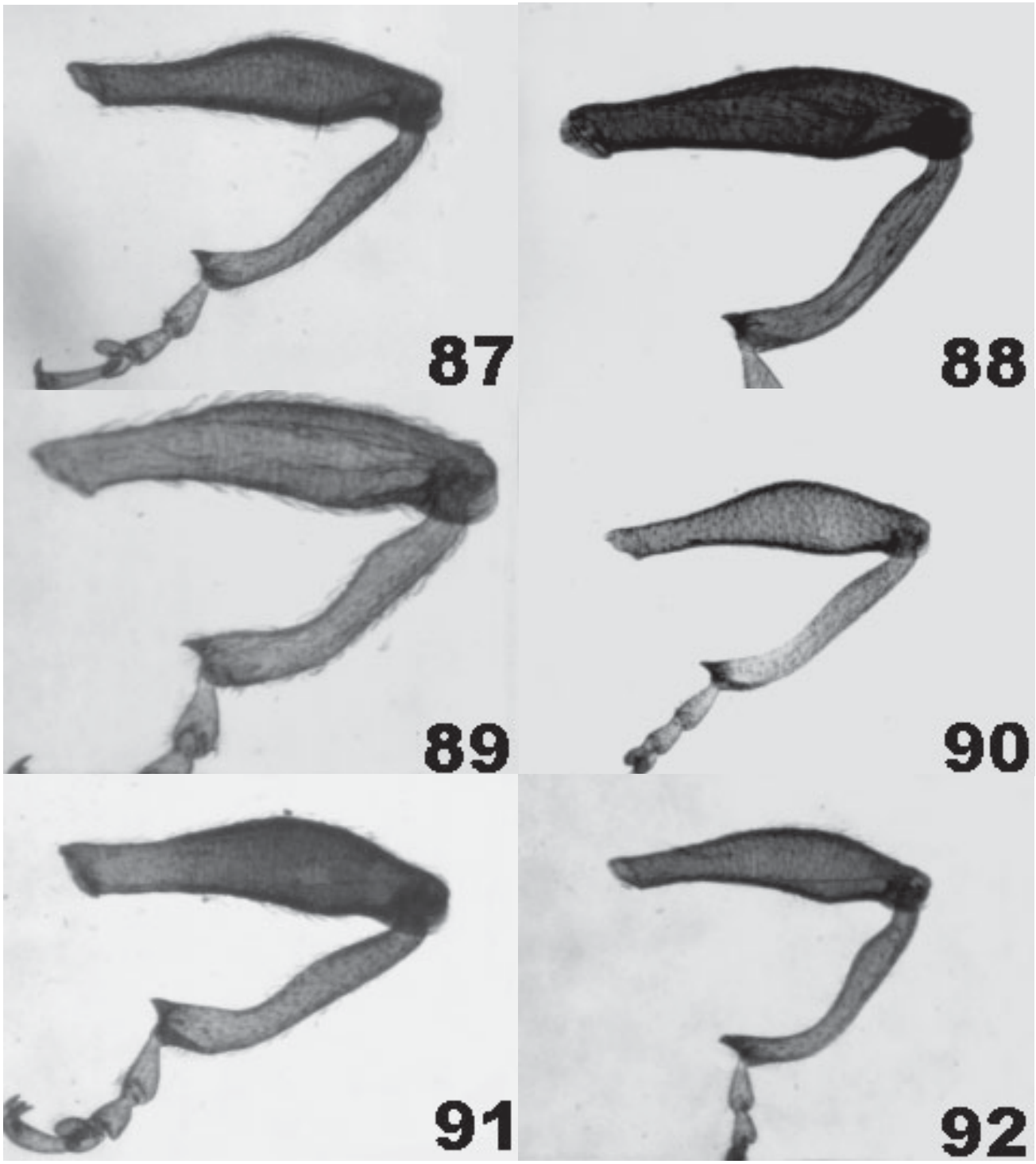
Anthonomus (*Cnemocyllus*) *pictus* (Blatchley)
Figs. 17, 18, 38, 58, 59

Anthonomus (*Sexarthrus*) *pictus* Blatchley 1922:105, 106. Type. United States. **New Jersey**. *Essex Co.*: [TYPE] [Newark/ N. J.] [Purdue/ Blatchley/ collection] [Anthonomus/ pictus/ sp. nov.] (female, PURC).

Description (Figs. 17, 18). *Length*: 1.8-3.0 mm. *Head*: rostrum evenly curved. *Thorax*: pronotum with dense, apically rounded, broad, chalky white scales predominant medially and laterally on dorsum, replaced on anterolateral portions of dorsum by narrower, pallid tawny scales. *Legs*: profemur with one small ventral tooth; metatibia of male with inner margin slighlty prominent medially, slightly concave subapically, outer margin straight, with short, straight, acute apical mucro (Fig. 38); tarsal claw with distinct basal tooth. *Genitalia*: median lobe of aedeagus slender, gradually narrowed in apical 3/4, slightly expanded at extreme apex in dorsal view, apex curved in lateral view, with dorsal plate open at extreme base and subapically (Fig. 58); in lateral view slender and nearly straight (Fig. 59).

Specimens examined. In addition to the type of *A. pictus* from New Jersey, 103 specimens of the species from the following localities were examined. Canada. **Ontario.** Rutherglen (1, CWOB). **Quebec.** La Trappe (2, USNM). United States. **Connecticut.** *New Haven Co.*: Mount Carmel (12, CWOB); Prospect (5, CWOB); Waterbury (2, CWOB). *Tolland Co.*: Storrs (1, CWOB). **District of Columbia**. Washington (1, MCZC). **Indiana**. Marion Co. (1, BYUC). **Maine.** *Franklin Co.*: Weld (1, MCZC). *Kennebec Co.*: Monmouth (1, MCZC). **Massachusetts.** *Middlesex Co.*: Framingham (3, MCZC; "on burr clover," 6, CASC; "on alfalfa," 1, CASC; "on tall bush clover," 3, TAMUIC, 3, USNM); Natick (1, MCZC); Sherborn (2, MCZC); Tyngsboro (2, MCZC). *Worcester Co.*: South Lancaster (10, TAMUIC). **Michigan.** *Ingram Co.*: Okemos (1, TAMUIC). *Oakland Co.* (1, USNM). *Shiawassee Co.*: Rose Lake Wildlife Experiment Station (1, TAMUIC). **Minnesota.** *Clay Co.*: Buffalo River (2, NDSU); Glyndon (1, CWOB). *Crow Wing Co.*: 12 mi. S Cross Lake (1, CWOB). **New Jersey**. (1, USNM); Crystal Lake (1, BYUC); Fairlawn (1, BYUC). *Bergen Co.*: Hillsdale (1, AMNH); Ridgewood (1, In gall in goldenrod, USNM). *Cumberland Co.*: Millville (9, BYUC). *Essex Co.*: Montclair (1, USNM). *Hudson Co.*: Snake Hill (1, BYUC). *Passaic Co.*: Clifton (6, USNM). **New York.** Rosedale (1, BYUC). *Bronx Co.*: Van Cortland (1, CUIC). *Clinton Co.*: Peru (1, CUIC). *Putnam Co.*: Patterson (1, TAMUIC). *Richmond Co.*: Great Kills (1, MCZC). *Westchester Co.*: Pelham (5, BYUC). **Virginia**. Roanoke (1, BYUC). **Wisconsin.** *Wood Co.* (1, CASC); Cranmoor (4, USNM).

Plant associations. Labels citing "in gall in goldenrod" are the only indication of host relationships of this species. It is possible that this species is an inquiline in a dipterous gall on goldenrod, as is



Figs. 87-92. *Anthonomus* (*Cnemocyllus*) spp., metathoracic legs. 87) *A. inermis*, male, Burney, California; 88) *A. extensus*, male, Table Mountain, Oregon; 89) *A. deserticolus*, male, holotype, Pima Co., Arizona; 90) *A. schuhi*, male, holotype, Siskiyou Co., California; 91) *A. latus*, male, holotype, Gilliam Co., Oregon; 92) *A. squamoerectus*, male, holotype, Mendocino Co., California.

Anthonomus (*Cnemocyllus*) *jacobinus* in galls of tephritids on *Chrysothamnus*.

Remarks. *Anthonomus pictus* is distinguished from the other two species in the *A. pictus* group by the shape of the metatibia (cf. Figs. 38-40) and by the median lobe of the aedeagus (cf. Figs. 58-62) which is similar to that of species of the *Anthonomus squamosus* group.

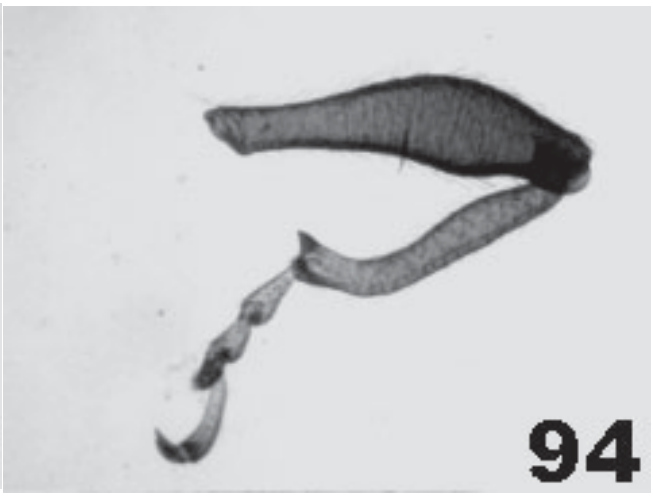
Anthonomus (Cnemocyllus) quesnelensis Sleeper
Figs. 19, 20, 39, 40, 60, 61

Anthonomus quesnelensis Sleeper 1955:160-161. Holotype. Canada. **British Columbia**. [Quesnel, B.C./ 16 VI 1949] G. J. Spencer] [HOLOTYPE/ Anthonomus/ quesnelensis/ male Sleeper] [E. L. Sleeper/ Collection] [Anthonomus male/ quesnelensis/ Sleeper/ Holotype] [California Academy/ of Sciences/ Type 16858/ No.] (male, CASC). Allotype. Canada. **British Columbia**. [Quesnel, B.C./ 16 VI 1949] G. J. Spencer] [ALLOTYPE/ Anthonomus/ quesnelensis/ female Sleeper] [E. L. Sleeper/ Collection] [Collection of the/ CALIFORNIA ACADEMY/ OF SCIENCES, San/ Francisco, California] [Anthonomus/ quesnelensis/ 16858 Sleeper] (female, CASC).

Anthonomus imbricus Hatch 1971:349. Holotype. United States. **Washington**. *Spokane Co.*: [Cheney, WASH./ Turnbull Slough/ May 30, 1947/ M. H. Hatch] [close to typical/ decipiens LeC.] [TYPE male/ Anthonomus/ (s. str.)/ imbricus/ 1968 - M. Hatch] [TYPE male/ Anthonomus/ (Sexarthrus)/ imbricus/ 1965 - M. Hatch] (female, USNM). Paratypes (3 examined). United States. **Washington**. *Spokane Co.*: [Cheney, WASH./ Turnbull Slough/ May 30, 1947/ M. H. Hatch] [ALLOTYPE female/ Anthonomus/ (s. str.)/ imbricus/ 1968 - M. Hatch] [ALLOTYPE female/ Anthonomus/ (Sexarthrus)/ imbricus/ 1965 - M. Hatch] (female OSUO); [Cheney, WASH./ Turnbull Slough/ May 30, 1947/ M. H. Hatch] [male] [PARATYPE/ Anthonomus/ (s. str.)/ imbricus/ 1968 - M. Hatch] [PARATYPE/ Anthonomus/ (Sexarthrus)/ imbricus/ 1965 - M. Hatch] (female OSUO). **Oregon**. *Klamath Co.*: [Ore., Klamath Co./ 1 mi. SW Chioquin/ 4200', Apr. 6, 1961/ ex-manzanita litter/ E. A. Dickason] [[PARATYPE/ Anthonomus/ (Sexarthrus)/ imbricus/ 1968 - M. Hatch] (female, OSUO). **New synonymy**.

Description. (Figs. 19, 20). *Length*: 1.8-2.6 mm. *Head*: rostrum evenly curved; pronotum with dense, apically rounded, broad, chalky white scales predominant medially and laterally on dorsum, replaced on anterolateral portions of dorsum by narrower, pallid tawny scales. *Legs*: profemur unarmed; metatibia of male with inner margin slightly prominent in basal 1/2, slightly concave in apical 1/2, outer margin straight, with straight, acute, apical mucro (Fig. 39); tarsal claw with distinct basal tooth. *Genitalia*: median lobe of aedeagus gradually narrowed in apical 3/4, slightly expanded at extreme apex in dorsal view with dorsal plate open throughout (Fig. 60),d apex curved subapically in lateral view (Fig. 61).

Specimens examined. In addition to the types of *A. quesnelensis* from British Columbia, and the types of *A. imbricus* from Washington and Oregon, 1137 specimens of *A. quesnelensis* from the following localities were examined. Canada. **Alberta**. (3, BYUC); Banff (4, BYUC); 9 mi. S Cardston (1, TAMUIC); 2 mi. N Carway (3, TAMUIC); 10 mi. E Clyde (14, CMNC); 6.5 mi. E Clyde ("on *Heterotheca villosa*," 19, TAMUIC); 5 mi. N Cypress Hills Provincial Park (3, CWOB); Kannanaskis (1, CASC); Lower Lake, Waterton Lakes National Park (1, CWOB); 27 km. S Manyberries (3, CMNC); Medicine Hat (1, BYUC; 1, TAMUIC); 1 mi. E Medicine Hat (2190', 7, TAMUIC). **British Columbia.** Aspen Grove (27, CASC); Cawston (1, U MANITOBA); Creston (17, HAHC); Elko (2, CASC); Hosmer (1, CASC); Merritt (11, CASC; 14, INHS); Trout Lake, near Kamloups (4000', 8, CASC). **Manitoba.** Treesbank Ferry (1, U. MANITOBA). United States. **Arizona.** *Apache Co.*: White Mountains (4, BYUC). *Coconino Co.*: 4 and 5 mi. S Flagstaff (44, CWOB); Hualpais Mountains (1, OSUC); Williams (6, CISC; 1, CWOB). *Gila Co.*: Carrizo (6, OSUC); 5 mi. S Carrizo (1, UAIC); Seneca Creek (11, CWOB). *Navajo Co.*: 3 mi. NE Carrizo (5600', 1, CWOB); Lakeside (3, CWOB); between Show Low and McNary (17, CWOB); 6 mi. SW Show Low (6800', 2, CWOB). *Pima Co.*: Santa Catalina Mtns. (1, BYUC). *Yavapai Co.*: 1 mi. S Prescott (2, BYUC). **California.** *Del Norte Co.*: Fort Dick (1, CASC). *El Dorado Co.*: Fallen Leaf Lake (2, BYUC); 13 mi. E Georgetown (2, CISC). *Fresno Co.*: Clovis (1, CWOB); Florence Lake (4, TAMUIC); Shaver Lake (1, CWOB); west of Huntington Lake (6350', 1, CASC). *Kings Co.*: Hanford (23, USNM). *Madera Co.*: Bass Lake (1, CASC). *Mariposa Co.*: Yosemite (5, CASC; 1, USNM). *Mendocino Co.*: Albion (2, CASC); Mendocino (2, CWOB). *Mono Co.*: Robinson Creek Trail, above Twin Lake (2286', 1, CASC); 5 mi. S Walker (1, CASC). *Nevada Co.*: Donner Pass (1, CISC); Prosser Creek, 1 mi. W Hobart Mills (6, CWOB). *Placer Co.*: Emigrant Pass (1, CISC); Lake Tahoe (1, CASC; 1, TAMUIC); Sagehen Creek Station (1, TAMUIC). *Plumas Co.*: (3, BYUC; 1, CASC); Mead-



Figs. 93-94. *Anthonomus* (*Cnemocyllus*) spp., metathoracic legs. 93) *A. albus*, male, Shasta Co., California; 94) *A. ornatulus*, male, California.

ow Valley (4, CASC). *San Francisco Co.*: San Francisco (1, CASC; 17, CWOB). *San Mateo Co.*: Moss Beach (2, USNM). *Shasta Co.*: Hat Creek (1, CDAE). *Sierra Co.*: 5 mi. NW Calpine (1, CISC); 5 mi. S Clio (1, CWOB). *Siskiyou Co.*: 1 MI. se Bartle (4, CISC); Goodyear's Bar (1, CDAE); Grass Lake (4, CASC); McBride Springs (5200', 2, CISC); Shasta Springs (7, CASC); Walker (2, CASC). *Trinity Co.*: Big Flats (10, CASC). *Tuolomne Co.*: Mather (1, USNM). **Colorado**. (1, BYUC; 3, USNM). *Alamosa Co.*: Great Sand Dunes (4, CASC). *Archuleta Co.*: Pagosa Springs (3, USNM). *Boulder Co.*: 1 mi. N Allens Park (1, CWOB); Longs Peak (1, USNM); 1 mi. N Nederland (22, CWOB); Peaceful Valley (1, USNM). *Chaffee Co.*: Buena Vista (1, USNM). *Douglas Co.*: 6 mi. N Castle Rock (6, CWOB). *El Paso Co.*: Colorado Springs (7, USNM); 15 mi. N Colorado Springs (15, CWOB); Pikes Peak (1, MCZC; 1, USNM). *Gunnison Co.*: Gunnison (2, MCZC; 10, TAMUIC); 13 km. Off Hwy. 133 towards Kebler Pass (3, CMNC); Monarch Pass (1, TAMUIC). *Gilpen Co.*: 6 mi. SE Black Hawk (14, CWOB). *Grand Co.*: Granby, Colo. (1, MCZC). *Huerfano Co.*: Blue Lake, San Isabel National Forest (1, CWOB). *Jackson Co.*: Gould (1, BYUC). *Jefferson Co.*: Evergreen (3, CISC). *La Plata Co.*: Durango (9, MCZC); 9 mi. E. Mancos (1, TAMUIC). *Larimer Co.*: Poudre Canyon (15, BYUC); Rocky Mountain National Park (19, TAMUIC), Estes Park (1, CISC), 5 mi. W Estes Park (26, TAMUIC); Fork Creek Sheep Ck nr. Cache la Poudre Canyon (9500', 1, CWOB); 1 and 6 mi. NW Laporte (4, CWOB); Poudre Canyon (13, TAMUIC); 25 mi. W Poudre Park (8, CWOB). *Las Animas Co.*: 8 mi. N Stonewall (8900', 10, CWOB). *Ouray Co.*: Ouray (1, TAMUIC). *Park Co.*: Kenosha (1, TAMUIC). *Pitkin Co.*: 11.2 km. N Aspen (1, CMNC). *Pueblo Co.*: Beulah (1, MCZC). *Rio Grande Co.*: Del Norte (1, TAMUIC). *Routt Co.*: Steamboat Springs (2, BYUC; 2, CASC). *Teller Co.*: Crystola (1, INHS). *Weld Co.*: 8 mi. W Nunn ("from seeds *Haplopappus spinulosis*," 1, CWOB); 3 mi. N Rockport (7, CWOB). **Idaho**. *Bear Lake Co.*: Montpelier (14, TAMUIC). *Boise Co.*: (1, CWOB). *Canyon Co.*: Parma (5, CASC). *Madison Co.*: Herse-Kelly Canyon (2, CWOB). **Montana.** (4, INHS). *Flathead Co.*: Kalispell (2, USNM). *Fremont Co.*: 16 km. NE Ashton (1800m, 3, HAHC). *Gallatin Co.*: Earthquake Lake (1, CWOB). *Glacier Co.*: Blackfeet Indian Reservation (1, CASC); Glacier Park (6, CASC); 1 mi. S Piegan (1, TAMUIC). *Hill Co.*: Havre (1, USNM). *Missoula Co.*: Missoula (1, MCZC). *Powder River Co.*: 7 mi. E Ashland (1, BYUC; 3, TAMUIC). **Nevada.** *Douglas Co.*: 4 mi. E State Line (7300', 3, CISC; 2, TAMUIC). *Ormsby Co.*: Carson City (3, CASC). *Nye Co.*: Ash Meadow (1, MCZC). *Washoe Co.*: Mount Rose (1, CASC); Reno (1, MCZC). **New Mexico.** (10, MCZC; 1, OSUC); Jemez Mountains (29, CASC). *Colfax Co.*: 5 mi. E Eagle's Nest (2, TAMUIC). *Lincoln Co.*: 1.5 mi. W Alto (7400', 30, CMNC). *Los Alamos Co.*: 1, CISC); *Otero Co.*: Cloudcroft (1, CWOB); 4 mi. E Cloudcroft (1, TAMUIC); 3 km. W Cloudcroft (2400m, 5, HAHC). *Rio Arriba Co.*: Chama (1, CDAE). *Sandoval Co.*: Bandelier National Monument (1, TAMUIC). *San Miguel Co.*: Beulah, N.M. (2, MCZC). *Santa Fe Co.*: 8 mi. N Santa Fe (2, TAMUIC). **North Dakota**. Theodore Roosevelt Memorial Park, North Unit (1, TAMUIC). *Benson Co.*: (2, NDSU).

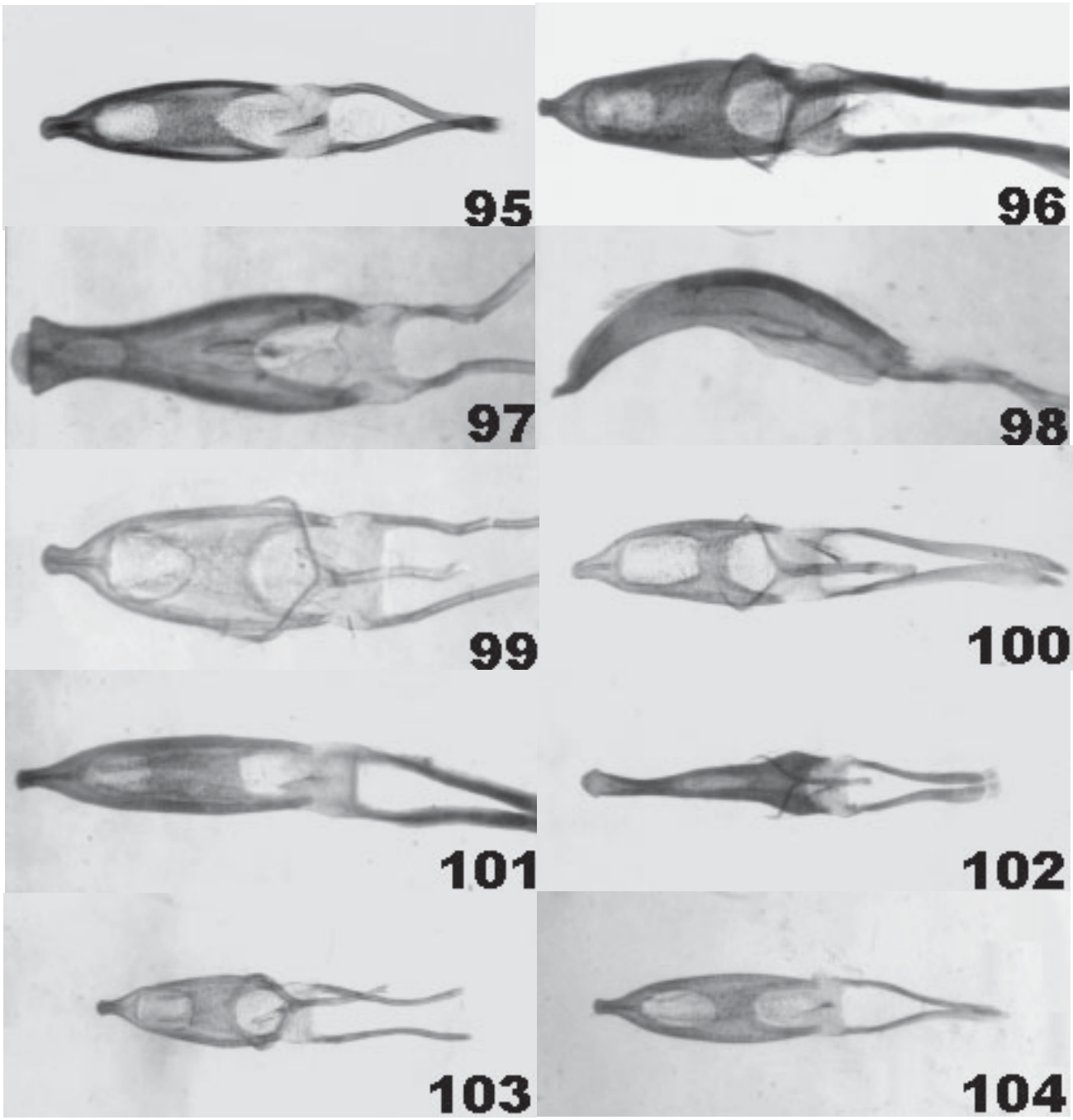
Billings Co.: (19, NDSU); Theodore Roosevelt Memorial Park (6, NDSU). *Bowman Co.*: (1, NDSU). *Golden Valley Co.*: Beach (2, NDSU). *Oliver Co.*: Center (1, NDSU). *Richland Co.*: (3, NDSU). *Slope Co.*: Burning Cole Vein (1, NDSU). **Oregon.** Warm Springs (2, AMNH). *Benton Co.*: Blodgett (2, MCZC); Marys Peak (1, AMNH; 3, TAMUIC). *Deschutes Co.*: Redmond (1, AMNH). *Douglas Co.*: Kelsey Valley (14, AMNH). *Harney Co.*: 35 mi. NE Burns (1, TAMUIC). *Jackson Co.*: Ashland (1, OSUO). *Jefferson Co.*: Metolius River (1, OSUO). *Klamath Co.*: 16 mi. SE Bly (1, AMHH); Lake G Woods (1, AMNH); Lower Klamath Lake (1, AMNH). *Lake Co.*: Silver Lake (1, AMNH); Summer Lake (1, AMNH). *Linn Co.*: Santiam Pass (1, OSUO). *Wasco Co.*: Tygh Valley (1, OSUO). **South Dakota**. *Custer Co.*: Flynn Creek, 8 mi. N Pringle (5400', 4, HAHC). *Lawrence Co.*: 2 mi. E Cheyenne Crossing (4, BYUC; 8, TAMUIC); Lead (2, BYUC; 1, TAMUIC); Savoy (1, BYUC). *Pennington Co.*: Pactola Reservoir (3, TAMUIC). **Utah.** *Cache Co.*: Logan (1, USNM); Logan Canyon (2, BYUC); 2, USNM); Paradise (1, BYUC); 2.4 mi. E Ricks Springs (1, CWOB). *Duchesne Co.*: Brush Creek, Uintah Mtns. (1, BYUC); Yellowstone Creek (1, TAMUIC). *Iron Co.*: Parowan (1, BYUC). *Juab Co.*: Goshiute Indian Reservation (4, BYUC). *Kane Co.*: 13 and 20 mi. W Long Valley Junction (24, TAMUIC). *Rich Co.*: 2 mi. W Bear Lake (1, CWOB). *Salt Lake Co.*: Emigration Canyon (1, CASC). *Sevier Co.*: 18 mi. E Cove Fort (3, TAMUIC). *Sanpete Co.*: Fayette (1, TAMUIC). *Summit Co.*: Parley's Park (1, CDAE). *Utah Co.*: Aspen Grove (1, CWOB; 2, TAMUIC); Provo (*Achillea millefolium lanulosa*, 57, TAMUIC); 0.5 mi. S Springdell (3, CWOB); 19 mi. E Springville (6, "sweeping *Chrysothamnus nauseosus*," TAMUIC; 38, TAMUIC); Spring Lake (1, BYUC); Timp Haven (15, TAMUIC). *Wasatch Co.*: Strawberry Reservoir (6, TAMUIC). *Washington Co.*: (1, OSUC); Zion National Park (2, CASC). *Weber Co.*: 18 mi. N Huntsville (5, TAMUIC). Zion's National Park (29, BYUC). **Washington.** *Chelan Co.*: Peskastin Creek (1, OSUO). *Clallam Co.*: Port Angeles (1, USNM). *Grant Co.*: Soap Lake (1, OSUO). *King Co.*: Seattle (1, OSUO). *Pacific Co.*: Bay Center (25, OSUO). *Pierce Co.*: Tacoma (9, BYUC; 5, MCZC; 1, USNM). *Yakima Co.*: Toppenish (2, AMNH). **Wyoming**. [Yellowstone] National Park (2, USNM). *Albany Co.*: 5 mi. NE Albany (1, BYUC). *Johnson Co.*: Buffalo (1, BYUC). *Lincoln Co.*: Allred Flats (6700' 1, CWOB); Bedford ("*Artemesia tridentata*," 21, TAMUIC); 4 mi. NW Frontier (2, CWOB). *Sublette Co.*: 25 mi. SE Jackson ("*Artemesia*," 19, CWOB). *Sweetwater Co.*: 30 mi. NW Rock Springs (1, TAMUIC). *Teton Co.*: Jackson (1, CASC); 12 mi. S Jackson (6100', 7, CWOB).

Plant associations. Label data indicate that adults of *A. quesnelensis* have been collected on the following Asteraceae: *Achillea millefolium* L. var. *lanulosa* (Nutt.) Piper; *Chrysothamnus nauseosus* (Pallas) Britton; *Haplopappus spinulosis* (Pursh) DC; and *Artemesia tridentata* Nutt. Labels recording "from seeds *Haplopappus spinulosis*" probably indicate a true host association.

Remarks. *Anthonomus quesnelensis* is widespread throughout western North America where it appears to replace the eastern *A. pictus*. The two are distinguished by the characters in the key and in the remarks on the latter species. The majority of specimens of *A. quesnelensis* examined are females and some large series consist of females only.

Hatch (1971:349) described *A. imbricus* in a key to the *Anthonomus* "*subfasciatus*-group" and contrasted it directly with a description of *A. quesnelensis*. He characterized the elytra of *A. imbricus* as having "intervals each with a series of rather obscure short semierect white setae or setose scales," in contrast to *A. quesnelensis* which was described as having "intervals without semierect scales." He also stated that *A. imbricus* has the "vestiture of dorsal surface largely obscuring the sculpture," whereas *A. quesnelensis* was described as having "scales forming short variable elytral vittae anteriorly along the suture, posteriorly on the fourth and anteriorly on the sixth interval and laterally." These features do, in fact, distinguish the type specimens of *A. imbricus* from specimens identified by Hatch as *A. quesnelensis* (OSUO). However, comparison of these with large series of specimens of *A. quesnelensis* from throughout its range reveals that these features vary both within and between populations. In all of these, males seem somewhat more likely to have the more condensed scales and bare elytra described for *A. quesnelensis*. Several males examined, however, could not be distinguished from Hatch's *A. imbricus* by this feature.

Hatch's (1970) *A. imbricus* is here considered a synonym of *A. quesnelensis*. The examined specimens in the type series of *A. imbricus* are females, despite the "male" labels on the holotype and one of the paratypes. There are four additional females with the label [Cheney, WASH./ Turnbull Slough/ May 30, 1947/ M. H. Hatch] in OSUO. Each has a red label with a female symbol that matches the



Figs. 95-104. *Anthonomus* (*Cnemocyllus*) spp., aedeagus. 95) *A. inermis*, Shasta Co., California; 96) *A. extensus*, Grant Co., Oregon; 97) *A. deserticolus*, holotype, Pima Co., Arizona; 98) *A. deserticolus*, holotype, Pima Co., Arizona; 99) *A. dorothyae*, holotype, Benton Co., Oregon; 100) *A. schuhi*, holotype, Siskiyou Co., California; 101) *A. latus*, holotype, San Mateo Co., California; 102) *A. squamoerectus*, holotype, Mendocino Co., California; 103) *A. albus*, holotype, Gilliam Co., Oregon; 104) *A. ornatulus*, holotype, California.

allotype and one of the paratype labels. Also in OSUO there are three females labeled [Cheney, WASH./ Turnbull Slough/ May 19, 1946/ M. H. Hatch] [male].

Anthonomus (*Cnemocyllus*) *juncturus* Fall
Figs. 21, 22, 62

Anthonomus (*Cnemocyllus*) *juncturus* Fall 1913:57, 58. Holotype. Mexico. **Baja California Norte**: [Ensenada,/ Low. Cal] [juncturus/ TYPE] [MCZ Type/ 25169] (male, MCZC).

Description. (Figs. 21, 22). *Length*: 1.8-2.4 mm. *Head*: rostrum slightly, evenly curved, glabrous and shining in apical 4/5. *Thorax*: pronotum with dense, broadly imbricated, rounded, broad, pallid fuscochalky white scales predominant medially and laterally on dorsum, replaced on anterolateral portions of dorsum by darker brown scales. *Elytra*: extended apically. *Legs*: profemur with one minute ventral tooth; metatibia of male with inner margin slightly prominent in basal 1/2, slightly concave subapically, outer margin straight, with short, straight, acute apical mucro; tarsal claw with basal tooth minute. *Genitalia*: median lobe of aedeagus narrowed in apical 3/4, slightly expanded at extreme apex in dorsal view, apex curved in lateral view, with dorsal plate open at extreme base and subapically (Fig. 62).

Specimens examined. In addition to the holotype from **Baja California Norte**, 151 specimens of *A. juncturus* from the following localities were examined. Mexico. **Baja California Norte**. 5 km. N Cataviña (1, HAHC); 5 km. W Lázaro Cárdenas ("on yellow-flowered composite," 11, HAHC); 17.2 mi. S San Vicente (57, TAMUIC); 23 km. SE San Vicente (1, CWOB); San Quintín (1, CASC); N Playa Santa Maria, SW San Quintin (1, HAHC). **Hidalgo**. Tlaxocoyucan (1, CWOB). **San Luis Potosí.** 16 mi. S Santa Maria del Rio (3, CWOB). United States. **Texas.** *Cameron Co.*: Boca Chica Beach (1, TAMUIC); 6.7 mi. W Boca Chica Beach (1, TAMUIC); Palmetto Hill, east of Brownsville (1, CWOB; 21, TAMUIC); 7 mi. NE Brownsville (5, CWOB); 6 mi. SW Port Isabel (3, TAMUIC); 6-7 mi. W Port Isabel (2, CWOB); Laguna Atascosa Wildlife Refuge (34, CWOB). *Willacy Co.*: 7 mi. W Port Mansfield (5, CWOB); Zapata (2, TAMUIC).

Plant associations. The only indication of a host for *A. juncturus* is "on yellow-flowered composite" on labels of a series from 5 km. W Lázaro Cárdenas, Baja California Norte, Mexico.

Remarks. Anthonomus *juncturus* is smaller than *A. pictus* and *A. quesnelensis* and has the rostrum less strongly curved. In addition, the rostrum of *A. juncturus* is smooth, shining and glabrous, except at the extreme base, whereas *A. pictus* has the rostrum coarsely rugose and densely clothed with scales between the base and the antennal insertions. The basal tooth of the tarsal claws of *A. juncturus* is minute, whereas the claws of *A. pictus* and *A. quesnelensis* have a large, distinct basal tooth.

In his description of *A. juncturus*, Fall (1913) stated "although the hind tibiae are not visibly bent, the general aspect is that of *Cnemocyllus* and its place is apparently near *ligatus*." The holotype of *A. juncturus* is smaller and less elongate than that of *A. ligatus*, and has narrow, curved, scales intermixed among the predominant broad, rounded scales on the prothorax and elytra. Some of these narrow scales are semierect on the pronotum. The scales on the pronotum and elytra of *A. ligatus* are not so distinctly differentiated. They are also less distinct in specimens from San Luís Potosí and Texas, identified as *A. ligatus,* which have predominantly broader, more rounded scales on the pronotum and elytra. These could represent a distinct species, though they do not appear otherwise to differ from the type of *A. juncturus*. The median lobes of the aedeagus of *A. juncturus* and *A. ligatus* are also distinctly different (cf. Figs. 54, 62).

Anthonomus (*Cnemocyllus*) *stolatus* Group

Diagnostic combination. Antennal funiculus with six articles; elytra narrow, subparallel-sided, with indistinct, diffuse, middorsal and posterolateral maculae (Figs. 23, 28); median lobe of aedeagus widened from base, narrowed in apical 3/4, with slight, subangulate, subapical expansions in dorsal view (Figs. 64, 66, 68), slightly down-turned at apex in lateral view (Figs. 70, 72, 74); tarsal claw with distinct basal tooth; dorsal plate of median lobe open at extreme base and subapically; profemur slightly wider than metafemur, minutely toothed.

Remarks. The three species in this group are small, with dense, pallid scales and with faint maculae of slightly darker scales on the pronotum and the elytra. The shape of the median lobe of the aedeagus is similar in the three and distinguishes

them from other *Anthonomus*, subgenus *Cnemocyllus* groups.

Key to Species of the *Anthonomus* (*Cnemocyllus*) *stolatus* Group

1 Metatibia of male strongly curved in apical 2/3 (Fig. 44); metatibial mucro of male large, strongly curved (Fig. 44); western United States and northern Mexico ..... ***A. tenuis***

1' Metatibia of male not strongly curved (Figs. 41, 43); metatibial mucro of male smaller, not strongly curved (Figs. 41, 43) 2

2 Metatibia of male with subapical prominence in lateral view (Fig. 41); metatibial mucro of male small, acute, curved away from tibial apex (Fig. 41); southwestern United States and northern Mexico ..... ***A. stolatus***

2' Metatibia of male without subapical prominence in lateral view (Fig. 43); metatibial mucro of male large, curved toward tibial apex (Fig. 43); Utah ..... ***A. intermedius***

Anthonomus (*Cnemocyllus*) *stolatus* (Fall)
Figs. 23, 24, 41, 42, 63, 64

Anthonomus stolatus Fall 1901:264. Lectotype (designated by Burke 1975:60). United States. **California**. *San Diego Co.*: [San Diego/ Co. Cal.] [Type/ stolatus] [M.C.Z. Type/ 25176] [H. C. FALL/ COLLECTION] [LECTOTYPE/ Anthonomus/ stolatus Fall/ des. H. R. Burke] (female, MCZC). Paralectotypes (designated by Burke 1975:60). United States. **California**. *San Diego Co.*: [San Diego/ Co. Cal.] [H. C. FALL/ COLLECTION] [Anthonomus/ stolatus./ Fall.] [PARALECTOTYPE/ Anthonomus/ stolatus Fall/ des. H. R. Burke] (1 female, MCZC); [San Diego/ Co. Cal.] [male] [H. C. FALL/ COLLECTION] [PARALECTOTYPE/ Anthonomus/ stolatus Fall/ des. H. R. Burke] (1 male, MCZC); [San Diego/ Co. Cal.] [H. C. FALL/ COLLECTION] [PARALECTOTYPE/ Anthonomus/ stolatus Fall/ des. H. R. Burke] (1 male, 1 female, MCZC). Burke 1984:263.

Anthonomus mimicanus Fall 1913:54. Holotype. United States. **Arizona**. *Pima Co.*: [Tucson, Arizon, (sic)/ Wickham] [N.B. VI/ p. 43] [TYPE\ mimicanus\ Fall.] [M.C.Z./ Type/ 25170] [H. C. FALL/ COLLECTION] (male, MCZC). In addition to this "type," three specimens (1 male, 2 females) with the [Tucson, Arizon, (sic)/ Wickham] [H. C. FALL/ COLLECTION] labels, identified as *A. mimicanus*, are present in the Fall collection (MCZC). Synonymy by Burke 1975:60.

Description (Figs. 23, 24). *Length*: 1.6-2.2 mm. *Head*: rostrum curved, proximal portion shallowly sulcate, dense, imbricated scales at extreme base replaced toward antennal insertions by narrower, sparser scales. *Thorax*: pronotum with dense, broadly imbricated, rounded scales, pallid, cheesy white scales predominant medially and laterally on dorsum, admixed on anterolateral portions of dorsum with darker, rusty-brown to smoky brown scales. *Elytra*: interstria with rounded, dense, broadly imbricated, multiseriate, recumbent, pallid, cheesy white scales and narrower, darker, rusty-brown to smoky brown scales; pallid scales dense basally on sutural interstria, on interstria 6, on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among darker scales; sutural interstria not prominent; abdominal sterna 1-4 with dense, imbricated, pallid scales laterally, with narrower scales medially. *Abdomen*: sternum 5 about 2 times longer than sternum 4, slightly shorter than sterna 3 and 4 combined, with elongate scales medially. *Legs*: protibia with inner margin slightly prominent in basal 2/3, concave in apical 1/3, with slight preapical prominence; protibial uncus slender; metatibia of male with inner margin slightly prominent in basal 1/2, broadly concave in apical 1/2, outer margin straight, with short, slender, apical mucro (Fig. 41); metatibia of female straight, with short, slightly curved apical mucro (Fig. 42). *Genitalia*: median lobe of aedeagus with slight, subangulate, subapical expansions in dorsal view (Fig. 63); straight, slightly down-turned apically in lateral view (Fig. 64).

Specimens examined. In addition to the types of *A. stolatus* from California and the types of *A. mimicanus* from Arizona, 852 specimens of *A. stolatus* from the following localities were examined. Mexico. **Baja California Norte**. 16 km. SW Tecate ("on dry leaves of composite," 7, CWOB). United States. **Arizona.** Graham Mountains (22, BYUC). *Apache Co.*: Ganado (2, UAIC); 20 mi. E Show Low (1, TAMUIC). *Coconino Co.*: 15 mi. E Cameron (3, CWOB); Fort Valley (1, UAIC); 7 mi. S Page (4, TAMUIC); 10 mi. N, 5 mi. W Page (2, CDAE); Hualpais Mountains (1, OSUC); 4 mi. N Redlake (3, CWOB); 4 mi. SW Sedona ("*Gutierrizia sarothrae*," 4, CWOB); 2 km. W Sunset Crater National Monument (1, TAMUIC); 1 mi. S Tusayan (7000', 7, TAMUIC). *Cochise Co.*: 6.8 mi. SE Apache (1, TAMUIC); Chiricahua Mountains (1, OSUC). Cochise Stronghold (1, TAMUIC); 2 mi. E Gleeson (4400', 1, CWOB); Onion Saddle Back (1, CISC); Pomerine (1, CWOB); Portal (1, CWOB); 0.8 mi. E Portal (16, CDAE); 3 mi. NW Portal (1, CWOB); 6.8

mi. SE Portal ("on *Chrysothamnus*," 2, CWOB); St. David (1, UAIC); 2 km. E Superior (3, HAHC); 5 mi. S Tombstone (2, TAMUIC); 8 mi. E Tombstone (4500', 1, CWOB); 10 mi. N Tombstone (1, CWOB); 3 mi. S Wilcox (4150', 18, CWOB); 15 km. S Willcox (1275 m, 9, HAHC). *Gila Co.*: Globe ("*Xanthocephalum sarothrae* (Pursh) Shinners," 8, TAMUIC); 4 mi. S Globe (6, TAMUIC); 10 mi. E Globe (1, HAHC); Sixshooter Canyon, N of Globe (1, TAMUIC); Moeukopi (2, CWOB); Payson (2, INHS); 25 mi. NE Seneca (5800' 3, CWOB). *Graham Co.*: Gila Valley (1, MCZC); 2.4 km. W on Highway 366 from Highway 666, 1,500 m. (1, TAMUIC); Pinaleño Mountains: (1, CWOB); 13.6 mi. E Bonita (4200', 2, TAMUIC); Hospital Flat,(1, CWOB); Swift Trail (3300', 2, CWOB); Wet Canyon (6000', 1, CWOB); south side of San Carlos Reservoir (1, AMNH). *Maricopa Co.*: (1, OSUC); Phoenix (1, BYUC; 1, TAMUIC; 12, USNM). *Mohave Co.*: 6 mi. SE Kingman (3, CDAE). *Navajo Co.*: Carrizo (1, UAIC); 3 mi. NE Carrizo (5600', 1, CWOB); Burnt Corn Creek (1, CWOB); Show Low (26, TAMUIC); 6 mi. SE Show Low (6800', 3, CWOB). *Pima Co.*: Continental ("*Aplopappus tenuisectus*," 3, UAIC); 3 mi. SE Contintal (7, CWOB); Quitobaquito (2, CWOB; 4, UAIC); 7 mi. E Robles Junction (2, AUEM); mile 17 and mile 20 Hitchcock Highway, Santa Catalina Mountains (2, CWOB); Sabino Canyon, Santa Catalina Mountains (2, CWOB); Santa Rita Mountains (1, BYUC; 1, UAIC); Florida Canyon, Santa Rita Mountains (3, UAIC); Tucson (3, BYUC; 6, CASC; 12, CISC; 12, MCZC; 3, TAMUIC; 1, UAIC; 33, USNM); 4 mi. E Tucson (1, CWOB). *Pinal Co.*: 10 km. N Casa Grande (1, HAHC). *Santa Cruz Co.*: 9 mi. W Sonoita (1, TAMUIC); Madera Canyon, Santa Rita Mountains (1, CWOB). *Yavapai Co.*: 4 mi. SW Congress ("*Hymenothrix wislizeni*," 1, CISC); 6 mi. NE Cottonwood (4, CWOB); 4 mi. N Prescott (7, CWOB); 2 mi. SW Prescott (1, CWOB); 13 mi. E Seligman (5600', 1, CWOB). **California.** (4, BYUC; 1, USNM). *Fresno Co.*: Clovis (1, TAMUIC). *Los Angeles Co.*: (10, USNM); Lancaster (3, USNM); Pasadena (2, USNM). *Orange Co.*: Cypress (6, CISC; 1, TAMUIC). *Riverside Co.*: 4 mi. E Elsinore (1, CISC); Soboba Springs (1, TAMUIC); Tule Canyon ("Collected from Chrysothamnus," 1, CDAE). *San Diego Co.*: (1, CASC; 1, USNM); Mountain Springs (1, CASC); San Diego (2, CASC); San Felipe (1, CDAE); 1 mi. NE and 3 mi. NW Scissors Crossing (3, CWOB); Scissors Crossing (7, ELSC); Scissors Crossing, 6 mi. E Banner ("*Haplopappus venetus vernonioides*," 4, CWOB). **Nevada.** *Clark Co.*: Las Vegas (3, TAMUIC); Overton ("*Aplopappus acradenius*," 6, USNM). *Lyon Co.*: 4 mi. W Dayton ("on flowers of *Helenium tenuifolium*," 1, TAMUIC). *Nye Co.*: Ash Meadows (2, TAMUIC). **New Mexico.** Aragon ("rabbit brush," 1, USNM). *Catron Co.*: 6 mi. W Quemado (1, CWOB); 23 mi. E Quemado (2, TAMUIC). *Chavez Co.*: 3 mi. NE Elk ("*Xanthocephalum sarothrae*," 119, CWOB); 19 mi. SW Elkins (2, CWOB). DeBaca Co.: 10 mi. W Fort Sumner (1, TAMUIC). *Doña Ana Co.*: Cox Ranch, Organ Mountains (2, TAMUIC); 17 mi. NE Las Cruces (21, CWOB); 5 mi. N Rincon ("on *Gutierrezia sarothrae*," 4, ELSC). *Eddy Co.*: 32°19'N, 103°46'W ("Taken on *Gutierrezia sarothrae* (Pursh) Britt. & Rusby," 1, TAMUIC); 26 mi. E Carlsbad ("*Gutierrezia sarothrae*," 18, TAMUIC); 14 mi. S Malaga (1, TAMUIC). *Guadalupe Co.*: 16 mi. W Santa Rosa (1, TAMUIC); 2 mi. E Vaughn (1, TAMUIC). *Hidalgo Co.*: 5 mi. S Road Forks ("taken on *Xanthocephalum microcephalum* (DC.) Shinners," 36, TAMUIC); 10 mi. N Rodeo (1, TAMUIC). *Lea Co.*: 19 mi. NE Lovington (26, CWOB). *Lincoln Co.*: 1.5 mi. W Alto (1, CMNC); 8 mi. E Carrizo ("*Gutierrezia microcephala*," 1, CUIC); Corona ("*Bouteloua gracilis*," TAMUIC); Glencoe (5800', 1, TAMUIC); Sierra Blanca Mountains (8600', 3, TAMUIC). *Otero Co.*: 10 mi. E Artesia (6, CWOB); 7 mi. N Cloudcroft (2, TAMUIC); 4 mi. E Loco Hills (11, CWOB); 1 mi. W Oliver Lee Memorial State Park (17, TAMUIC); White Sands National Monument ("*Chrysothamnus*," 11, FSCA). *Quay Co.*: 20 mi. E Tucumcari (1, TAMUIC). *Sandoval Co.*: Bandelier National Monument (2, TAMUIC). *Santa Fe Co.*: Santa Fe (1, TAMUIC). *San Miguel Co.*: Las Vegas (1, USNM). *Union Co.*: 42 mi. S Clayton (1, CDAE). *Valencia Co.*: Belen (1, TAMUIC). **Texas.** *Anderson Co.*: 10 mi. SW Elkhart (1, TAMUIC). *Bailey Co.*: Muleshoe (4, CWOB); 7 mi. SE Muleshoe (2, CWOB). *Brewster Co.*: Alpine (2, TAMUIC); 22 mi. S Alpine (3, TAMUIC); 10 mi. W Alpine (1, TAMUIC); 17 mi. S Alpine (4,600', 1, CWOB); 7 mi. S Marathon (30, TAMUIC); 22 mi. E Marathon (1, CWOB). *Culberson Co.*: Dog Canyon, Guadalupe Mountains National Park (11, CWOB); Pine Springs (3, CWOB); Van Horn (1, CWOB). *Dickens Co.*: 9 mi. SE Dickens (1, CWOB). *Gaines Co.*: Seagraves ("*Xanthocephalum*," 2, CWOB); 5 mi. N, 4 mi. S, and 16 and 18 mi. SW Seminole (12, CWOB). Hall Co.: 6 mi. SE Turkey (8, CWOB). *Jeff Davis Co.*: 30 km. SE Kent ("*Baccharis*," 1, TAMUIC). *Lamb Co.*: 10 mi. W Littlefield ("swept *Gutierrezia*," 10, CWOB). *Lubbock Co.*: Lubbock (18, CWOB); 7 mi. SE Lubbock (1, CWOB). *Parmer Co.*: (1, TAMUIC); 4 mi. SW Bovina (7, CWOB). *Pecos Co.*: Pecos River at

Hwy. 190 (1, TAMUIC). *Presidio Co*.: 7 mi. S Marfa (1, TAMUIC); 9 mi. W Marfa (1, CISC); Plata (56, TAMUIC). **Utah**. *Zion National Park*. (1, MCZC).

Plant associations. Label data indicate that adults of *A. stolatus* occur on the following Asteraceae: *Baccharis*; *Chrysothamnus*; *Gutierrezia microcephala* (DC.) A.Gray; *G. sarothrae* (Pursh) Britt. & Rusby (also as *Xanthocephalum*); *Haplopappus acradenius* (Greene) Blake (as *Aplopappus*); *H. tenuisectus* (Greene) Blake (as *Aplopappus*); *H. venetus* (H.B.K.) Blake; *Helenium tenuifolium* Nutt.; *Hymenothrix wislizeni* A. Gray; *Xanthocephalum microcephalum* (DC.) Shinners; and "rabbit brush."

Remarks. *Anthonomus stolatus* closely resembles *A. tenuis*. The two species are distingished by the straight metatibia of the male of *A. stolatus* as compared to the curved one of *A. tenuis* (cf. Figs. 41, 44) and by the narrower, smoother and more nearly completely glabrous rostrum of the latter. The male genitalia of the two are closely similar but the median lobe is narrower and more apicolaterally rounded in dorsal view in *A. stolatus* (cf. Figs. 63, 67). *Anthonomus tenuis* is more broadly distributed in the western United States and northern Mexico than *A. stolatus* but there is considerable overlap in their ranges.

Most of the specimens of *A. stolatus* from southern California (Figs. 23, 24), including the types of *A. stolatus* and *A. mimicanus* and most specimens from southern Arizona, are relatively large and robust, with the rostrum distinctly, evenly convex, the elytra strongly convex posteriorly, and the scales on the pronotum and elytra predominantly rusty-brown in color. Specimens from White Sands, New Mexico, also fit this description. A few specimens from southern California and from Tucson and Phoenix, Arizona, however, as well as the great bulk of the specimens from elsewhere in Arizona, New Mexico, and Texas, are smaller and more elongate and have less strongly convex elytra. These also have more pallid scales on the pronotum and elytra and the darker scales are smoky brown rather than rusty-brown in color. The rostum is somewhat shorter and most strongly curved basally, especially in the females.

The single male of *A. stolatus* from Anderson County, Texas, represents a considerable disjunction from the rest of the specimens of the species examined from further west in Texas and further investigation of its occurrence there is needed.

Anthonomus (*Cnemocyllus*) *intermedius*, **new species**
Figs. 25, 26, 43, 65, 66

Type series. Holotype. United States. **Utah.** *Tooele Co*.: [Utah, Knolls/ 3900' Tooele/ Co. 9-27-1966/ C. W. O'Brien] [Chrysothamnus/ nauseosus] [PHOTO/ 025] (male, CWOB). Paratypes (81). *Juab Co*.: [UT Juab Co./ Right Fk Salt Cr/ 10 mi e Nephi/ May 20, 1988/ S. A. Wells] (1 female, TAMUIC). *Tooele Co*.: [Utah, Knolls/ 3900' Tooele/ Co. 9-27-1966/ C. W. O'Brien] [Chrysothamnus/ nauseosus] (41 males, 39 females, CWOB, TAMUIC).

Description. (Figs. 25, 26). *Length*: 2.3-2.5 mm. *Head*: rostrum slightly, evenly curved, proximal portion shallowly sulcate, dense, imbricated scales at extreme base replaced well distad of antennal insertions by narrower, sparser scales. *Thorax*: pronotum with dense, broadly imbricated, rounded scales, pallid, cheesy white scales predominant medially and laterally on dorsum, replaced on anterolateral portions of dorsum by rusty-brown scales. *Elytra*: interstria with rounded, dense, broadly imbricated, multiseriate, recumbent, cheesy white scales, some with scattered, narrower, rusty-brown scales; pallid scales dense basally on sutural interstria, on interstria 6 and on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among slightly darker rusty-brown scales; sutural interstria slightly prominent, especially at apices; abdominal sterna 1-4 with dense, imbricated, pallid scales laterally, with narrower scales medially. *Abdomen*: sternum 5 slightly longer than sternum 4, distinctly shorter than sterna 3 and 4 combined, with elongate scales medially. *Legs*: protibia with inner margin slightly prominent in basal 1/2, concave in apical 1/2, with slight preapical prominence; protibial uncus slender; metatibia of male with inner margin slightly prominent in basal 1/2, broadly concave in apical 1/2, outer margin straight, with short, curved, excavated apical mucro (Fig. 43). *Genitalia*: median lobe of aedeagus (Figs. 65, 66) 3/4, with slight subangulate, subapical expansions in dorsal view.

Plant associations. Label data indicate that adults of *A. intermedius* have been collected on *Chrysothamnus nauseosus* (Asteraceae).

Remarks. *Anthonomus intermedius* is larger than *A. stolatus* and *A. tenuis* and has the metatibia of the male slightly curved (Fig. 43), intermediate

between the straight metatiba of *A. stolatus* (Fig. 41) and the strongly curved one *A. tenuis* (Fig. 44).

Anthonomus (*Cnemocyllus*) *tenuis* Fall
Figs. 27, 28, 44, 67, 68

Anthonomus (*Cnemocyllus*) *tenuis* Fall 1913:57. Holotype. United States. **Nevada**. *Ormsby Co.*: [Ormsby Co. Nev/ July. Baker] [male] [tenuis/ TYPE] [M.C.Z./ Type/ 25178] [H. C. FALL/ COLLECTION] (male, MCZC).

Epimechus gracilis Fall 1913:59-60. Holotype. United States. **New Mexico**. *Bernalillo Co.*: [ALBUQ/ 9/ 19] [male] [M.C.Z./ Type/ 25184] [Epimechus/ gracilis/ Fall/ type.] [H. C. FALL/ COLLECTION] (male, MCZC). Synonymy by Burke 1975:60, 61.

Description. (Figs. 27, 28). *Length*: 1.5-2.3 mm. *Head*: rostrum curved at base, straightened distally, with dense, imbricated scales at extreme base, otherwise smooth, shining, glabrous. *Thorax*: pronotum with broad, chalky white scales predominant medially and laterally on dorsum, replaced on anterolateral portions of dorsum by narrower, darker, smoky gray-brown scales. *Elytra*: interstriae with dense, apically rounded, imbricated, multiseriate, recumbent scales, without distinctly narrower scales; pallid scales dense basally on sutural interstria, on interstria 6 and on longer median and posteromedian portions of interstria 4, variously interspersed elsewhere among slightly darker scales; sutural interstria not prominent; abdominal sterna 1-4 with dense, imbricated, pallid scales. *Abdomen*: sternum 5 slightly longer than sternum 4, distinctly shorter than sterna 3 and 4 combined, convex, with elongate scales medially. *Legs*: protibia with inner margin slightly prominent in basal 1/3, slightly concave in apical 3/4; protibial uncus short, stout; metatibia of male with inner margin prominent in basal 1/3, strongly concave in apical 3/4, outer margin curved in apical 1/2, apical mucro slightly curved in lateral view, excavated (Fig. 44). *Genitalia*: median lobe of aedeagus with subangulate, subapical expansions in dorsal view (Fig. 67), slender, slightly, broadly curved in lateral view (Fig. 68).

Specimens examined. In addition to the types of *A. tenuis* from Nevada, and the types of *A. gracilis* from New Mexico, 1,252 specimens of *A. tenuis* from the following localities were examined. Canada. **Alberta**. Medicine Hat (1, BYUC). Mexico. **Chihuahua**. Rio Rincon de la Concha, Yapomera (4, BYUC). **Sonora.** 40 mi. N Hermosillo ("swept from *Hymenoclea*," 1, CWOB). United States. **Arizona.** (2, MCZC); Grand Canyon (1, BYUC); Walnut (3, MCZC). *Apache Co.*: White Mts. (9, BYUC). *Cochise Co.*: Chiricahua Mountains (1, MCZC). *Gila Co.*: 6 mi. NE Globe ("*Gutierrezia sarothrae*"). *Maricopa Co.*: Phoenix (2, MCZC). *Mohave Co.*: Peach Springs (4, BYUC). *Yavapai Co.*: 1 mi. S Prescot (11, BYUC, "*Ambrosia artemisiifolia*"); Oak Creek Canyon (1, BYUC); 1 mi. W Sedona (1, BYUC). **California.** Newton (1, OSUC). *Alpine Co.*: Markleeville (1, CWOB). *Inyo Co.*: 31 mi. NE Big Pine (3, CWOB); 7 mi. NW Bishop (1, CWOB); 13 mi. N Bridgeport (1, OSUO). *Kern Co.*: Inyokern (3600', 1, CWOB). *Mono Co.*: Bridgeport. (2, MCZC); 13 mi. N Bridgeport (8, CWOB); McGee Creek (1, CISC); Sonora Junction (1, CISC); Tom's Place (3600', 1, CWOB). *Plumas Co.*: 7 mi. N Loyalton (1, CISC). *Sierra Co.*: 5 mi. NE Loyalton (4, CISC). *Santa Cruz Co.*: Santa Cruz (8, BYUC; 1, MCZC). *Siskiyou Co.*: (2, USNM); Macdoel ("on *Chrysothamnus nauseosus*," 1, AMNH); 30 mi. N Weed (1, CWOB). *Tulare Co.*: 9 Mile Canyon (1, CWOB). **Colorado.** (8, BYUC; 1, MCZC). *Archuleta Co.*: Pagosa Junction (1, CASC). *Chaffee Co.*: Buena Vista (1, USNM). *Eagle Co.*: Wolcott (73, BYUC). *El Paso Co.*: Colorado Springs (5, MCZC) ; Pikes Peak (1, MCZC). *Gunnison Co.*: 9.6 km. E Gunnison (2, CMNC). *Huerfano Co.*: Walsenburg (10, TAMUIC); 6 mi. E Walsenburg (1, TAMUIC). *Larimer Co.*: Loveland (2, BYUC). *La Plata Co.*: Durango (2, MCZC). *Mesa Co.*: 2 mi. E Grand Valley (2, TAMUIC); Mack (1, BYUC). *Montezuma Co.*: (1, OSUC). *Montrose Co.*: 4 mi. W Cimarron (2, CWOB). *Ouray Co.*: 2 mi. W and 3 mi. NE Ridgeway (10, TAMUIC). *Rio Blanco Co.*: (65, CWOB); 15 mi. W Meeker (6, TAMUIC). *Routt Co.*: Steamboat Springs (1, BYUC). *Weld Co.*: Greeley (1, USNM); 8 mi. N Nunn (5, CWOB); 3 mi. N Rockport (7, CWOB). **Idaho.** *Bear Lake Co.*: 17 mi. SE Montpellier (1, TAMUIC). *Bannock Co.*: Pocatello (1, MCZC; 1, TAMUIC). *Benewah Co.*: Riverdale (1, BYUC). *Blaine Co.*: Craters of Moon Idaho (1, MCZC) . *Bonneville Co.*: Swan Valley (4, CWOB). *Custer Co.*: 12 mi. N Challit (6, OSUO). *Fremont Co.*: Paraker (4, OSUO); Saint Anthony Dunes (5400', 6, CDAE). *Minidoka Co.*: Rupert (7, USNM). *Oneida Co.*: Stone (1, OSUO); Twin Springs (8, CWOB). *Twin Falls Co.*: Snake River Canyon (1, CWOB). **Kansas.** *Clark Co.*: (1, TAMUIC). *Logan Co.*: State Lake (2, CWOB). **Montana.** *Beaverhead Co.*: Dillon (1, USNM). *Dawson Co.*: Milliron Montana (5, BYUC). *Dearlodge Co.*: Warm Springs (4, TAMUIC). *Madison Co.*: 17 mi. S Ennis (9, TAMUIC). **Nebras-**

ka. *Dawson Co.*: Gothenburg (1, CWOB). **Nevada.** (1, MCZC). *Elko Co.*: Elko (5,200', 33, CWOB); 6 mi. E Wells (1, CWOB); 27 mi. S Wells (18, CISC). *Ely Co.*: 37 mi. NW Ely (2, CWOB). *Esmeralda Co.*: 3 mi. W Lida (6800', 1, CWOB); Lida Summit, 2,225m (1, CASC). *Eureka Co.*: Eureka (3, CWOB). *Lander Co.*: 7 mi. E Austin (1, CWOB). *Lincoln Co.*: Mackay (1, USNM); Panaca ("on *Chrysothamnus*," 1, TAMUIC). *Lyon Co.*: 19 mi. S Wellington (1, CDAE). *Nye Co.*: 2 mi. E Tonapah (1, CWOB). *Nye Co.*: Mercury (1, BYUC). *Ormsby Co.*: Carson City (1, CASC; 1, USNM). *Washoe Co.*: 9 mi. NW Gerlach (1, CWOB); Washoe City (1, CWOB). **New Mexico.** (1, MCZC). *Bernalillo Co.*: Albuquerque (7, BYUC; 2, MCZC). *Catron Co.*: 7 mi. W Datil (7500', 1, TAMUIC); Luna (2, MCZC); 18 mi. E Quemado (7, TAMUIC). *Colfax Co.*: Cimarron Canyon (23, TAMUIC); 5 mi. E Eagle's Nest (11, TAMUIC). Lincoln Co.: Coyote (5, TAMUIC). *Rio Arriba Co.*: 15 mi. S Cebolla (1, TAMUIC); 5 mi. S Chama (7, TAMUIC). *Sandoval Co.*: Jemez Mts.(1, MCZC); Jemez Springs (2, MCZC). *Socorro Co.*: 5 mi. W and 40 mi. NW Magdalena (2, TAMUIC). *Taos Co.*: La Sombre Campground, Carson National Forest (4, CWOB); Tres Piedras (3, CASC). **North Dakota**. Theodore Roosevelt Natl. Park, So. Unit (1, BYUC). **Oregon.** *Harney Co.*: 7 mi. NE Stinking Water Pass (8, CWOB). *Klamath Co.*: Lower Klamath Lake ("*Chrysothamnus nauseosus*," 14, AMNH). *Lake Co.*: Silver Lake (8, AMNH). **Utah.** (4, BYUC); Chad's Ranch (9, MCZC); Indian Creek (1, BYUC); Willow Creek (3, BYUC). *Beaver Co.*: Beaver UT (1, BYUC); 4 mi. N Beaver (1, TAMUIC) ; Milford (5, MCZC; 3, USNM); Minersville (3, TAMUIC). *Box Elder Co.*: Cotton (2, TAMUIC). *Cache Co.*: Cache Jctn (1, BYUC); Logan (1, BYUC; 1, INHS); 9 mi. E Logan (1, CWOB). *Carbon Co.*: Helper (61, BYUC). *Duchesne Co.*: 10 E and 17 mi. W Duchesne (1, CWOB); Fort Duchesne ("On *Chrysothamnus*," 1, USNM); 7 mi. N Mountain Home (5, TAMUIC); Myton (2, TAMUIC). *Emory Co.*: (1, OSUC). *Garfield Co.*: Panguitch (3, BYUC). *Grand Co.*: Cisco (1, BYUC). *Iron Co.*: Antelope Springs (1, BYUC); Cedar City (1, BYUC; 1, CASC); 12 mi. NW Orton (1, TAMUIC); Parawan Creek (2, TAMUIC). *Juab Co.*: Nephi (2, BYUC). *Kane Co.*: 4 mi. W Alton (11, TAMUIC); 2 mi. E and 7 mi. W Mount Carmel Junction (2, CWOB; 12, CMNC; 1, TAMUIC); 2 mi. N Orderville (5, TAMUIC); Pine Valley (2, BYUC); The Hall, Escalante Desert (1, BYUC). *Millard Co.*: Fillmore (29, BYUC; 1, MCZC; "*Chrysothamnus nauseosus*," 1, TAMUIC). *Morgan Co.*: Peterson (1, BYUC). *Piute Co.*: Marysvale (2, MCZC); Marysvale Canyon (1, BYUC). *Rich Co.*: (1, OSUC). *Sanpete Co.*: Axtell ("*Chrysothamnus nauseosus*," 7, TAMUIC). *San Juan Co.*: La Sal (174, BYUC); San Juan R. (1, BYUC); Monticello (2, BYUC; 6, TAMUIC). *Sanpete Co.*: Manti (2, BYUC); Moroni (1, BYUC). *Sevier Co.*: Joseph (2, BYUC). *Summit Co.*: 1 mi. E Echo (1, CWOB); Parley's Park (2, TAMUIC). *Tooele Co.*: Davis Mtn. (17, BYUC); Knolls (3900', "*Chrysothamnus nauseosus*," 1, CWOB); 5 mi. S James Ranch Gov't Creek (6, BYUC). *Uintah Co.*: Fort Duchesne (2, BYUC); Naples ("*Chrysothamnus viscidiflorus*," 58, CWOB; 13, TAMUIC); Watson (2, MCZC). *Utah Co.*: Payson (1, CWOB); Provo (5, BYUC); 15 mi. E Springville (1, TAMUIC); 19 mi. E Springville ("*Chrysothamnus nauseosus*," 108, TAMUIC); Hobble Creek Canyon (1, TAMUIC). *Wasatch Co.*: Deer Creek (2, BYUC). *Washington Co.*: St. George (1, BYUC; 1, MCZC). *Wayne Co.*: 2 mi. E Torrey (6500', 11, HAHC). **Wyoming.** *Albany Co.*: 5 mi. NE Albany (2, TAMUIC); Laramie (1, MCZC). *Carbon Co.*: Medicine Bow (2, BYUC); 45 mi. E Rock Springs (3, USNM). 1.5 mi. NE Saratoga ("on *Artemesia tridentata* Nutt.," 9, CWOB); 7 mi. E Sinclair (1, CWOB). *Lincoln Co.*: Kemmerer (1, TAMUIC). *Park Co.*: Cody (10, BYUC); 20 mi. N Cody (59, BYUC). *Uinta Co.*: Evanston (7, CWOB). *Sweetwater Co.*: Farson (6, BYUC); Rock Springs (5, BYUC). *Teton Co.*: 12 mi. S Jackson (8, CWOB).

Plant associations. Label data indicate that adults of *A. tenuis* occur on the following Asteraceae: *Artemesia tridentata* Nutt.; *Chrysothamnus nauseosus*; *C. viscidiflorus* (Hook.) Nutt.; and *Hymenoclea*. Burke (1968) and Ahmad and Burke (1972) described the pupa and larva, respectively, of *A. tenuis* from flower heads of *Chrysothamnus nauseosus*. They stated that "the larvae feed in the flower heads of *A. nauseosus* with pupation taking place in the feeding cavity." Burke (1968) also noted that adults of the species have been collected on *Xanthocephalum sarothrae*. Boldt and Robbins (1994) listed *A. tenuis* as "occasional (less than one per plant but more than one per 10 plants") on leaves of *Baccharis salicina*.

Remarks. For comparison of *A. tenuis* with *A. stolatus*, see remarks on the latter species above. *Anthonomus tenuis* is more like the members of the *A. jacobinus* group in possession of the curved metatibia. The species appears to share its geographic range and host associations with *A. jacobinus*, the most widespread member of that group.

Despite the similarity of the male metatibia, however, *A. tenuis* is distinguished from that species by the smaller size, shorter, smoother, more nearly glabrous rostrum, and most markedly, by the shape of the median lobe of the aedeagus (cf. Figs. 63, 64, 67, 68).

Anthonomus (*Cnemocyllus*) *inermis* Group

Diagnostic combination. Antennal funiculus with seven articles; Metatibia of male with inner margin prominent in basal 1/4-1/2, concave in apical 1/4-3/4, outer margin curved in apical 1/2 (Figs. 87-94); metatibia of female straight; scales on midline of pronotum extending anteriorly, scales on dorsolateral portions extending more-or-less anteromedially; tarsal claws with basal tooth; endophallus minutely denticulate, with one slender, transfer apparatus (Figs. 95-97, 99-104).

Remarks. The species of the subgenus *Cnemocyllus* with seven antennal funicular articles and with the metatibia of the male curved are assigned to the *A. inermis* group. Many of the species have the median lobe of the aedeagus similar to many of the species in the *A. squamosus* group. The relationship of the species in the two groups needs further study.

Key to the Species in the *Anthonomus* (*Cnemocyllus*) *inermis* Group

1 Tarsal claws long, slender, widely divergent, with short, slender basal tooth 2
1' Tarsal claws stouter, not widely divergent, with long, robust basal tooth 3

2 Metatibia of male strongly, abruptly bent in apical 1/3 (Fig. 94) elytra convex in lateral view (Fig. 85), sides broadly rounded in dorsal view (Fig. 86); middorsal and posterolateral maculae distinct (Figs. 85, 86) ..... ***A. ornatulus***
2' Metatibia of male strongly curved in apical 1/2, but not abruptly bent (Fig. 93); elytra less convex in lateral view (Fig. 83), subparallel-sided in dorsal view (Fig. 84); middorsal and posterolateral maculae indistinct (Figs. 83, 84) ***A. albus***

3 Head, thorax, sternum, elytra and legs with short, erect, narrow scales; body elongate (Figs. 81, 82); metatibia of male slender, strongly curved in apical 2/3 (Fig. 92); median lobe slender in dorsal view, broadly constricted in the distal 1/3, with small, acute, apicolateral prominences (Fig. 102) ..... ***A. squamoerectus***
3' Head, thorax, sternum, elytra and legs without erect scales; metatibia of male stouter, less strongly curved (Figs. 87-91); median lobe broader in distal 1/3, with (Fig. 97), or without (Figs. 95, 96, 99-101) apicolateral prominences 4

4 Tarsal claws long, flattened, basal tooth extending nearly to apex of claw 5
4' Tarsal claws shorter, not flattened, basal tooth shorter, not extending to near apices of claw 6

5 Body broad (Fig. 80); elytra with more-or-less evenly interspersed pallid and dark scales (Fig. 79, 80); median lobe of aedeagus long, slender, with broadly rounded sides and long dorsal sclerotized area (Fig. 101) ..... ***A. latus***
5' Body narrower (Figs. 78); elytra with unicolorous pallid scales (Figs. 77, 78); median lobe of aedeagus shorter, narrowed in apical 2/3, with short dorsal sclerotized area (Fig. 100) ..... ***A. schuhi***

6 Pronotum and elytra with scales unicolorous (Figs. 75, 76) ..... ***A. dorothyae***
6' Pronotum and elytra with variegated pallid and dark scales, darker scales concentrated on dorsomedian, posterolateral and apicolateral maculae (Figs. 69-74) 7

7 Metatibia of male curved in apical 2/3, innermarginal prominence limited to basal 1/3 (Fig. 89); median lobe strongly, broadly constricted in apical 2/3, abruptly narrowed subapically (Fig. 97), narrow apical portion extended in lateral view (Fig. 98) ..... ***A. deserticolus***
7' Metatibia of male curved in apical 1/2, innermarginal prominence longer, extending across basal 1/2 (Fig.93-94); median lobe broadly rounded on sides in dorsal view, with narrow apicomedian extension (Fig. 95, 96) 8

8 Elytral apices rounded (Figs. 69, 70); apicomedian extension of median lobe broad (Fig. 95) ..... ***A. inermis***
8' Elytral apices extended (Figs. 71, 72); apicomedian extension of median lobe of aedeagus narrower (Fig. 96) ..... ***A. extensus***

Anthonomus (*Cnemocyllus*) *inermis* (Boheman)
Figs. 69, 70, 87, 95

Anthonomus inermis Boheman 1859:132. **Holotype**. United States. **California**. *San Francisco Co.:* [California] [Kinb.] [Type] [Typus] (&, NHRS). LeConte 1876:203. Dietz 1891:242, pl. vi., fig. 22.

Anthonomus mannerheimi Dieckmann 1968:468 (new name for *Anthonomus brunnipennis* Mannerheim 1843:292, not Curtis 1840:280). Type not examined, depository unknown. LeConte 1876:198. Dietz 1891:211. **New synonymy**.

Anthonomus subvittatus LeConte 1876:203. Lectotype (designated by Burke 1984:266). United States. **California**. [(gold disk)] [Type/ 2071] [J. L. Leconte/ Coll.] [LECTOTYPE/ Anthonomus/ subvittatus/ LeC./ design. by/ H. R. Burke] [A./ subvittatus/ Lec.] (&, MCZC). Dietz 1891:240. Hatch 1971:351. **New synonymy**.

Description (Figs. 69, 70)**.** *Length*: 1.8-3.1 mm; rostrum slightly to strongly, evenly curved, shallowly sulcate proximally, dense scales at base replaced by narrower, sparser scales toward antennal insertions; pronotum with broad, distinct, lateromedian vittae of dark, dark brown to rusty red-brown scales, and narrower, dorso- and lateromedian vittae of pallid, cheesy white scales; elytra narrow, not extended apically, with variously distinct dorsomedian and posterolateral maculae of dark scales; pallid, cheesy white scales dense on posteromedian portions of 4th and 5th interstria, on basal portions of sutural and 6th interstria, and on median portions of 9th and 10th interstria, variously intermixed among darker scales elsewhere; profemur unarmed or minutely toothed; metatibia of male with inner margin broadly prominent in basal 1/2, broadly concave in apical 1/2, outer margin slightly to strongly curved in apical 1/2 (Fig. 87); metatibial mucro stout, excavated; tarsal claws and basal tooth moderate, tooth distinctly shorter than claw; median lobe with sides broadly, evenly rounded, slightly narrowed in apical 1/2, more strongly narrowed apically to narrow apicomedian extension (Fig. 95).

Specimens examined. In addition to the types of *A. inermis* and *A. subvittatus* from California, 300 specimens of *A. inermis* from the following localities were examined. United States. **California.** King's River Canyon (3, MCZC). *Alameda Co.:* Berkeley (1, CISC); Strawberry Canyon (1, CWOB). *Calaveras Co.:* 3 mi. NE Glencoe (1, CWOB). *Contra Costa Co.:* Briones Reservoire (3, CWOB). *Fresno Co.:* Boyden Cave (1, CDAE). *Humboldt Co.:* Dinsmore Road (1, CASC); Mad River (1, CASC). *Inyo Co.:* 8 mi. NE Big Pine (1, CWOB). *Kern Co.:* 5 mi. SW Glennville (1, CDAE); Tehachapi (5, MCZC); Tejon (1, CWOB). *Lake Co.:* Clear Lake (2, CASC, 1, MCZC); Hullville (1, CASC). *Madera Co.:* Sugar Pine (1, CASC). *Marin Co.:* Bon Tempe Lake (1, TAMUIC); Carson Ridge (1, CWOB); Fairfax (1, CASC); 1 mi. SE Inverness (4, CWOB); Laguna, Chileno Valley (1, CWOB); Lagunitas (6, CASC); Nicario (1, CWOB); Phoenix Lake (1, CASC); Pt. Reyes Penninsula" (*Layia platyglossa,"* 109, CWOB); Tocoloma (8, CWOB). *Mariposa Co.:* Midpines (1, CDAE); Sumerdale Camp, Sierra National Forest (3, TAMUIC); Yosemite (1, MCZC). *Mendocino Co.:* 2 mi. N Fort Bragg (45, CDAE); Sherwood (1, CASC). *Monterey Co.:* (1, CASC); Carmel (28, CASC); Carmel River (1, CWOB). *Orange Co.:* (2, MCZC). *San Benito Co.:* (1, OSUC). *San Mateo Co.:* Lake Pilarcitos (1, TAMUIC; 1, CWOB; *"Monardella villosa* var *franciscana,"* 1, CWOB); San Mateo (1, CASC). *Santa Barbara Co.:* Lobo Canyon, Santa Rosa Island (1, CDAE). *Santa Clara Co:* (3, CASC); Palo Alto (1, CASC). *Sequoia National Park:* Potwisha (7, CASC). *Shasta Co.:* Burney (1, TAMUIC). *Solano Co.:* Green Valley Falls (1, CASC). *Sonoma Co.:* Mark West Springs (2, CASC). *Tulare Co.:* 4 km. S Alta Sierra Pass (1, HAHC); Ash Mountain (3, CASC; 17, CDAE); 2 mi. W Camp Nelson (2, CDAE); Kaweah (1, CASC; 1, CISC; 2, MCZC); Visalia (1, CDAE). *Yolo Co.*: Davis (1, UCDC). *Yosemite National Park*: Pate Valley (1, USNM). **Idaho**. *Idaho Co.:* Slate Creek Ranger Station (1, OSUO). **Oregon**. *Baker Co.:* Unity (1, AMNH). *Benton Co.:* Corvallis (1, CDAE). *Crook Co.:* 19 mi. E Prineville (Aex *Chrysothamnus nauseosus,* 1, OSUO). *Jackson Co.:* Laurelhurst State Park (1, TAMUIC). *Josephine Co.:* Lake Selmac (1, CISC). *Umatilla Co.:* Athena (2, AMNH). **Washington**. *Walla Walla Co.:* Dixie (1, CWOB).

Plant associations. Label data indicate that some adults of *A. inermis* have been collected on *Chrysothamnus nauseosus* (Pall.) E. L. Greene, *Layia platyglossa* L. E. L. Fischer & M. Gray (Asteraceae), and *Monardella villosa* var *franciscana* (Lamiaceae).

Remarks. The name *A. inermis* Boheman (1859) replaces *A. subvittatus* LeConte (1876) as the valid name of this species. It is represented in the present study by specimens from central and northern California, Oregon and Idaho.

Hatch (1971:351), citing personal communication with Horace R. Burke, commented on variability of the species he identified as *Anthonomus subvittatus*. This variability is confirmed in our examination of additional specimens, including the types and specimens determined by Hatch. A large proportion of the examined specimens of *A. inermis*

are among three large series from California. The specimens in two of these, from 1 mi. N Fort Bragg, Mendocino County, and the ones from Ash Mountain, Tulare County, are relatively robust and have distinct, discrete patterns of pallid and dark scales. The Ash Mountain specimens also have a distinct ventral tooth on the profemur, a feature absent from the Fort Bragg series and from the specimens in the third large series from Pt. Reyes Penninsula, Marin County, California. The Pt. Reyes specimens have a mottled appearance, the pallid and dark scales less distinctly condensed into discrete patterns.

Single specimens and specimens in shorter series from various localities in Marin County and elsewhere in north-central California differ in having the rostrum and femora relatively long and slender. Among these is a female specimen labelled "Cala./ % [or 6?]" "J. L. Leconte/ coll." "A. brunnipennis/ Mann." in the LeConte Collection (MCZC) under the name *Anthonomus brunnipennis*. The type of the species described by Mannerheim (1843) as *Anthonomus brunnipennis* but now known as *A. mannerheimi* Dieckmann (1968) is apparently not to be found in the holdings of any of the collections contacted, including the Helsinki, London, and St. Petersburg museums. Fall (1913:47) asserted that Mannerheim's description (duplicated by Linsley 1978) "calls for an insect two lines long excluding the rostrum, finely pubescent, pitchy black with brown elytra," whereas LeConte's specimen is "smaller, uniform in color, and rather sparsely but truly squamose." This casts doubt on LeConte's identification of *A. brunnipennis*. We wait, as Fall did before us, to "hear from any collector who believes he or she has a good *brunnipennis,"* preferably the type. For now, our concept of *A. mannerheimi* is based on the specimen in the LeConte collection which we consider to be conspecific with the types of *A. inermis* and *A. subvittatus*.

Anthonomus (*Cnemocyllus*) *extensus*,
new species
Figs. 71, 72, 88, 96

Type Series. Holotype. United States. **Oregon.** *Jackson Co.:* [Table Mt./ Ore./ 7-2-39] [Fred Lawrence/ collection] (male, CASC). Paratypes (54). Canada. **British Columbia.** [Genoa Bay/ Duncan, B.C./ VII-31-1928/ W. Mathers] [Anthonomus/ sp.] [R. Hopping/ Collection] (1 male, CASC); [Goldstream, B.C./ 17-VI-1923/ K. F. Auden] [122 Bu.] [R. Hopping/ Collection] [Anthonomus/ sp./ Det. L. L./ Buchanan] (1 male, CASC). United States. **California.** *Humboldt Co:* [Samoa/ Humboldt Co./ Cal. Jul. 4, >35] [B. P. Bliven/ Collector/ No. 123] [BRUNSEN P. BLIVEN/ COLLECTION/ 1981 Accession/ CALIF. ACAD. OF SCI.] (1 male, 3 females, CASC). *Placer Co.:* [U.S.A.: CALIFORNIA/ Placer County, Tahoe/ National Forest,/ Granlibakken Ski Res.] [1.6 km SW. Tahoe/ 24.VII.1983/ Thomas W. Davies] (1 male, CASC). *Plumas Co.:* [Crescent Mills/ Plumas Co. Cal./ VII-18 1967] [R. P. Allen/ Collector] (1 female, CDAE). **Idaho.** *Boise Co.:* [5.8 mi. NW/ Gardena/ Boise Co., Ida./ IX-23-1983] [In seeds/ Madia/ glomerata] [F. W. Merickel/ R. P. Wright/ Collectors] (2 males, 3 females, CMNC). *Bonner Co.:* [Sandpoint, Ida./ VII-14-1961/ N. M. Downie] [Anthonomus/ sp./ (Cnemocyllus)/ DET SLEEPER 57] (1 female, TAMUIC); [Sandpoint, Ida./ July 4, 1969/ N. M. Downie] (1 female, TAMUIC). **Oregon.** *Grant Co.:* [Summit Prairie, Ore./ August 9, 1939/ Gray & Schuh] (1 female, AMNH). *Jackson Co.:* [Moon Prairie/ G8 Jackson Co/ Ore VII-13-1941] [on Madia/ glomerata] [L. G. Gentner/ Collector] [OSU] (1 male, OSUO); [Prospect/ Or. 8-II-25/ Lawrence] [Fred Lawrence/ collection] (1 male, CASC); [Prospect, Ore./ June 10, 1941] [L. G. Gentner/ Collector] (1 male, 3 females, OSUO); [Prospect, Ore./ June 10, 1941] [L. G. Gentner/ Collector] [Anthonomus/ near subvittatus Lec./ Det. L. L. Buchanan >46] (1 female, OSUO); [Prospect, Ore./ June 14, 1941] [L. G. Gentner/ Collector] [Anthonomus/ (Cnemocyllus)/ inermis/ LeC./ M. Hatch - 1967] (1 male, OSUO); [Prospect, Ore./ June 14, 1941] [L. G. Gentner/ Collector] [TYPE / Anthonomus/ (Cnemocyllus)/ prospectus/ 1968 - M. Hatch] [OSU] (1 male, OSUO); [Table Mt./ Ore./ 7-2-39] [Fred Lawrence/ collection] (2 males, 2 females, CASC). *Klamath Co.:* [3 mi. NW Bly, Ore./ Klamath Co.: Artemesia/ June 1, 1962/ Vertrees & Schuh] (1 male, AMNH); [Crystal Cr., Ore./ Upper Klamath Lk./ May 30, 1960/ Joe Schuh, Coll.] (1 male, 6 females, AMNH); [Mare's Egg Sprg., Ore.) Klamath County/ May 30, 1962/ Joe Schuh, Collector] (1 male, AMNH). *Lake Co.:* [71-12OREG Lake Co/ Lower Pitt Lk 8 mi S/ Quartz Mtn 5900'/ 20 Jul 71/ Lattin/ sweeping meadow] (1 female, OSUO). **Washington.** *Klickitat Co.:* [Klikitat V. W.T./ Preston's, July 11, >82.] (6 males, 9 females, MCZC).

Description. *Length*: 2.7-3.1 mm; rostrum slightly, evenly curved, shallowly sulcate proximally, dense scales at base replaced by narrower, sparser scales toward antennal insertions; pronotum with broad, distinct, lateromedian vittae of dark, dark

brown to rusty red-brown scales, and narrower, dorso- and lateromedian vittae of pallid, cheesy white scales; elytra narrow, extended apically, with distinct dorsomedian and posterolateral maculae of dark scales; pallid, cheesy white scales dense on posteromedian portions of 4th and 5th interstria, on basal portions of sutural and 6th interstria, and on median portions of 9th and 10th interstria, variously intermixed among darker scales elsewhere; profemur minutely toothed; metatibia of male with inner margin broadly prominent in basal 1/2, broadly concave in apical 1/2, outer margin slightly to strongly curved in apical 1/2 (Fig. 88); metatibial mucro stout, excavated; tarsal claws and basal tooth moderate, tooth distinctly shorter than claw; median lobe with sides broadly, evenly rounded, slightly narrowed in apical 1/2, more strongly narrowed apically to narrow apicomedian extension (Fig. 96).

Plant associations. Labels state that some adults of *A. extensus* were collected "in seeds" of *Madia glomerata* Hook. (Asteraceae).

Remarks. *Anthonomus extensus* closely resembles *A. inermis* (cf. Figs. 69-72), and some of the specimens in the type series have been preserved under the name *Anthonomus subvittatus* (a synonym of *A. inermis),* as well as under the *nomen nudum* on the label of one of the paratypes from Prospectus, Oregon. The apically extended elytral apices of *A. extensus* is the most notable distinguishing feature of the species which is somewhat larger and more elongate than *A. inermis* and has the dark scales on the elytra more strongly and more consistently condensed into a discrete pattern. In addition, the median lobe of *A. extensus* is more strongly narrowed apically and the apical extension is shorter and narrower than that of *A. inermis* (cf. Figs. 95, 96). The male metatibia is also slightly stouter in *A. extensus* (cf. Figs. 87, 88). The ranges of *A. extensus* and *A. inermis* overlap, but the two appear to have different host plants.

Anthonomus (*Cnemocyllus*) *deserticolus*,
new species
Figs. 73, 74, 89, 97, 98

Type Series. Holotype. United States. **Arizona.** *Pima Co.:* [Ariz: Pima Co./ Quitobaquito/ Organ Pipe/ N. M. IV-11-65] [G. L. Jensen/ W. J. Turner/ collectors] [DEC015] (male, CISC). **Arizona.** Paratypes (40). Mexico. **Baja California Sur**. [MEXICO: B. C. S./ La Paz/ 13.IX.1978/ D R Whitehead] (1 female, USNM); [Loreto/ Baja Cal./ May 19 1921] [E P VanDuzee/ Collector] [Sebastiana] (1 female, CASC); [MEXICO. Baja Cal. Sur/ 2 km S. Mulegé/ 10.VIII.1992/ H. & A. Howden] (1 female, HAHC); [MEX: Baja Sur/ Playa Los Cerritos/ X-8-1983/ F. Andrews & D. Faulkner] [Collected on/ ground at night] (1 female, CDAE); [MEX: Baja Calif. Sur/ 3 mi. S San Pedro/ 23-VII-1977/ R. L. Westcott] [Beating mesquite,/ PROSOPIS/ GLANDULOSA/ var. TORREYANA] (3 females, CWOB). **Guerrero**. [20 mi. S. E./ Acapulco, Gro./ MEX. VII-13-64/ Phil Wagner (1 female, TAMUIC); [MEXICO. Guerrero/ 21 mi. E. Acapulco/ 12 August 1962/ (N. Marston)] (1 male, CMNC). **Sonora**. [Alamos, Son. Mex./ 6-XII-55] [Colector/ F. Pacheco M.] [pasto] [hierba] [Anthonomus/ subgenus/ Cnemocyllus/ det. H. R. Burke >62] (1 male, TAMUIC); [Alamos, Son. Mex./ 6-XII-55] [Colector/ F. Pacheco M.] [pasto] [hierba] [Coleccion Entom./ de la Oficina/ de Estudios Especiales/ S.A.A. Ortega] (1 male, TAMUIC); [MEX., Sonora,/ Ba. San VI-25-62/ Francisquito] [E. Sleeper, R. An-/ derson, A. Hardy,/ R. Somerby Collr.] [E. L. Sleeper/ Collection] (1 male, 1 female, ELSC); [MEX. Sonora/ Hermosillo/ VII-9 to 16-53/ B. Malkin] (1 male, CASC); [MEX.,/ Sonora, 1 mi. NW/ Navojoa VII-12-62] [E. Sleeper, R. An-/ derson, A. Hardy,/ R. Somerby Collr.] [E. L. Sleeper/ Collection] (1 male, 1 female, ELSC); [San Bernardo Mex/ Rio Mayo Son./ X-9-34] [R S Gentry/ Collector] [Van Dyke/ Collection] (1 female, CASC). United States. **Arizona**. *Cochise Co.:* [Cochise Co. Ariz/ T17S-R31E-S3/ 23-VI-59] [Cut] [579] (1 male, TAMUIC); [Ft. Huachuca/ Ariz. VIII-3-'24] [E P VanDuze/ Collector] (1 female, CASC). *Pima Co.:* [Ariz: Pima Co./ Quitobaquito/ Organ Pipe/ N. M. IV-11-65] [G. L. Jensen/ W. J. Turner/ collectors] (1 male, 3 female, CISC); [Ariz.; Pima Co./ Sells; 4-21-69/ Joe Schuh, Coll.] (1 male, AMNH); [San Xavier/ Mission Ariz./ X-15-36] [E P VanDuze/ Collector] (1 male, CASC). **California**. [Mt. Springs/ V-27-60 Cal.] [J. J. & J. N./ Knull Collrs.] (1 female, OSUC). **New Mexico**. *Dona Ana Co.:* [10 mi. S./ N. M. State/ College, N. M.] [Mesquite Sta./ Date 2/3/30/ L. alyssoides] [Anthonomus/ canus/ Lec./ Buc./ >31] (1 male, USNM). *Eddy Co.:* [NEW MEXICO, Eddy Co./ 26 mi E Carlsbad/ 24 May 1977 - *Gutierrezia/ sarothrae,* Plot W 43,/ 44, 49, 50-Plant #18] (1 male, TAMUIC). **Texas**. *Brewster Co.:* [Tex. Big Bend N./ P. 4500' Juniper/ Cyn. VI-5-1970/ L & C. O'Brien] (1 female, CWOB); [South Rim Trail/ Big Bend Natl. Park/ Brewster Co., Texas/ August 15, 1969/ Board & Hafernik] (1 male, 2 females, TAMUIC); [7 mi. s.

Marathon,/ Brewster Co., Texas/ August 18, 1969/ Board & Hafernik] (1 female, CWOB); [Marfa, Tex./ July 3-6/ 4600-4800 ft./ Wickham] (1 male, USNM); [12 mi. s. Marfa/ texas IX-30-66/ C. L. Cole] [57] (1 male, TAMUIC). *Presidio Co.:* [2 miles north/ Presidio, Texas/ June 23, 1968/ J. E. Hafernik] (1 female, TAMUIC); [3 miles north/ Presidio, Texas/ August 17 1968/ J. E. Hafernik] (1 female, TAMUIC); [13 miles north/ Presidio, Texas/ Nov 20 1967/ C. L. Cole] (1 male, TAMUIC); [Shafter, Texas/ Presidio County/ June 22, 1968/ J. E. Hafernik] (1 female, TAMUIC); [2 mi. s. Shafter,/ Presidio County/ Texas VII-30-1968/ J. E. Hafernik] (1 male, TAMUIC).

Description. *Length*: 1.8-2.2 mm; rostrum distinctly, evenly curved, shallowly sulcate proximally, dense scales at base replaced by narrower, sparser scales toward antennal insertions; with dense scales at base, narrower, sparser scales toward antennal insertions; pronotum with broad, distinct, lateromedian vittae of dark, dark brown to rusty red-brown scales, and narrower, dorso- and lateromedian vittae of pallid, cheesy white scales; elytra narrow, not extended apically, with faint dorsomedian macula and with more distinct posterolateral maculae of dark scales; pallid, cheesy white scales dense on posteromedian portions of 4th and 5th interstria, on basal portions of sutural and 6th interstria, and on median portions of 9th and 10th interstria, variously intermixed among darker scales elsewhere; profemur minutely toothed; metatibia of male with inner margin prominent in basal 1/2, broadly concave in apical 2/3, outer margin slightly to strongly curved in apical 1/2 (Fig. 89); metatibial mucro stout, excavated (Fig. 89); tarsal claws and basal tooth moderate, tooth distinctly shorter than claw; median lobe strongly, broadly constricted in distal 2/3, abruptly narrowed subapically (Fig. 97), with apical portion flexed and extended in lateral view (Fig. 98).

Plant associations. Labels state that *A. deserticolus* adults were collected on *Gutierrezia sarothrae* (Pursh) Britt. & Rusby (Asteraceae). One specimen from New Mexico is labeled as having been collected on "*L. alyssoides*". If this refers to *Lepidium montanum* Nutt., var. alyssoides (Gray) M.E. Jones (Cruciferae) it probably does not indicate a true host of *A. deserticolus*. Likewise, collection of specimens on mesquite in New Mexico and in Baja Calfornia probably does not establish this leguminous plant as a host.

Remarks. *Anthonomus deserticolus* is distinguished from the other species in the *A. inermis* group by the shape of the median lobe of the male genitalia which is strongly, broadly constricted in the distal 2/3 then abruptly narrowed subapically in dorsal view (Fig. 97), the narrow apical portion extended in lateral view (Fig. 98). The metatibia of the male of the species is also distinct with the inner-marginal prominence limited to the proximal 1/3 (Fig. 89). Most specimens of *A. deserticolus* have the middorsal elytral macula faint, the posterolateral macula more distinct (Fig. 73-74), but the maculation is indistinct in some.

Anthonomus (*Cnemocyllus*) *dorothyae* Hatch
Figs. 75, 76, 99

Anthonomus (*Cnemocyllus) dorothyae* Hatch 1971:350. Holotype: **Oregon**. *Benton Co.:* [ORE.: Corvallis/ Aug. 16, 1941/ K. M. & D. M. Fender] [Type %/ Anthonomus/ (Cnemocyllus)/ dorothyae/ 1968 - M. Hatch] (male, USNM).

Anthonomus (*Cnemocyllus) minutus* Hatch 1971:351. Holotype: **Oregon**. *Benton Co.:* [ORE.: Corvallis/ Aug. 16, 1941/ K. M. & D. M. Fender] [Type %/ Anthonomus/ (Cnemocyllus)/ minutus/ 1965 - M. Hatch] (male, USNM). **New synonymy.**

Description. *Length*: 2.4-2.5 mm; rostrum distinctly, evenly curved, shallowly sulcate proximally, dense scales at base replaced by narrower, sparser scales toward antennal insertions; pronotum with unicolorous smoky gray-brown, coppery scales, without contrasting vittae of pallid and darker scales; elytra narrow, not extended apically, with unicolorous smoky gray-brown, coppery scales, without maculae and vittae of pallid and dark scales; profemur unarmed; metatibia of male with inner margin prominent in basal 1/2, broadly concave in apical 1/2, outer margin slightly to strongly curved in apical 1/2; metatibial mucro stout, excavated; tarsal claws and basal tooth moderate, tooth distinctly shorter than claw; median lobe short, with sides slightly narrowed in apical 1/2, more strongly narrowed apically to narrow apicomedian extension (Fig. 99).

Specimens examined. In addition to the types of *A. dorothyae* and *A. minutus* from Oregon, seven specimens of *A. dorothyae* from the following localities were examined. **California.** *Mendocino Co.:* 3 mi. E Yorkville (1, CWOB); *San Francisco Co.:* San Francisco (1, CASC); *Sonoma Co.:* 2 mi. N Sebastopol (3, CWOB). **Oregon.** *Benton Co.:* Cor-

vallis (2, OSUO). **Washington.** *Pierce Co.:* Spanaway (1, USNM).

Remarks. The holotype of *A. dorothyae* and the other examined specimens from Corvallis, Oregon, have uniformly smoky gray-brown, coppery scales; the scales in the California specimens are somewhat larger, more pallid, less smoky gray-brown and less coppery. The median lobe of the male genitalia of the California specimens is somewhat longer and a little less strongly narrowed apically than that of the holotype. The median lobe of the holotype of *A. dorothyae* is similar to that of the type of *A. albus,* but there is also variation in the length and width of this structure in that species (cf. Figs. 99, 103).

Hatch (1971) asserted that the holotype of *A. minutus* is smaller than the holotype of *A. dorothyae,* the "scales of dorsum smaller and more discrete, not obscuring the elytral striae, which are somewhat less strongly impressed," and that the specimen lacks the "...impression before the middle on each side of the midline" of the pronotum. These features do in fact distinguish the two specimens, but it is doubtful that these represent distinct species. The locality labels on the two are identical, indicating that they were probably taken from a single, natural population. The impressions on the pronotum of the holotype of *A. dorothyae* are probably teratological. Two males with identical labels (OSUO, not mentioned as part of the type series and not labelled as types) lack these impressions but otherwise appear identical to the type of *A. dorothyae.* Additional collecting is needed to determine the limits of variation within *A. dorothyae* and the other members of the *A. inermis* group.

Anthonomus (*Cnemocyllus*) *schuhi*, **new species**

Figs. 77, 78, 90, 100

Type Series. Holotype. United States. **California.** *Siskiyou Co.:* [Yreka/ Siskiyou Co., Cal./ VII-27-1972] [ex Dry/ Chaparral/ hillside] [F. D. Horn/ collector] [Cal. Dept. Agr./ 73H1-73] [%] [DEC041] (male, CDAE). Paratypes (27). **California.** *Humboldt Co.:* [U.S.A.: CALIFORNIA/ Humboldt County/ Mad River, 7-VII-1946/ Brunson P. Bliven] [BRUNSEN P. BLIVEN/ COLLECTION/ 1981 Accession/ CALIF. ACAD. OF SCI.] (1 female, CASC). *Lake Co.:* [Lake Co. 5 mi./ W. Middletown/ Cal. vi-27-1966/ C. W. O'Brien/ 1200'] 2 females, CWOB). *Modoc Co.:* [6 mi. S. Newell,/ Cal.; Modoc Co./ *Artemesia*/ Oct. 5, 1966/ Joe Schuh, Coll.] (1 male, AMNH). *Shasta Co.:* [McArthur, Calif./ Shasta County/ Grindelia; 7-24-64/ Joe Schuh, Coll.] (1 female, AMNH). *Siskiyou Co.:* [Cal.; Siskiyou Co./ 3 mi. S. Macdoel/ sweep sprg. flowers/ June 28, 1972/ Joe Schuh] (1 male, AMNH); [Montague, Calif./ Siskiyou County/ Grindelia sp./ August 11, 1963/ Joe Schuh, Coll.] (1 male, AMNH); [Montague, Calif./ Siskiyou County/ alfalfa/ July 14, 1961/ Joe Schuh, Coll.] (1 male, AMNH); [Montague, Calif./ Siskiyou County/ Eriognum; 8-11-64/ R. Rieder, J. Schuh] (1 male, AMNH); [Montague, Calif./ Siskiyou County/ Sept. 4, 1964/ J. Schuh, W. C. Peters] (1 male, AMNH); [10 mi. NE Montague,/ Cal.; Siskiyou Co./ August 27, 1964/ J. Schuh, W. C. Peters] (3 females, AMNH); [Yreka/ Siskiyou Co., Cal./ VII-27-1972] [ex Dry/ Chaparral/ hillside] [F. D. Horn/ collector] [Cal. Dept. Agr./ 73H1-73] [&] [Anthonomus/ sp. nr./ minicanus/ Det. T. L. Seeno 1973] [Anthonomus/ (Cnemocyllus)/ sp./ det R E Warner 75] (1 female, CDAE); [Yreka/ Siskiyou Co., Cal./ VII-27-1972] [ex Dry/ Chaparral/ hillside] [F. D. Horn/ collector] [Cal. Dept. Agr./ 73H1-73] [&] [Anthonomus/ sp. nr./ minicanus/ Det. T. L. Seeno 1973] (1 female, CDAE); [Yreka/ Siskiyou Co., Cal./ VII-27-1972] [ex Dry/ Chaparral/ hillside] [F. D. Horn/ collector] [Cal. Dept. Agr./ 73H1-73] [PHOTO] (1 male, CDAE); [Yreka/ Siskiyou Co., Cal./ VII-27-1972] [ex Dry/ Chaparral/ hillside] [F. D. Horn/ collector] [Cal. Dept. Agr./ 73H1-73] [%] (1 male, CDAE); [Yreka/ Siskiyou Co., Cal./ VII-27-1972] [ex Dry/ Chaparral/ hillside] [F. D. Horn/ collector] [Cal. Dept. Agr./ 73H1-73] (1 male, 2 females, CDAE). *Solano Co.:* [Vacaville Cal./ Solano Co./ VII-14 1940] [A. T. McClay/ Collector] (1 male, UCDC). **Oregon.** *Jackson Co.:* [Ashland/ Or./ Sept. 7, 1897,/ A. P. Morse.] (1 female, MCZC); [Medford/ Or./ 7-25-37/ Lawrence] [Fred Lawrence/ collection] (1 female, CASC). *Wasco Co.:* [The Dalles, Oregon/ 20 IV 1948/ J. E. Davis, Coll.] [KENNETH M. FENDER/ COLLECTION/ 1988 and 1992/ Gifts to the California/ Academy of Sciences] [Anthonomus/ &] (1 female, CASC); [Rowena Loops View-/ point, Ore./ Wasco co.; sweeping/ May 23, 1959/ Joe Schuh, Coll.] (1 male, 2 females, AMNH).

Description. *Length*: 2.2-3.4 mm; rostrum distinctly, evenly curved, shallowly sulcate proximally, dense scales at base replaced by narrower, sparser scales toward antennal insertions; pronotum with unicolorous pallid, cheesy white to ash-colored scales, without contrasting vittae of pallid and darker scales; elytra narrow, not extended apically, with unicolorous cheesy white to ash-

colored scales, without maculae and vittae of pallid and dark scales; profemur unarmed; metatibia of male with inner margin prominent in basal 1/2, broadly concave in apical 1/2, outer margin slightly to strongly curved in apical 1/2 (Fig. 90); metatibial mucro stout, excavated (Fig. 90); tarsal claws and basal tooth long, flattened, tooth extending to, or nearly to apex of claw; median lobe short, with sides slightly narrowed in apical 1/2, more strongly narrowed apically to narrow apicomedian extension, with short dorsal plate (Fig. 100).

Plant associations. Label data indicate that adults of *A. schuhi* have been collected on *Artemesia* and *Grindelia* (Asteraceae).

Remarks. The tarsal claws of *A. schuhi* are long and somewhat flattened and the basal tooth is long, extending nearly to the apex of the claw. In this respect, *A. schuhi* is like *A. latus* from which it is distinguished by the narrower form and uniformly pallid vestiture (cf. Figs. 77, 79) and by the short dorsal plate of the median lobe of the aedeagus (Fig. 100). The species closely resembles *A. albus* which has at least feebly developed pronotal vittae and and elytral maculae and the widely divergent tarsal claws with a short, slender basal tooth.

This species is named in honor of Joe Schuh (1910-1981) whose extensive collections in the western United States have greatly increased the knowledge of the insect fauna of that area.

Anthonomus (*Cnemocyllus*) *latus*,
new species
79, 80, 91, 101

Type Series. Holotype. United States. **California**. *San Mateo Co.:* [Cal. Lake/ Pilarcitos/ S. Mateo Co./ VIII-14-1966] [W. Gagne/ Monardella/ villosa var./ franciscana] (male, CWOB). Paratypes (6). United States. **California**. *Humboldt Co.:* [Fort Seward, Cal/ 6-16-1935] [E O Essig/ Collector] [Pres by/ EO Essig/ Collector] (1 female, CASC). *San Mateo Co.:* [Cal. Lake/ Pilarcitos/ S. Mateo Co./ VIII-14-1966] [W. Gagne/ Monardella/ pilosa var./ franciscana] (2 males, 1 female, CWOB). *Santa Clara Co.:* [Sneedal Uvas Cn./ Calif: Sta. Clara/ Co., IV-26-1959] [Collector:/ C. W. O'Brien] [PHOTO] (1 male, CWOB); [Sneedal Uvas Cn./ Calif: Sta. Clara/ Co., IV-26-1959] [Collector:/ C. W. O'Brien](1 male, CWOB).

Description (Figs. 79, 80)**.** *Length*: 3.0-3.4 mm; rostrum slightly, evenly curved, not sulcate proximally; pronotum with broad, distinct, lateromedian vittae of dark, dark brown to rusty red-brown scales, and narrower, dorso- and lateromedian vittae of pallid, cheesy white scales; elytra broad, not extended apically, with pallid, cheesy white scales and darker, rusty red-brown scales fairly evenly admixed throughout, except for pallid scales on basal portion of 6th interstria; profemur stout, unarmed; metatibia of male with inner margin broadly prominent in basal 2/3, concave in apical 1/3, outer margin curved in apical 1/2 (Fig. 91); metatibial mucro stout, excavated (Fig. 91); tarsal claws and basal tooth moderate, tooth distinctly shorter than claw; median lobe long, slender, with sides broadly, evenly rounded, slightly narrowed apically to narrow apicomedian extension (Fig. 101).

Plant associations. According to label data, adults of *A. latus* have been collected on *Monardella villosa* Benth., var. *franciscana* (Lamiaceae). This is a questionable host association, considering the evidence that species of the subgenus *Cnemocyllus* utilize plants in the Asteraceae as hosts.

Remarks. The broad form of *A. latus* (Fig. 80) distinguishes the species from the other members of the *A. inermis* group (cf. Figs. 70, 72, 74, 76, 78, 82, 84, 86). The pronotal vittae of the species are distinct, as in *A. inermis* (cf. Figs. 69-70, 79-80), but the elytral vittae are limited to the basal portion of interstria 6 and the pallid scales and darker scales are fairly evenly interspersed throughout elsewhere. The rostrum of *A. latus* is not sulcate and is nearly devoid of scales between the base and the antennal insertions, whereas in *A. inermis* and the other species in the group the proximal portion of the rostrum is moderately to strongly sulcate proximally and scales are present, at least at the base. The median lobe of the male genitalia of *A. latus* is more elongate and more slender than that of *A. inermis* (cf. Figs. 95, 101), but there is no notable difference in the shape of the male metatibia in the two species. The tarsal claws are long and flattened and the basal tooth is long, extending nearly to the apex of the claws, as in *A. schuhi* which is distinguished by the characters listed in the remarks on that species.

Anthonomus (*Cnemocyllus*) *squamoerectus,*
new species

Figs. 81, 82, 92, 102

Type Series. Holotype. United States. **California**. *Mendocino Co.:* [Ham Pass Rd., 2.5 air/ mi NW Eel River R. S./ Mendo. Co., Cal., 4400'/ VI-13-72] [J. Doyen/ Collector] [DEC/ 068] (male, CISC). Paratypes (18). United States. **California**. *El Dorado Co.:* [Calif. El Dor. Co./ 3000' . 5 mi. E. Mt./ Aukum VI-22-65] [C. D. Johnson/ collector] (1 female, CWOB). *Mendocino Co.:* [Ham Pass Rd., 2.5 air/ mi NW Eel River R. S./ Mendo. Co., Cal., 4400'/ VI-13-72] [J. Doyen/ Collector] (1 male, CISC); [Ham Pass Rd., 2.5 air/ mi NW Eel River R. S./ Mendo. Co., Cal., 4400'/ VI-13-72] [J. Doyen/ Collector] [PHOTO] (1 female, CISC). *Shasta Co.:* [6 mi. E. McArthur,/ Cal.; Shasta Co../ tarry plant; 8-7-64/ J. Schuh. Col.] (4 males, 13 females; 2 males, CWOB). *Yuba Co.:* [Marysville/ Yuba Co. Cal./ VIII-24-1976] [on Solidago] [Coll: Mullins/ DeVaney] [Anthonomus sp./ det. T N Seeno 1976] (4 males, 2 females, CDAE). **Oregon**. *Josephine Co.:* [Grants Pass/ Oregon] [17 Sept. 1930/ Wm. W. Baker] [Truck Crop/ No 1276] [n. sp./ (femora mutic;/ scales & setae)] (1 female, USNM); [Grants Pass/ Oregon] [17 Sept. 1930/ Wm. W. Baker] [Truck Crop/ No 1276] [!!! (sic)/ det. Buchanan >31] (1 female, USNM); [Grants Pass/ Oregon] [Wm. Baker/ Coll IX-19-30] [Truck Crop/ No 1382] (1 female, USNM).

Description (Figs. 81, 82). *Length*: 2.3-2.8; rostrum slender, distinctly, evenly curved, not sulcate proximally; pronotum with dark, dark brown to rusty red-brown scales, and narrow, dorso- and lateromedian vittae of pallid, cheesy white scales; elytra narrow, extended apically, with faint dorsomedian and posterolateral maculae of dark scales; pallid, cheesy white scales dense on posteromedian portions of 4th and 5th interstria, on basal portions of sutural and 6th interstria, and on median portions of 9th and 10th interstria, variously intermixed among darker scales elsewhere; profemur unarmed; metatibia of male with inner margin prominent in basal 1/4, strongly concave in apical 3/4, outer margin strongly curved in apical 1/2 (Fig. 92); metatibial mucro stout, excavated (Fig. 92); tarsal claws and basal tooth moderate, tooth distinctly shorter than claw; median lobe slender in dorsal view, abruptly narrowed slightly distad of base, broadly constricted in distal 1/3 and with acute apicolateral prominences (Fig. 102).

Plant associations. Adults of *A. squamoerectus* have been collected on *Solidago* (Asteraceae) and on a "tarry plant."

Remarks. The most obvious feature distinguishing *A. squamoerectus* from the other species in the *A. inermis* group is the presence of short, erect, pallid, seta-like scales on the elytra, pronotum and legs. The metatibia of the male (Fig. 92) is more slender and more strongly curved in the distal 2/3 than in the other members of the group, and the inner-marginal prominence is limited to the proximal 1/3. Additional features distinghishing *A. squamoerectus* are the diffuse and indistinct median and posterolateral elytral maculae (Figs. 81, 82) and the unique structure of the median lobe of the male genitalia (Fig. 102).

Anthonomus (*Cnemocyllus*) *albus* Hatch
Figs. 83, 84, 93 103

Anthonomus (*Cnemocyllus) albus* Hatch 1971:351. Holotype: **Oregon**. *Gilliam Co.:* [Condon, ORE./ June 21, 1938/ M. H. Hatch] [Type %/ Anthonomus/ (Cnemocyllus)/ albus/ 1965 - M. Hatch] (male, USNM). Allotype: **Oregon**. *Gilliam Co.:* [Condon, ORE./ June 21, 1938/ M. H. Hatch] [Allotype &/ Anthonomus/ (Cnemocyllus)/ albus/ 1965 - M. Hatch] (&, OSUO). Paratype: **Oregon**. *Gilliam Co.:* [Condon, ORE./ June 21, 1938/ M. H. Hatch] [Paratype &/ Anthonomus/ (Cnemocyllus)/ albus/ 1965 - M. Hatch] (&, OSUO). Additional paratypes mentioned by Hatch (1971:351) from Boise, Idaho, Corvallis, Oregon, and Naches, Washington, were not examined.

Description (Figs. 83, 84)**.** *Length*: 2.1-2.8; rostrum strongly, evenly curved, shallowly sulcate proximally, with dense scales at base, narrower, sparser scales toward antennal insertions; pronotum with broad, lateromedian vittae of pallid, brown scales, and narrower, dorso- and lateromedian vittae of more pallid, cheesy white to ash-colored scales; elytra narrow, not extended apically, with dorsomedian and posterolateral maculae of pallid, brown scales; pallid, cheesy white scales most dense on posteromedian portions of 4th and 5th interstria, on basal portions of sutural and 6th interstria, and on median portions of 9th and 10th interstria, variously intermixed among slightly darker scales elsewhere; profemur unarmed or minutely toothed; metatibia of male with inner margin broadly prominent in basal 1/2, broadly concave in apical 1/2, outer margin curved in apical

1/2 (Fig. 93); metatibial mucro stout, excavated (Fig. 93); tarsal claws slender, widely divergent, basal tooth slender, short, not reaching middle of claw; median lobe with sides slightly narrowed in apical 1/2, more strongly narrowed apically to narrow apicomedian extension (Fig. 103).

Specimens examined. In addition to the types of *A. albus* from Oregon, 79 specimens of the species from the following localities were examined. Canada. **British Columbia**. Penticton (17, CASC). United States. **Arizona**. *Apache Co.:* 2 mi. N Alpine (1, TAMUIC). *Coconino Co.:* Flagstaff (1, USNM). **California**. *Shasta Co.:* Castle Creek Canyon (1, CDAE); Old Station (10, CWOB); 30 mi. N Weed (1, CWOB). **Nevada**. *Washoe Co.:* 3 mi. S Gerlach (1, CWOB); Reno (1, USNM). **New Mexico**. *San Juan Co.:* Navajo Lake (4, FSCA). **Oregon**. *Benton Co.:* 6 mi. N Corvallis (1, OSUO). *Franklin Co.*: Pascoe (1, USNM). *Grant Co.:* Prairie City (1, OSUO). *Harney Co.:* Burns ("Reared from Heads *Chaenactis douglasii*," 16, AMNH; 1, CASC); 7 mi. N Burns ("Reared from Heads *Chaenactis douglasii*," 3, AMNH). *Klamath Co.:* 19 mi. SE Bly (1, AMNH); 8 mi. SE Dairy (2, TAMUIC); Grizzly Butte (1, AMNH). *Lake Co.:* Quartz Mountain (1, AMNH). *Sherman Co.*: 5 mi. W Biggs (1, OSUO). **Colorado**. *Weld Co.:* 3 mi. N Rockport (4, CWOB). **Washingon**. *Adams Co.*: Ritzville (1, USNM). *Spokane Co.*: Spokane ("Lomatium triternatum ?var. anomala," 1, CWOB). *Tacoma Co.*: Naches (1, OSUO). *Umatilla Co.:* Ukiah (1, AMNH). **Wyoming**. *Johnson Co.* 1 mi. N Kaycee (1, TAMUIC). *Laramie Co.*: Otto (3, TAMUIC). *Teton Co.:* Flagg Ranch (1, CWOB).

Plant associations. Label data indicate that some adults of *A. albus* were "reared from heads" of *Chaenactis douglasii* (Hook.) Hook. & Arn. (Asteraceae), and that others were collected on *Lomatium triternatum* (Pursh) J. M. Coult. & Rose var. *anomala* (Apiaceae). Since definitely known hosts of members of the subgenus *Cnemocyllus* are all Asteraceae, the latter is probably not a true host association.

Remarks. The body of *A. albus* is relatively narrow and compact, and the scales on the pronotum and elytra are pallid, the prontal vittae and elytral maculae feebly discernable (Figs. 89-90). The femora are relatively stout. More important diagnostically are the divergent tarsal claws with the short, slender basal tooth. These claws are like the ones of *A. ornatulus* which is distinguished from *A. albus* by the distinct patterns of strongly contrasting pallid and dark scales on the pronotum and elytra (cf. Figs. 83-86) and by the more strongly bent male metatibia (cf. Figs. 93, 94

Anthonomus (*Cnemocyllus*) *ornatulus* Dietz
Figs. 85, 86, 94, 104

Anthonomus ornatulus Dietz 1891:241. Lectotype (designated by Burke 1971:49). United States. **California**. [Cal] [Type/ 2057] [W. G. Dietz/ Coll.] [LECTOTYPE/ Anthonomus/ ornatulus Dtz./ des. H. R. Burke] [Anthonomus/ ornatulus/ Dietz] (male MCZC). Paralectotype (designated by Burke 1984:261). United States. **California**. [84] [Cal] [A./ ornatulus Dtz] [TYPE/ Anthonomus/ ornatulus/ W. G. Dietz/ 8153] [PARALECTOTYPE/ Anthonomus/ ornatulus Dtz./ des. H. R. Burke] (1 female MCZC).

Anthonomus figuratus Dietz 1891:241, 242. Lectotype (designated by Burke 1971:49). United States. **California**. *Los Angeles Co.:* [Santa Monica,/ May 1, >79 S. Cal.] [Type/ 2058] [W. G. Dietz/ Coll.] [LECTOTYPE/ Anthonomus/ figuratus/ Dietz/ design. by/ H. R. Burke] [Cnemocyllus/ figuratus/ Dietz] [figuratus/ Dietz] (male, MCZC). Paralectotype (designated by Burke 1984:259). United States. **California**. *Los Angeles Co.:* [Santa Monica,/ May 1, >79 S. Cal.] [Type/ 2058] [W. G. Dietz/ Coll.] [PARALECTOTYPE/ Anthonomus/ figuratus/ Dietz/ design. by/ H. R. Burke] [Cnemocyllus/ figuratus/ Dietz] (1 male MCZC). Synonymy by Burke 1971:49.

Description (Figs. 85, 86)**.** *Length*: 2.1-3.0; rostrum distinctly, evenly curved, punctate proximally, scales limited to extreme base; pronotum with broad, distinct, lateromedian vittae of dark, dark brown to rusty red-brown scales, and narrower, dorso- and lateromedian vittae of pallid, cheesy white scales; elytra narrow, not extended apically, with variously distinct dorsomedian and posterolateral maculae of dark scales; pallid, cheesy white scales dense on posteromedian portions of 4th and 5th interstria, on basal portions of sutural and 6th interstria, and on median portions of 9th and 10th interstria, variously intermixed among darker scales elsewhere; profemur unarmed or minutely toothed; metatibia of male with inner margin broadly prominent in basal 2/3, deeply concave in apical 1/3, outer margin strongly curved in apical 1/2 (Fig. 94); metatibial mucro stout, excavated (Fig. 94); tarsal claws slender, widely divergent, basal tooth slender, short, not reaching middle of claw; median lobe with sides broadly, evenly rounded, slightly narrowed in apical 1/2, more strongly narrowed apically to narrow apicomedian extension (Fig. 104)

Specimens examined. In addition to the types of *A. ornatulus* and *C. figuratus* from California, 216 specimens of *C. ornatulus* from the following localities were examined. **California.** (3, MCZC; 1, USNM); Ahwahnee (1, MCZC); Centerville (4, CASC); Newton (5, OSUC); Santa Rosa Mountains (3, OSUC). *Contra Costa Co.:* Mount Diablo (21, USNM). *El Dorado Co.:* Tallac Lake (1, USNM). *Fresno Co.:* 25 mi. E Minkler (13, CWOB). *Kern Co.:* Tehachapi (3, MCZC); Wofford Heights (1, HAHC). *Lake Co.:* Middletown (1, CWOB); 5 mi. W Middletown (1, CWOB). *Lassen Co.:* Amedee (1, MCZC). *Los Angeles Co.:* Azusa (2, CASC); (2, USNM); Los Angeles (1, MCZC); Mount Lowe (1, MCZC); Mount Wilson (1, MCZC); Pomona (13, MCZC; 2, USNM); Santa Monica (1, MCZC). *Madera Co.:* Ahwahnee (4, CASC). *Marin Co.:* (1, MCZC; 5, USNM); Mill Valley (1, CASC). *Mariposa Co.:* Mariposa (1, MCZC). *Modoc Co.:* Buck Creek Ranger Station ("reared from *Eriophyllum lanatum*," 17, CISC). *Mono Co.:* Benton (1, CDAE). *Monterey Co*.: Arroyo Seco (2, CDAE); Pacific Grove (1, USNM); Paraiso Springs (23, CASC); Tassajara (1, CASC). *Riverside Co.:* Keen Camp (1, OSUC); Riverside (1, MCZC); San Jacinto Mountains ("swept from *Eriogonum* sp.," 1, USNM). *San Bernardino Co.:* Mill Creek Canyon (1, CASC). *San Benito Co*.: Paicines (1, CISC); Pinnacles National Monument (2, CISC). *San* Diego Co.: Jamul (1, CDAE); Julian ("blossom *Ceanothus* sp.," 3, CWOB); Mountain Springs (1, TAMUIC); Poway (2, MCZC); San Diego (1, MCZC). *San Francisco Co.:* Mount Davidson (20, CASC). *Santa Clara Co.* (1, MCZC; 2, USNM); Alum Rock Park (2, CISC); Gilroy Hot Springs (2, CASC); Sveadal (13, CWOB). *Santa Barbara Co.:* San Marcos Pass (1, CASC); Santa Barbara (2, MCZC). *San Bernardino Co.:* 3 mi. E Camp Angeles (2, CWOB); 3 mi. W Forest Home (2, CWOB); New Idria (2, CISC); San Bernardino Canyon (1, CASC). *Santa Clara Co.:* 2.5 mi. W Saratoga (5, CWOB). *San Mateo Co.:* Palo Alto (1, CWOB). *Tulare Co.:* Ash Mountain (3, CDAE); Kaweah (1, CASC); 19 mi. SE Kennedy Meadows Campground, 9 Mile Canyon (1, CWOB). **Nevada.** *Washoe Co.:* Reno (2, MCZC).

Plant associations. Label data indicate that some adults of *A. ornatulus* were reared from *Eriophyllum lanatum* (Pursh) Forbes (Asteraceae), swept from *Eriogonum* sp. (Polygonaceae) and collected on the blossom of *Ceanothus* sp. (Rhamnaceae). *Eriophyllum* is definitely a host of the species, while the other two plants are probably not.

Remarks. *Anthonomus ornatulus* is distinguished from the other members of the *A. inermis* group by the metatibia of the male which is strongly, abruptly bent in the apical 1/3 (Fig. 94) and by the divergent tarsal claws with the basal tooth short. The range of the species overlaps that of *A. inermis* in central California. The pallid and dark scales are condensed into distinct pronotal vittae and elytral maculae in both species (Figs. 75, 76, 85, 86), and the median lobe of the two is indistinguishable (Figs. 95, 104). In addition to the more strongly bent male metatibia, the form of *A. ornatulus* is slightly broader and more convex than that of *A. inermis,* and the rostrum is more evenly curved and less sulcate. The two are also distinguished by the short basal tooth on the tarsal claws of *A. ornatulus*.

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